GENE

By
Per H. Ramqvist
Abstract
This thesis deals with questions concerning the sedentary settlement in central Norrland: its origins, function and development. This type of settlement appears at the start of our calendar. The material comprises an almost fully excavated farmstead from the Early Iron Age (1–600 A.D.), situated on Genesmon in the parish of Själevad, northern Ångermanland. Particular stress has been put on the description of the individual structures and on questions concerning the construction and room-division of the houses. The farm’s resource utilization, handicrafts and development are also analysed and discussed.

The basic material for the thesis has been obtained through archaeological excavations. To a limited degree a comparative method has been used with regard to the form and content of the farm settlement. In addition data has been extracted from the presence, distribution and species of carbonized seeds, which were collected from post-holes, hearths and other features in and around the nine house foundations found hitherto.

Contrary to the views of previous research, the results show that even northern Ångermanland obtained sedentary settlement at about the same time as Hälsingland and Medelpad. With regard to the origin of this settlement a critical examination is made of previous research, which has largely been in agreement that it was a result of colonization from the Mälar Valley. Some circumstances are presented which can be interpreted rather as internal development under influence. The settlement on the excavated site at Gene consists of a farmstead, with a three-aisled long-house and smaller three-aisled houses nearby with special functions. The number of small houses increases with time. Only a few remnants of dividing walls have been encountered.

Room analyses show that the long-house was probably divided into six rooms or sections, each with its own function. The general layout and this room-division corresponds well with other contemporary houses in, for example, S.W. Norway and on Jutland. There are however tendencies towards regional differences. During the Migration Period both iron-forging and bronze-casting have taken place on the farm. These handicrafts were probably not carried out by professional smiths. The remains of bronze working show that relief brooches, keys, rings and pins were cast. A preliminary going-through of the literature also shows that bronze-casting was considerably more common on the Migration Period farms in Norden than one generally assumed. The farm on Genesmon is suggested to have been relocated during the 6th or 7th century A.D. Since a similar restructuring or movement of settlement can be noted over large parts of Norden during this period, the explanations for the relocation of the Gene farm must be sought in changes in a long-established inter-regional structure.

Key words: sedentary, settlement, colonization, internal development, origin, development, three-aisled long-houses, house construction, room division, inter-regional structure, iron forging, bronze casting.

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On the origin, function and development of sedentary
Iron Age settlement in Northern Sweden

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The Gene investigation was begun in 1977 and work is still in progress. This thesis is therefore of course a component part rather than a terminal point in a research process. Early sedentary settlement in central Sweden in general and Norrland in particular is practically unknown at the present time, judging by the published material. The department of Archaeology at Umeå University, however, has deliberately allocated large resources to this problem complex, resulting above all in two major investigations—one in Trogsta in northern Hälsingland and the one of current interest here, in Gene. As major analyses and syntheses have not yet been carried out, this thesis must in this perspective be regarded as an introduction to future work on problems concerning the origins, function and development of the sedentary settlement. Within the Gene investigation we have tried to reduce the “empirical mountain” that rapidly appears by submitting reports on the excavated material as soon as possible. At present two such reports are available (Ramqvist 1981, Lindqvist 1983) and two more are in progress.

My teacher in Archaeology and supervisor, Professor Evert Baudou, showed great confidence in me when, despite limited field experience, I was offered the leadership of the archaeological excavations on Genesmon. This confidence has in many ways been an encouragement throughout the course of this work. During the preparation of the thesis, Evert has also made valuable comments from his wide experience and has suggested the pruning of less important or over-weight sections of the text.

Dr. Roger Engelmark, the palaeo-ecologist in our department, has carried out macro-fossil analyses on soil material from Genesmon throughout the investigation and, in doing so, has provided the basis for new and important points of view in the interpretation of for example resource utilization and house functions.

Research engineer Rita Larje at the Osteological Research Laboratory, University of Stockholm, has, in a patient way analysed the very fragmentary bone material. Dr. Birgitta Hulthén, the Department of Quaternary Geology, University of Lund, has analysed raw clay and clay samples from the site, and thereby formed a basis for the interpretation of provenance and manufacture of ceramic artifacts.

During many seminars, coffee breaks and other occasions, I have had fruitful discussions with my friends and colleagues, when ideas and their eventual application have been tested. For me these informal discussions have been and remain very important elements in the research process.

Hitherto about 75 locally-recruited workers have participated in the investigation and made an important contribution through the excavation and sieving of over 1000 cubic metres of soil. These workers have been renumerated by Västernorrland's County Employment Board (Länsarbetsnämnden) which, at an early stage, recognized the dualism in this project, i.e. the benefits both for the labour market and for research.

Between 1957 and 1962, Evert Baudou excavated cairns in northern Ångermanland. These investigations were made at the initiative of Själevad's Local Historical Society (Själevads Hembygdsförening), whose members had long played active parts in researching the district's prehistory. In the final stage of Baudou's investigation three of the burial mounds on the Genesmon cemetery were also excavated. On the basis of the interesting settlement indications that appeared, a further investigation of the site was considered desirable. Fifteen years later and as Professor of the Department of Archaeology at Umeå University, Baudou was able to realize these plans and the author was offered the leadership of the field investigations. Anna-Karin Lindqvist was also there from the start and has led the field work during the last two seasons.

During the important introductory stage of the investigation, the financial support of the research foundation Seth M. Kempes minne in Örnsköldsvik was particularly welcome. At that time it was still uncertain whether we would encounter settlement remains. In fact the house foundations on Genesmon have the archaeological inconvenience of not being visible on the surface prior to excavation; which means that their actual localization took a great deal of time. On the other hand, this has the advantage that surfaces between the foundations have been and will be thoroughly excavated.

In order that an excavation of this size can be
started up and run smoothly, positive and effective administrative processing is required; in this respect the County Antiquarian for Västernorrland, Bengt Häger, was of great importance for the investigation. The positive attitude and support imparted by Örnsköldsvik’s Local Authority has also been con­cil to the Gene investigation. Mention must here be made of the Principal Secretary to the Local authority Karl-Erik Axenström, who supported the excavations with considerable personal interest, together with the Real Estate Manager Bengt Lindholm and engineer Lars Dahlberg, who complied with our occasionally fastidious requirements for excavating equipment and special tools.

During the last two seasons financial support has also been given by the Council for Research in the Humanities and Social Sciences (Humanistisk­samhällsvetenskapliga Forskningsrådet, HSFR).

The good relationships that developed between the public and archaeologists through, for example, Baudou’s activities in the area were passed on to the Gene investigation. Arne Söderström, assistant at Örnsköldsvik’s Museum, has acted as a very important intermediary and, with his great involvement and narrative skill, he has continually interested people in the investigation. Furthermore, Arne has helped in many ways with obtaining information for this thesis.

Co-operation with Marianne Nejati, who was responsible for the composer transcript, has gone very well—despite periods with many, much-altered manuscript pages. She has also proof-read large parts of the text and thereby drawn attention to many difficult-to-discover irregularities. Parts of the manuscript have been read and commented upon by Lena Holm, Ingela Bergman-Hennix and Margareta Backe-Högberg, here at the department. Our departmental secretary, Carina Lahti, has also helped by typing fair copies of certain parts of the manuscript. The photographer at the Faculty of Arts, Åke Sörlin, has in many ways been helpful with matters regarding my photos. The antiquarian at the County Museum in Umeå, Lars-Göran Spång, helped me to diminish and reproduce several of the excavation plans.

The translation has been carried out by Dr. Ian Layton (Chaps. 1–3, 5–7) and John Hall, lecturer (Chaps. 4, 8, 9, Excursus 1). Dr. Noel Broadbent translated most of the captions to the figures and tables, together with the first written version of Chapter 5, which was later modified by the author. Besides translating, Ian Layton also made useful comments on sections of the text with human geographical connections.

Last but not least I want to convey my apologies to Anna-Karin for certain malechauvenistic tendencies that have been accentuated during the past year.

And Lina: now, at last, the frog!

Umeå, 8th November 1983

Per H. Ramqvist
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1. INTRODUCTION

1.1. PROBLEM AREAS

Knowledge about life and society in Norrland during the Iron Age is largely based on data connected with the graves, their contents, number, construction, distribution and location. No settlement has yet been investigated and published, despite the fact that at least portions of two of them were excavated long ago (see Sect. 2.2.1.). This rather unfortunate situation has nevertheless resulted in a number of conclusions regarding the settlement and economic history of the area (e.g. Baudou 1968, 1977a, Selinge 1977). In current research on settlement archaeology, cemeteries are interpreted as indications of settlement. The graves date the farmsteads. Grave finds give evidence of social conditions and stratification. The number of graves provides some kind of measure for the size of the population. The position of the graves in the terrain shows which branch or branches of livelihood have been of most importance on the farms etc. In general this indirect method of treating settlement is of great use for broad economic-ecological analyses and for rather detailed diachronic settlement studies over a wider area (e.g. Ambrosiani 1964, Ferenius 1971, Hyenstrand 1974, Selinge 1977).

With regard to the farms' detailed resource utilization, building methods and general structure and development, however, thorough investigations of the actual farms and related structures are required. This thesis is an example of one such investigation and it thereby serves its purpose as a case study of one of the earliest sedentary farms known hitherto in the coastal area of central Norrland.

In connection with the Gene-investigation there are two important problems of a special nature. Firstly, at the time of the writing the farm is not fully excavated. In principle this means that further house foundations may be found which could change the picture of the settlement's complexity and extent in time, etc. However, I estimate these possibilities to be small, on the grounds that extensive digging of sample pits, phosphate mapping and general reconnaissance have been carried out on Genesmon. Nevertheless this possibility ought to be kept open. Secondly, the degree of generalization is low with regard to the results of the investigation. This is naturally a consequence of the fact that the Gene-investigation is the first of its type in the Norrland area. One problem connected with this has been to judge what degree of thoroughness to employ. Chapter 4, for example, perhaps goes too far in adopting the deadly dullness of the report text?

Problems concerning the development of the settlement during the Early Iron Age and change at the transition to the Late Iron Age are brought to the fore through the Gene-investigation. Is the change that can be observed over large parts of the Nordic area at the transition to the Late Iron Age contemporaneous or does it stretch over a longer period? Can one look for local explanations which by chance happen to coincide in time or is it a change which has common causes?

One further, very important question concerns the origin of the sedentary settlement. Is it colonists from the south who build up the Norrlandic peasant society or does the indigenous population undergo a socio-economic change during the centuries around the beginning of our calendar? These problems will not be illustrated from a separate material but the structure and development of the Gene farm can throw new light on these questions, while a critical analysis of earlier conceptions of problems of colonization will determine the likelihood of one or other of the assertions.

The thesis does not aim to explain any of the changes that are illustrated in this investigation. In this context it is quite adequate with new descriptions of the actual changes. Explanations are complicated, something which is well illustrated by Elster's (1973: 17ff) lucid treatment of different forms of explanation: genealogical, functionalist and genetic. Much simplified, the genealogical type of explanation is said to be a method which tries to explain the change of a system by listing relevant causal factors, without investigating the connection between them. It is endogenous if the causal factors are taken from the system itself and exogenous if they are located outside the actual object of research.

The functionalistic type of explanation focuses on viewing phenomena in a synchronic and functional context. The factors in the system belong together functionally and are locked together so that changes
in the system cannot be made clear.

The genetic type of explanation embraces the notions that there are inbuilt possibilities for change in every functional entity, that the same conditions can simultaneously be both functional and mal-functional, and that one and the same phenomenon can both solve a system's problem and lead to its destruction. In other words this type of explanation is dialectic.

From this brief classification of explanations one sees that they increase in complexity from genealogical to genetic (Elster 1973:114). The functionalistic type appeared as a reaction to the genealogical way of isolating factors. In its turn the genetic type of explanation takes up changes within functional systems by pointing out connections between self-reproduction and self-destruction.

What then is the situation in Nordic archaeology? The question ought itself to be a subject of a thesis, but seen generally the answer is simple as it is practically always different genealogical explanations. Broadly one can say that previously exogenous factors were emphasized whereas in recent times there are many who place more importance on endogeneous factors. A few, more functionalistic attempts have also been undertaken, but genetic explanations has never been presented. This over-emphasis on genealogical types of explanations says something about the difficulties as well as the possibilities within the archaeological discipline.

One fundamental condition for all explanation of social change is that the social system can be described both before and after the change in question. This is not the case for the Bronze Age society or for the Early Iron Age. This thesis is therefore essentially a contribution to such descriptions.

Compared with the Norrlandic pre-sedentary phase, the sedentary settlement (indicated by mounds) exhibits a clear connection with good cultivable soils. As a rule these consist of post-glacial deposits in former bays and inlets which have become infilled. From hill and esker tracts the finer particles have been washed out of the morainic material and deposited as sediments in various parts of the sea floor. This process was particularly marked in areas consisting mainly of hills and valleys, as for example along the coast of Central Norrland. It was along these valleys that the Iron Age farms were located (Fig. 1.1).

The valleys normally stretch far inland from the coast and, in principle, follow the same direction as the mountain - and forest - rivers. With their enticing sediment plateaux, the river valleys have been particularly favourable for the settlement of that period. This applies perhaps foremost to the somewhat wider valleys alongside the Ljungan and its tributaries. It has not been solely a question of these valleys stretches but also, to a high degree, lesser valleys such as that of the Selångersån or others running more or less parallel to the coast.

Accordingly we find a natural boundary for the settlements which flock together alongside the valley zones but avoid the surrounding morainic forest areas. Our present knowledge about settlement in Roman times in for example the county of Västnorrland (Medelpad and Ångermanland) is founded largely upon excavations carried out during the first half of the twentieth century (see Björnstad 1962).

Fundamental inventories of this material have recently been made by Selinge (1977) and, in the cases of Medelpad and Jämtland, earlier by Slomann (1950). On the basis of this work there was apparently no sedentary settlement in Angermanland during the Roman Iron Age. Instead we find it in Medelpad, concentrated mainly around lake Marmen (a little way up the wide valley of the Ljungan), in the smaller Timrå and Selånger valleys, and in the valley of the Indalsälven at some distance from the present river mouth. The Indalsälven differs from the Ljungan by virtue of its relatively narrow valley. Finally, there are also traces of settlement in direct association with the mouth of the Ljungan river.

In contrast with Bronze Age graves, those of the Iron Age do not seem to be tied in the same way to beaches (Baudou 1968:89, Fig. 26). Therefore it is more difficult to date Iron Age graves using shore-displacement chronology. Mounds placed above c. 10 m.a.s.l. could belong to any of the Iron Age periods.

In my opinion, it is also at present dubious to determine the dating of graves from morphological criteria, despite significant progress along these lines (Selinge 1977:229ff). In the case of Medelpad Selinge's datings are founded on fairly abundant material, whereas conditions in Angermanland are considerably poorer. According to Selinge's own tables (1977:231) regarding Medelpad, foot-chains of stones and foot-trenches constitute the most characteristic, externally visible, construction details for graves of the Early and Late Iron Ages respectively (1977:232).

In Angermanland's case there are for example only two of the investigated graves with foot-chains and a few with foot-trenches. The foot-chains are dated to the Early and Late Iron Ages (the latter is in the form of a trident on the burial ground at Holm). The mounds with foot-trenches are related to the cemetery near the Björkå ironworks, where they constitute about half of the 50 graves. Ten graves, with or with-
Fig. 1.1. The distribution of Iron Age features in the investigation area.
out foot-trenches, have been investigated and been dated to the Viking Period.

In cemetery No. 22 in Gene (Fig. 3:1), the largest mound has a foot-trench but it has not yet been excavated (Chap. 4.3). Nevertheless, I can mention here that most signs so far suggest that the burial ground belongs to the adjacent settlement and is thus of Early Iron Age.

Although there has been great progress in settlement analyses and in attempts to form a general chronology for the Iron Age graves (Selinge 1977) there are still uncertainties. Among these problems the method of identifying the earliest sedentary settlements seems to be important and not quite solved today.

1.2. SOME DEFINITIONS AND POINTS OF DEPARTURE

A term used frequently in this thesis is sedimentary settlement. It is easy to make a general definition; for example Higgs & Vita-Finzi (1972:29) say that "sedentary economies are practised by human groups which stay in one place all the year around. They are marked by the development of durable wealth in the form of houses, buildings, roads and the like". In principle this definition does not concern any particular type of economic system or resource utilization. Normally, however, sedentary settlement appears in the form of farming communities, even though there are many exceptions to this (cf. Higgs & Jarman 1972:8, Higgs & Vita-Finzi 1972:29).

A closely related term is pre-sedentary settlement, which in this thesis concerns a non-sedentary settlement that chronologically preceded the sedentary phase. Implicit in this lies an evolutionistic viewpoint which implies that sooner or later settlement becomes sedentary. This is not always the case, but in this context the term has analytical advantages. What is mainly meant by pre-sedentary is mobile settlement, which moves according to changes in the seasons and where different types of resources are successively utilized (cf. Higgs & Vita-Finzi 1972:28f). Naturally, in the perhaps six millennia during which mobile settlement existed in the coastal area of Norrland, a number of variations have appeared and the degree of mobility has with certainty altered both in time and space.

One sign that a settlement is sedentary is thus the occurrence of permanent structures in the form of houses, storage pits and grave monuments adjoining the dwelling site. These types of indications occur in the coastal area of central Norrland and perhaps in the Storsjön-region in Jämtland during the centuries around 1 A.D. The structures differ markedly from what we know from the preceding periods. It is therefore obvious that light must be thrown on the relationship between sedentary and pre-sedentary settlement. This question is also tied to the problem of colonization (Chap. 8).

The point of departure in this context is that the pre-sedentary phase is characterised by a mobile settlement pattern and resource utilization and that sedentary settlement began to appear around 1 A.D. This farm settlement cannot possibly have been isolated but must have been part of a unit above the level of the farm organization, based on social and perhaps economic dependency. Basically I see it also as the fragmentation of a more collective form of resource utilization into, from a population point of view, smaller farm units. The size of the basic units in pre-sedentary economies is unknown, but the figure of 25 persons has often been mentioned (e.g. Gräslund 1974:4). This is plausible, while a probable figure for the population of a farm is for instance 15 individuals. Both these figures lack empirical foundation and are generalizations of analogies from so-called primitive societies or historically known conditions.

A transition from a mobile to a sedentary economy does not necessarily involve any dramatic change-over in a short-term perspective. In fact, regarding the coastal area of Norrland it appears that the types of economic activity were approximately the same before and after the transition with the important distinction, however, that different resources were stressed in different ways. Such displacements can for example depend on the fact that indigenous groups have discovered or accepted innovations concerning the farming system, or that immigrant groups brought innovations with them and settled down on the land habitually used by the indigenous population. The displacement can also be due to over-exploitation of natural resources, etc. These types of exogenous and endogenous genealogies are the only explanations that can at present be given in this case. But as previously stated explanations are not the main theme of this thesis.

Because of the imperfect investigation situation an alternative must be kept open, namely that some kind of intermediate form of settlement can have existed in the area during, for example, Pre-Roman Iron Age. Seen theoretically this could have been a semi-sedentary type relating to a year-round settlement which changed location one or more times during a generation. This settlement type could give rise to simpler houses and constructions. As examples of this type of settlement may be cited the Bronze Age settle-
ments in the Mälar Valley (Hyenstrand 1968, 1976) and perhaps also the so-called "migratory villages" of the Pre-Roman Iron Age on Jutland (Becker 1980).

Sedentary settlement can appear when the current population considers that secure reproduction conditions exist. In exceptional cases this can consist of a good combination of natural resources, but in the most common cases it is connected with the manipulation of nature through changes in the farming systems. Given the types of soils that mainly appear in Scandinavia, continuous and sedentary agriculture cannot be carried on without considerable working and manuring of the soil. Extensive forms of agriculture with long-term fallow, e.g. forest-fallow and bush-fallow cultivation (Boserup 1977:15f), by necessity lead to a certain degree of mobility unless they are marginal activities in extremely good niches of natural resources. One of the most important conditions for sedentary settlement in this area ought therefore to be connected with the systematic use of fertilizer.

Manuring is tied in turn to the keeping of livestock and to the effective collection of animal dung. The degree of significance for such farming can vary considerably, depending on the other resources with which it is combined. The economy of a single farm may be built up of several different resource systems, each with its own special characteristics; the labour requirement, the point of time for exploitation or activity, social roles in connection with the activities, etc.

During the sedentary phase the inhabitants of the farm practise this type of resource utilization and thereby form the smallest economic unit in this society. As suggested by investigations, primarily in Östergötland (Lindquist 1968, Widgren 1983) and on Gotland (Lindquist 1974, Carlsson 1979), several scattered farms have probably been joined together as larger units. Such a unit can be termed a farming community in order to differentiate it from the later villages, which are characterized by agglomerated settlement on a village plot (tomt). It is highly probable that farming communities of similar type also occurred in the coastal area of central Norrland during the Early Iron Age. In a theoretical model one must also imagine several levels, of which the one above the farming community can be called farming district, which is comprised of several farming communities within an area delimited topographically by, for example, large tracts of forest or other natural barriers. Further levels can later be added to the model so that a picture is obtained of a possible spontaneously-developed system (Fig. 1:2).

Unions on a higher level, e.g. farming districts or federations, are in no way recorded, but they are most likely a precondition for the administrative divisions which arise during the Late Iron Age, at least in the Mälar region (cf. Hyenstrand 1974:127f). For the coastal parishes in southern Norrland it has
also been shown that there are good reasons for believing that twelfths (tolfter) occurred in pre-Christian times (Hyenstrand 1979a, Jonsson 1982:133).

In a number of connections it has been maintained that the Christian parish boundaries overlie an older system of division (cf. Jonsson 1982:118f), so that two different types of societal and spatial divisions appear, namely the spontaneously-evolved and the superimposed. An existing spatial division is probably a precondition if an imposed structure is to have any function at all without being sustained by enormous control mechanisms. All types of state formation have a strong need of administrative and not least territorial divisions. According to E.W. Soja, the difference between pre-state and state territories is that the former is said to be a social definition of the territory whereas the latter territory is a definition of the society (in Jonsson 1982:119).

It is important to try to get at the "spontaneous" growth of the division which, later on, is taken over and modified beyond recognition by state and church. The starting point in such an analysis is the general settlement pattern over a wider area. As mentioned above, however, it is necessary to analyse settlement through actual dwelling sites and not only through graves. There has to be a connection between micro- and macro-investigations with regard to the analysis of the structure of settlements and their development.
2. THE IRON AGE FARM:
AIMS AND PREVIOUS RESEARCH

2.1. AIMS OF THE FARM ANALYSIS

The farm analysis will form the largest and most important part of this thesis. Rather than the nuclear or the extended family, the farm seems to have formed society's smallest economic unit during the Early Iron Age. The nuance of this concept leave open the possibility that the farm also included labour which was not related by kinship to the other inhabitants of the farm. In this connection, the farm is a concrete object for study and of great importance for understanding society as such. However, it cannot be said that one understands an economic system merely because one single detail in the system is understood. The value of the farm as an object lies in the fact that we are directly led into a type of everyday environment, which carries traces of the population's main activities. Furthermore the results of such analyses are most frequently comparable with other geographical areas.

When the Gene investigation began in 1977, no report on an intact farmstead had been published as far as Norrland was concerned (see below). On the whole the rate of publication has been slow or non-existent. More or less by necessity, therefore, much of this present work is purely empirical, i.e. analyses of excavated or exposed material, but such a presentation is also part of the aim of this thesis. Obviously no complete publication of all the material which has emerged from the investigation is possible or even desirable. On the other hand, considerable care has been taken to describe and analyse house constructions together with their room division and function.

As the investigation embraces the whole of the Early Iron Age, a diachronic approach is obviously inevitable. How have the farm's economy and buildings changed during these 400–500 years? The principal aim in this context is to describe this change.

A complete comparative analysis will not be made, but comparative material is continually drawn into those chapters which are not concerned with material descriptions.

The degree of generalization with this type of "pioneer work" for a region becomes very limited and often such attempts are repudiated by the next new find. The generalizations tend to be quickly out-dated and in many cases may appear banal, irrelevant or even ridiculous to a later (or contemporary) generation of researchers. I am nevertheless of the opinion that such generalizations encourage research in general. All inductive generalizations are of precisely the same type and only differ quantitatively, i.e. generalizations are based on much or little experience (or authority, which in this context implies that aspects of research status are inbuilt). Comprehensive attempts at generalizations on an inductive basis will not be made. However, several hypotheses will be formulated from those conditions which have been established in connection with the Gene investigation. Such hypotheses are based directly on experience but are deductive in character. In archaeology there are no counterparts to science's "laws of nature", nor can I rely on statistically-supported theses with "natural law" precedence. Rather, I must quite simply trust to a logical argument from which inferences and the formulation of hypotheses can take place.

The objectives for this part of the study can thus be said to comprise the answers to the following questions:
- What did the houses in Gene look like?
- How have the houses in Gene functioned?
- How has the settlement changed?
- How was the economy of the farm constituted and how has it changed?

2.2. PREVIOUS HOUSE AND FARM INVESTIGATIONS

2.2.1. NORRLAND

Within the Norrland area no proper farm studies have been made for the Iron Age, if by farm studies one means an analysis of an Iron Age farm's resource utilization, establishment and development. With regard to the Early Iron Age, what exists are four investigations of dwelling sites with remains of house foundations (Baudou 1981:113ff) and a couple of newly-started partial investigations. Thus previous research has not had many objects to go on in the discussions on the Iron Age farm and its contents, as is evident from the following list of the investigation locations (also Fig. 2:1):


3. Högom, in Seländer parish, Medelpad. Two disturbed house foundations beneath the great mounds nos. 3 and 4, 24 × 7 m and 18 × 8.5 m respectively. No. 4 was investigated by Margareta Biörnstad in 1956 (Biörnstad 1958) and No. 3 by Rolf Petré in 1960 (Petré 1963). Unpublished. Cited by, for example, Selinge (1977:328ff).

4. Gene, in Själevad parish, Ångermanland. See below and in list of references.

To these can be added a terrace investigated by The Central Board of National Antiquities (Riksmitt­ kvärtämbetet) at Gomaj, in Njurunda parish, Medelpad (Sverker Söderberg), which is said to have produced neither finds nor structures (Selinge 1977:334). In 1982 the county museum in Härnösand also began an investigation of one (or more?) house foundation(s) by Sticksjön, in the parish of Seländer, Medelpad. The foundation is more like the stone wall type and not really a terrace. This investigation is also important as it lies only about 1 km from the site and burial mounds at Högom and, in relation to them, in quite another topographical location. Margareta Bergvall is leading the investigation.

As at Sticksjön, the investigation in Lucksta by the Lake Marmen in Medelpad, was a rescue excavation. Below a mound from probably the Viking Period a complicated stratification was found. Just below the grave, parts of a terrace were recognised, overlapping a thick occupation layer which finally overlapped plough marks. The occupation layer is dated by C-14 analyses to Early Roman Iron Age. In that layer some pieces of asbestos-tempered pottery were found. The occupation layer probably represents a longer period than that given by the two radiocarbon dates. On the limited area hitherto excavated, scattered postholes were found (Margareta Bergvall, pers. comm.).

In this context the recently-started excavation at Frösön in the lake Storsjön, Jämtland province, must also be mentioned (Hemmendorff 1982, Baudou 1983:66ff). Inside this hillfort there are at least four house foundations of the terrace type. None of these are as yet investigated, but two radiocarbon dates from the wall of the hillfort suggest that the whole construction been built during the Roman Iron Age and Migration Period. The datings show that the sedentary settlement in the central parts of Jämtland was perhaps established as early as that along the coast of Norrland.

The Högom house occurs as a secondary phenomenon through the excavations of the great mounds nos. 3 and 4 (see Figs. 5-2-4). The foundation beneath mound No. 4 is very like House I at Gene in appearance and construction. On the other hand, the foundation under mound No. 3 contains a number of well-preserved construction details which do not occur at Gene. Unfortunately no publication on these investigations is yet available and at this time only certain parts of the material can be utilized here (Chap. 5).

The investigations of the Högom burial ground began in 1949, when one of the four great mounds (No. 2 in Fig. 2:2) was excavated (Janson & Selling 1955). This chambered grave proved to be one of the richest graves hitherto investigated in Norrland. It was immediately given the designation "the chieftain's grave" (Janson & Selling 1955) and among the finds may be noted a complete set of weapons, quantities of household articles — including faceted glass beakers (Ekholm 1956:49, 1967), equestrian accessories, together with ornaments and pieces of costume, etc. These extraordinarily rich finds are still not analysed and only a presentation of the ornamented sword (Selling 1952) and the glass beakers (Ekholm 1967) is available. The find is also mentioned in Stenberger (1964:56ff) and Selinge (1977:270ff). The grave finds have been dated by Selinge as being of the Late Migration Period.

The character and content of the mound's fill material give direct indications of the presence of a nearby habitation layer. Fire traces and finds in the fill are mentioned sporadically in the essay by Janson & Selling (1955:65) and, looking through the available artifacts and finds in Sundsvall's Museum from grave No. 2, we can see (exhibited and termed an oil lamp) an intact crucible (Fig. 2:3) of the same type as those in for example Helgö (e.g. Lamm 1977:9ff) and Gene (Sect. 4.2.4.3 & Fig. 4:86). According to the meagre find reports, the crucible was found together with a wrist clasp in the north-west part of the cairn (i.e. the core cairn beneath its earthen mantle).

The crucible's outer dimensions of 65 × 60 × 37 mm make it slightly larger than the Gene crucible. It
Fig. 2.1. Provinces, rivers and investigated Early Iron Age farmsteads in Norrland. 1 = Onbacken, 2 = Trogsta, 3 = Högom, 4 = Genesmon.
is far less burned than crucibles normally are, so that for example the tempering material and the seam between the upper and lower parts shows up clearly (Fig. 2:3). Otherwise it is very like the one from Gene. Crucibles normally belong to dwelling-site finds and it is likely that a habitation layer existed (and maybe still exists) beneath grave No. 2.

The other two great mounds nos. 3 and 4 at the Högom cemetery have been investigated and well-reported, but not however published. They do on the other hand have well-documented settlement remains buried beneath their respective mounds (Fig. 2:2).

The preserved portion of the house foundation under grave No. 4 was c. 18 X 8.5 m in size. The width is the original but its length has probably been about twice as large (Figs. 2:2, 2:4). It is strikingly similar to House I in Gene (Fig. 2:4) and the houses have several construction details in common (Sect. 5.1.2.2.). In the habitation layer, which was also found in the mound's fill material, there were a number of simpler iron objects together with iron slag of indefinite type (cf. Selinge 1977:330). Above the house foundation (the habitation layer) and under the mound there were also traces of furrow tracks from an ard, forming a sparse grid pattern (e.g. Selinge 1977:355, Fig. 77).
The dating of grave No. 4 is uncertain and it can be noted that it was quite different from the aforementioned in that it was almost entirely composed of sand and its primary grave had an iron vessel, containing burnt bones and separate artifacts; This was buried in what looked like a "core mound" of 6 m in diameter and 1 m high, constructed of material from the habitation layer (Biörnstad 1958:10). In addition, in the mound's mantle there was a secondary cremation with bone objects, which led Selinge to date it provisionally to the Migration Period (1977:329f). To obtain the earliest possible dates for the houses (even for the one under grave No. 3) we can look at the effects of land uplift. Like the Gene houses the foundations lie at about 21 m above the present sea level. They are located in the valley of Selångersån on the uppermost crest of a rather flat boulder-esker, covered by sorted sediments. The 20 m contour picks out the back of the esker as an elongated "island" of barely 10 ha, situated in a narrow inlet in the deeply penetrating bay. At a height of around 15 m (corresponding to about 500 A.D.) the esker forms part of the mainland. In theory, therefore, the 18—20 m con-
tour forms the earliest possible limit for the origin of the settlement and in terms of time this places it at about the birth of Christ or a couple of centuries earlier (cf. Selinge 1977:391).

Grave No. 3 was devoid of finds but underneath we encounter another house foundation (Figs. 2:2 & 2:5). One gable end is preserved together with c. 24 metres of the long walls. This is estimated to be 60–70 % of the original house length. The width was 7 m in the centre (i.e. at the end of the preserved part) and c. 5.5 m at the gable end. No account is given of the structure of the house’s inner supporting parts, which may simply be an oversight in the excavation. On the other hand a number of well-preserved details are encountered in one of the walls (see Fig. 2:5 and Sect. 5.1.2.2., Fig. 5:5).

Two interesting points arise on going through the finds in Sundsvall’s museum. Firstly, in the report (Petré 1963) there are details of hundreds of pottery sherds. A closer analysis shows that the majority of these consist of pieces of moulds and crucibles (Fig. 2:6). Petré mentions the latter in the report but not the mould fragments. The only cast object that can be positively identified from the moulds is a pin with a profiled head (Fig. 2:6a), a larger counterpart of which appears among the Gene finds (cf. Sect. 4.2.1.5., Fig. 4:16d). The mould and crucible fragments occur both in the mound’s fill material (e.g. those in Fig. 2:6a) and in the habitation layer beneath the mound (e.g. the crucible fragment in Fig. 2:6b). Among the crucible material there are fragments both with handles and lips, which show that they are of the same type as those found at e.g. Helgö, Gene, and in the above grave No. 2 (Fig. 2:3).

With regard to actual pottery, there thus remain only about 15 fragments (Fig. 2:7) and they are not, as Selinge writes, pot sherds of at least two pot types (1977:330). It is a question of only bucket-shaped, asbestos-tempered pottery and the fragments probably belong to the same vessel (found within 8 m²). They have a red-toned exterior with large sooty parts and a greyish interior without any visible soot. The thickness of the ware is 5 mm and is heavily tempered with asbestos. Only one sherd has any preserved decoration, in the form of thin and deep lines. The pottery resembles the only sherd found at area J in Gene (Figs. 4:1, 4:55h), and, in terms of quality and decoration, it is quite different from those of area A (Sect. 4.2.4.3., Fig. 4:55a–g).

In comparison with the house foundation under mound 4, below grave No. 3 there were many finds — for example, several round and flat decorated bone pins, fragments of a decorated bone comb and spoon, a three-rowed bead necklace with an S-shaped bronze
Fig. 2.6. (a) Examples of mould and crucible fragments from the filling of grave 3 at Högom, (b) crucible fragment from the settlement layer beneath the mound, (c) positive of the mould fragment. Photo: Sundsvall’s Museum.

Fig. 2.7. Asbestos-tempered potsherds from the settlement layer beneath mound 3 at Högom. Photo: Sundsvall’s Museum.
The burnt bones in the habitation layer beneath House 3 have been analysed by N.-G. Gejvall (in Petré 1963) and the following domastic species have been identified: cattle (Bos) — mature animals and calves, horse (Equus), sheep/goats (Ovis/Capra) — adult and young animals, together with domesticated pig (Sus). Among the wild animals there are the remains of seal (Phocidae), elk (Alces alces) and birds (Aves).

Thus there are superficially many similarities between the Gene and Högøm locations. Apart from the four large mounds in the cemetery at Högøm, the following features are in common:

a) The cemeteries are about the same size (there has been a total of 17 mounds at Högøm),
b) the locations date from the Early Iron Age, without continuity, to the Late Iron Age (Selinge 1977:332),
c) the houses are situated on well-drained, flat land with sorted soils and near the nodes where watercourses meet the sea (Selångersån in Högøm and Moälven in Gene),
d) in one case the building type is almost identical with regard to certain construction details (Chap. 5),
e) there is strong agreement between the two dwelling sites concerning the animal species, i.e. a mixture of wild and domestic animals,
f) craft activity in the form of e.g. casting is represented in both farms.

In several ways, however, these two locations differ from those with house foundation terraces. The terrace at Onbacken, already investigated in 1923, was in its day viewed as being the remains of a pagan temple (Hallström 1926:24, Boëthius 1931:29, Stenberger 1933:162). The excavations of similar remains at Trogsta show that this interpretation is without support and that instead it is a question of an ordinary Iron Age farm (cf. Liedgren 1981).

After the Gene investigation, that at Trogsta is hitherto the most comprehensive study of a Norrlandic dwelling-site and its results will be presented in a forthcoming thesis by Lars Liedgren. Without anticipating Liedgren's analyses, it can simply be mentioned that the C-14 datings of the Trogsta house fall completely within the Early Iron Age (1–600 A.D.). The total of 10 foundations represents the buildings left by a single farm where, on average, one large and two smaller houses were in use simultaneously.

As in Gene, botanical analyses of dwelling-site material have been carried out in Trogsta, the results of which are presented in a grade 3 essay (Wennberg 1980). Parts of long-house A have been analysed (Liedgren 1981:63, Fig. 12) and show that barley (Hordeum vulgare), oats (Avena sativa), rye (Secale cereale) and even flax (Linum usitatissimum) were used during the Early Iron Age (Wennberg 1980:28).

From the distribution of the seeds of the different plants within the foundation area, there are tendencies which suggest that the house was divided into separate rooms.

A few single fragments of moulds and crucibles have also been found in connection with one of the smaller, not fully-excavated, house foundations. Similarly the site includes remains from iron-working or production (Liedgren 1983).

Apart from the above-mentioned archaeological house investigations, there is one study in settlement archaeology which should be named in this context: Selinge's Järnålderns bondekultur i Västernorrland (Iron Age Peasant Culture in Västernorrland). In this he has collected together and arranged ancient monuments and finds from the provinces of Medelpad and Angermanland (Selinge 1977).

As no Norrlandic farm investigation has yet been published, Selinge is unable to tackle problems concerning the single farm's economy and settlement development (cf. 1977:327ff). On the other hand two other levels are discussed fairly thoroughly, namely what he terms the settlement unit and the farming district, (Swed. bygd).

A fundamental concept in Selinge's reasoning and in that of most other settlement archaeologists is the settlement unit, which usually means a habitation (e.g. a village or farm) forming a chronological and spatial unit in a closed landscape (1977:159). The settlement unit refers to a functional basic unit and thereby a prehistoric reality, so that it is not solely used as an analytical concept. In the absence of sufficiently investigated units within the region, Selinge employs a general treatment which he considers to be hypothesis-forming for the guidance of intensive studies of smaller units. The starting point for the interpretation of settlement units is the way in which ancient monuments form different types of distribution pattern.

Two distribution patterns can be regarded as models for the most important types of settlement complex in Iron Age settlement areas, namely:
1. The Vattjom model — a large unit with dispersed ancient monuments (1977:308ff).

2. The Holm and Björkå model — smaller units with large cemeteries (1977:314ff).

The first model corresponds to what is called Siedlungskammer in German archaeological literature, i.e. a relatively closed settlement environment where the spatial continuity can also be expected to correspond to a chronological continuity.

The 130 graves and two foundation terraces within the Vattjom unit lie scattered round the villages of Rude and Vattjom, over a total area of c. 2 x 9 km (Selinge 1977:310, Fig. 63). The area lies north of the Ljungan river, in its today partly-cultivated valley and adjacent slopes. The prehistoric remains form small concentrations and the datings embrace the whole of the first millennium A.D. Four locations within the area have graves from the Roman Iron Age. On one of these sites, near the village of Vattjom, there is also a grave dated to the Late Iron Age. The intact house-foundation terrace measures c. 35 x 7 m and is surrounded by graves from the Roman Iron Age, Migration Period, and Early Iron Age in general.

The area lacks all forms of fossil fences, lynchets and stone cairns from field clearance, which leads to the conclusion that the cultural landscape has been in continuous use — even though the location of dwelling and burial sites can have altered. Selinge's conclusion is that in principle the Vattjom area may have formed one settlement unit, in which the inhabitants formed a social and economic group. The land within this settlement unit may have been distributed between them and the central settlement site may have been close by the historical settlement.

In the Holm and Björkå model, two large cemeteries (> 10 graves) are found along the northern bank of the river Ångermanälven with some other graves scattered round about (Selinge 1977:315, Fig. 64). One of the cemeteries is the largest in Västernorrland with 50 registered graves. The other consists of 15 graves. Nine of the latter have been investigated and contained 14 burials dating from the Migration to the Viking Periods. A horizontal stratigraphy seems to exist in which the oldest graves are highest up in the NW part of the cemetery (c. 14–15 m a.s.l.). The later graves follow to the east and lower down, the lowest at c. 12 m.

The larger cemetery is located between two low natural terraces north of the river. Ten graves have been excavated. Those graves which have been dated from their finds lie on the lower terrace; one belongs to the Vendel Period while the remainder probably date from the Viking Period. Graves with foot-trenches as constructional features are dated by Selinge as Late Iron Age (1977:232) and are almost entirely found on the lower terrace. Theoretically, the graves on the upper terrace may date back to the Early Iron Age.

Cemeteries of this sort could well represent the sole burial place for one unit. Compared with the Vattjom case, the units in this model have had significantly smaller infield areas in which to place their graves and, despite the smaller number of ancient monuments, they may have been continuously settled (e.g. Holm). The exceptional cases with the large cemeteries could depend on the fact that, in addition to having a somewhat longer settlement period than average certain units could also have had an unusually firm tradition regarding the placing of graves. For example, the large cemetery in Korsta, Skön, dates back to the Late Roman Iron Age and may have continuity throughout the rest of the millennium (Selinge 1977:319).

The large cemeteries in Medelpad and Ångermanland can consequently cover a longer continuous development within an area with a somewhat firmer tradition of burial customs than that illustrated by the more usual Vattjom model (Selinge 1977:319).

The problem with Selinge's way of using the settlement-unit concept is that it is not related to any explicit model or theory. If, for example, one fits his two type units (Vattjom and Holm) into the model suggested above (Fig. 1:2), in my view they end up on two different levels; Vattjom as an example of a possible farming community and Holm as an example of a farm. But it is of course uncertain whether or not the latter is part of a larger farming community, as such a unit does not have any definite size.

The difference forming the basis of the various suggested models is that there are so-called large cemeteries and small cemeteries, or groups of graves. If one applies Ambrosiani's theory (1964:202) that the cemetery size depends mainly on the length of usage, then the variations become merely an expression of different times of usage. Is there possibly a connection between large cemeteries and favourable resource locations? Units of the Vattjom type are the most common in the county of Västernorrland. It should however be pointed out that the frequency of burials in Norrland appears to be very low. For example, during the four to five centuries of settlement in Gene only 12 graves have been produced.

The situation is about the same for the Högom cemetery outside Sundsvall (which originally had at least 17 burial mounds) and for the one at Trogsta. The
cemetery recently excavated by The Central Board of National Antiquities near Björka village, south of Hudiksvall, shows a similar relationship but in contrast with the afore-mentioned case the graves belong mainly to the Late Iron Age.

Selinge’s further division of settlement into farming districts is made from purely cartographic definitions and builds on connected areas with established ancient monuments. In exceptional cases, however, regard has been paid to topographical and historical administrative conditions (1977:191). He considers that the farming districts that have emerged today form well-defined areas with a distinctive cultural character. Selinge’s usage of the term farming district only implies a spatial and not a chronological continuity.

According to this definition Angermanland is divided into 16 farming districts, where the largest (the Ådal district) embraces c. 108 km² and the smallest (the Gene district) only 3 km² (Selinge 1977:195). These figures illustrate the difficulties in the method, especially as we know today that Selinge’s Gene district was in fact composed of a single farm. On the other hand the Ådal district includes many times more farms. Thus his method caught up quite different structures when in fact it only wanted to capture one.

In extreme cases the method proves a failure but frequently it picks out clearly delimitable units or, at least, spatial affinities. No instances of distinctive cultural character have yet been proven. Even if Selinge’s ambitions are to bring forth such units it has not been achieved in practice, for those “farming districts” which Selinge identified are completely empirical or operational in nature. I imagine that detailed topographical analyses, thorough studies of objects, and mapwork are together the only possible ways of delimiting farming districts in the sense intended here.

Selinge nevertheless gives some examples in which topographical studies are employed. With regard to the Timrå farming district, consisting of c. 11 km² south of the mouth of Indalsälven, Selinge is of the opinion that among other things its extension and size speak against it forming a functional unit (1977:342). Furthermore the Timrå valley can be divided into three main topographical parts, each with a similar number of ancient monuments and with graves dating from the Roman Iron Age. These three areas situated in the same valley probably formed three units even in the Roman Iron Age (Selinge 1977:343) and in my opinion it is possible to distinguish two separate but functionally-related structures at that time. At least three in number, the farms may in their turn have formed a farming community including co-operative obligations etc., according to the definition given in Chapter 1.

2.2.2. THE REST OF SCANDINAVIA, AN OVERVIEW

Farm analyses, which consider the Iron Age farm’s economy, construction, function and development, are almost non-existent within Swedish archaeology. Apart from Öland and Gotland where there have been a number of investigations, such as the Vallhagar projects (Stenberger 1955), the Eketorp investigation (e.g. Borg et al. 1976, Näsman & Wegraeus 1979) and the Skedemosse investigation (Beskow–Sjöberg 1977), there is no proper farm study from central Sweden.

Due to very extensive building during recent decades a number of so-called “emergency digs” have been undertaken, in particular by the Central Board of National Antiquities. During those excavations a number of Early Iron Age settlement remains have appeared. These investigations are, however, seldom so comprehensive that whole farm units can be studied and the work often has to be carried out in such great haste that the quality suffers. Even though these excavations are fragmentary and perhaps sometimes summary, the collation and simple analysis of this material would be valuable. This is not available at present, although some of the extensive material can be found in report form.

By chance large “emergency digs” have also given rise to settlement-archaeological analyses, e.g. Modin’s (1973) work on three Iron Age farms in Täby (SE Uppland), where even settlement remains are described. There are however no farm analyses in the aforementioned sense, but the house foundations are among the few that have been published and they are useful for comparative purposes within this extensive and rich area of ancient monuments. A similar situation exists regarding the settlement remains from Dargsärde in eastern Uppland where the monuments and finds excavated in the 1950s still have not been worked upon (Ambrosiani 1958, 1959, 1964).

The Helgö investigation commenced in the mid-1950s and besides the very famous workshop finds from this site a large number of house foundations have been excavated (published in the series Excavations at Helgö). Among other things it became evident from these investigations that foundations could also be laid out on built-up terraces, which were clearly visible on the surface before the excavation. This knowledge has since led to the recording of a large number of foundation terraces. Terrace-houses had
been recognized previously, but not until after the Helgö result was this knowledge implemented and since then hundreds of terraces have been recorded in central Sweden and Norrland. It is not certain that all these foundations are contemporaneous throughout these named areas but much suggests that they belong mainly to the Early Iron Age, i.e. the Roman Iron Age and the Migration Period.

The material published hitherto from the Helgö project above all concerns finds from farms, workshops and cemeteries and work on the settlement and utilization of resources has not yet been carried out. The plans published so far of certain foundations are in most cases unusable for comparisons as what were obviously several overlapping strata could not be separated (e.g. Holmqvist 1970).

The Halleby investigation (Östergötland) may well be regarded today as being that "Central Swedish" study which has gone deepest into problems of settlement development (Lindquist 1968, Baudou 1973). This study is also of interest in that it was the result of collaboration between archaeologists and human geographers. The human geographical aim was to describe the general development of the cultural landscape in eastern Östergötland (Lindquist 1968). To obtain chronological bases, trial investigations of fossil fence systems and settlement were made in one of the locations in the area — namely at Halleby. The basic human geographical material comprised maps of ancient monuments and measurements of fields, etc.

The time schedule with which Lindquist (1968: 155) concludes suggests that the single farmstead emerges and is developed into groups of farms during the Pre-Roman Iron Age (500 B.C.—1 A.D.). Free-lying fenced fields occur.

During the Roman Iron Age (1—400 A.D.), he suggests that the farms are still loosely grouped but functionally combined into hamlets. There are common infields, cattle tracks (fägata) and fence systems. After stagnation in the Early Migration Period (400—475 A.D.), the Late Migration and Vendel Periods (475—800 A.D.) saw an intensive phase of landnam, in which each settlement independently claimed its own territory from virgin land. During this period the hamlets are regulated through hammarskifte in accordance with the development of a firm social organization.

In that context it was appropriate to look more closely at one particular unit, namely Halleby, and see how it corresponded with the model of development. The archaeological investigations were led by Baudou and the results thereof are unable to confirm the connection between fences and settlement (Baudou 1973:124). Lindquist's model involved a functional and thus chronological connection between the three possible settlement sites at Halleby and the fences which partially connect them. Baudou's (1973:123f) view on the fossil fence systems is that they belong to various time periods and that the investigated fence around the site is younger than the settlement itself.

In a recently published doctoral thesis the human geographer Mats Widgren (1983) presented results from an investigation in an area lying near Halleby. According to him, the evidence supports Lindquist's opinion that there is a functional connection between stone walls and settlement and that the construction of these walls can be dated to the period c. 100—500 A.D. (Widgren 1983:123). He suggests that during the Early Roman Iron Age a single-farm settlement develops, wherein three or more farms are joined by stone walls. Farms linked in this way form functional units. In Widgren's area of detailed analysis, Fläret, four or five farms were thus joined by stone walls and they covered an area totalling 4 km² (Widgren 1983:123). Near to the settlement there were small areas of intensively cultivated and manured arable land. The more substantial stone walls functioned as barriers and enclosed arable- and meadowland, as well as linked the different farms. From the farmsteads cattle paths lead to the pasture lands beyond the enclosures.

From calculations Widgren (1983:79) reckons that each farm was about 93 % self-sufficient from agriculture and stock-raising. For such a level of utilization he reckons that 3 ha was used for annual cropping (ensadesäker), 30 ha were used as meadow land and over 30 ha as grazing land. This means that each farm ought to have access to over 60 ha and that more than half of this area, i.e. arable fields and meadow, was enclosed by stone walls.

With regard to the long-term development of the cultural landscape there are also interesting results. According to Widgren the construction of stone walls involved the introduction of a completely new farming system, in which the stalling of livestock, the manuring of permanent fields, the clearance of meadows, the enclosure of arable- and meadow land by stone walls and the establishment of cattle paths are the main innovations (Widgren 1983:124). This system was set out in the framework of an older and little-known territorial organization. The pollen diagram indicates that the area was already cultivated during the centuries preceding 1 A.D. (Widgren 1983:99). This diagram also shows that a decline in agrarian production took place in the 5th and 6th centuries but "no radical changes in the proportions between
different land-use categories can be documented” during the Early Iron Age expansion (Widgren 1983:123). The decline in agrarian production was accompanied by the abandonment of many farm sites and the large stone-wall systems “were then split up into the historically known by territories” (Widgren 1983:124).

With regard to explanations for the decline around the change-over to the Late Iron Age, Widgren suggests that one contributory cause may have been the conflict “between the local endeavour to increase production and the existing social and spatial structures” (Widgren 1983:119). He also believes that social changes may possibly have taken place above the farm level.

In Norway too, house foundations are clearly visible on the ground. These remind one of those on Gotland and are henceforth termed stenmurshus (stone foundation houses). Such foundations are found along the whole Norwegian coast, even up to the county of Troms, and they can be largely attributed to the Early Iron Age – in particular the Migration Period (Hagen 1977:281ff). As in Östergötland and on Öland/Gotland, in connection with these foundations we find stone fences which enclosed arable and even certain portions of meadow land. In the same area, clearly visible remains of boat-houses (Norw. nausttufter) and ring-shaped yards (tun) are also common features which are quite unknown within Swedish areas. These three types of settlement remains have hitherto completely dominated Norwegian investigations. Nevertheless, even in Norway there are a number of examples of flatmarkshus (level ground houses) which have come to light more or less by chance (cf. e.g. Myhre 1980:466, Farbregd 1980:62ff, Løken 1982). Thus Norway too has partially contemporary house foundations of different types. The same can be said about the North Sea area with its Geest and Wurten settlements, about Östergötland, where flatmarkshus are also found (e.g. Fernholm 1982) beside the terrace foundations, and for example about Medelpad with terrace and level ground houses. There is insufficient knowledge about the latter for any real conclusions to be drawn regarding differences between for example these farms’ economy, social affiliation, etc. Level ground houses have mostly been found by chance and comparatively few are known.

During recent years a voluminous material concerning settlement remains has been produced within Nordic archaeology. A whole series of Danish investigations have covered practically all the Iron-Age periods, the most important for the Early Iron Age being Grøntoft (Becker 1965, 1968, 1971), Hodde (Hvass 1975), and Vorbasse (Hvass 1979). Furthermore there were other earlier examples such as Hatt’s investigations in Norre Fjand (1957) and Oksbøl (1958).

In Norway, a couple of studies have been made which are of great interest in this context and the latest example is Bjorn Myhre’s (1980) publication of the excavations at Ullandhaug in Rogaland. In this work an exhaustive description is given of the room division and function of the investigated house foundations. In the rich nuances of the presentation a comprehensive comparative material is taken up, mainly from Norway but also from the rest of northern Europe. Myhre furthermore includes studies from the Late Iron Age and Medieval Period. The work aims to put SW Norwegian settlement into a wider chronological and spatial perspective, in which the building types have a central position. The farms’ economy and resource utilization are not however taken up. Regarding the development of buildings, he says that during the Roman Iron Age (throughout the North-European area of investigation) the main house in a farmstead was lengthened significantly and, at the same time, was divided into more rooms than previously. He also states that there is a clear tendency for wall constructions to be better made and stronger timber to be used (Myhre 1980:467). In the same place Myhre says that the typical SW Norwegian farm layout with a larger house surrounded by smaller dwellings and outhouses has its parallels throughout the whole area of analysis (the Netherlands, North Germany and Scandinavia). He emphasizes that the most important difference is simply the number of farm units per dwelling site and means that places such as Fløgløen, Vorbasse and Vallhagar must be interpreted as hamlet formations, comprising separate farm units. He also states that whether the farm occurs alone or together with others this has no noteworthy effect on the structuring of the houses within each farm unit (1980:468).

Concerning farmsteads in a wider sense, i.e. where the economic setting is the prime object, studies have also been carried out in Norway. One such example is Kaland’s (1979) analysis of the Viking/Medieval Period farm at Lurekalven in Hordaland and her calculations are discussed in Section 6.2.2.

In 1953 Anders Hagen published his Studier i jernalderens gårssamfunn, which was the first Scandinavian publication on the analysis of a single farm and its economic setting. It is based on excavations at Sostelid, a deserted farm in Vest-Agder. Three house foundations, nine graves, cairns from the cleared fields, lynchets and some hearths were excavated. A
A stone fence could be seen close to the houses and this was interpreted as an enclosure around the infield, the total area of which was assessed as c. 1.5 hectares.

Signs of forest clearance have been observed, preceding the settlement which was probably founded in the 4th century A.D. The habitation continued throughout the Migration Period. House 1 was probably sub-divided into living quarters and some kind of workshop (cf. Myhre 1980:266, Fig. 134). This house was soon abandoned and a newer larger one erected (House 2), 45 m long and 6 m wide. It had a three-aisled layout. A very odd interpretation of the construction of House 1 was presented. Only one row of post-holes was found, placed to one side of the mid-axis of the house. The author says that the ridge beam was placed on top of the posts so that the roof construction would have been asymmetrical (Hagen 1953:19f).

House 2, however, was a more typical Early-Iron Age house and was clearly divided into living quarters and a stable area. The stable was interpreted as occupying almost the whole of the western part of the building and was c. 18 m long. This was partly indicated by the absence of artifacts and finds and partly by a c. 8 m long stretch of cobble-stones along the mid-axis of the house.

The third excavated house was a smaller building, believed to be a combined barn and shelter for the livestock.

In Hagen’s work, attention is also drawn to agricultural remains. The farming base consists of a couple of fields totalling c. 1.5 ha, while the livestock was assessed to be 14—16 cows. Theoretically the c. 18 m long stable could hold 30—35 cows, but Hagen assumes that the cobbled section alone was for the cattle and it only provided room for about 16 animals.

Interesting calculations have also been made concerning the amount of time required for fodder collection. On the basis of historical analogies, it is assumed that a cow requires 8 loads (Sw. lass) of hay during the winter period. Depending on the quality of meadow production, one man requires 10—16 days to collect fodder for one cow. In historical times fodder collection has normally been possible for a period of approximately two months.

On the basis of these figures it can be concluded that about five individuals were needed for the two months of fodder collection at the Sostelid farm. This and other indications lead the author to believe that the farm was populated by an extended family (Sw. storfamilj) and that the structure of society during the Early Iron Age and Migration Period was based upon the single farm (Sw. ensamgården).

Hunting and fishing are also thought to have played an important role in the Sostelid economy. Although there are scarcely any artifacts or finds to indicate these activities (the only indication is one talc sinker), the proximity to reindeer country and fishing waters make it probable that these resources were utilized.
3. ANCIENT MONUMENTS, FINDS AND THE ENVIRONMENTAL BACKGROUND

3.1. THE ORIGINS AND COURSE OF THE INVESTIGATION

In 1962 three graves were excavated in cemetery No. 22 in Själevad parish, namely nos. 22:3, 22:8, and 22:9 (Fig. 3:1). The investigation was led by E. Baudou, Professor of Archaeology at Umeå University.

The grave 22:3 was dated to the Viking Period (Baudou 1968:139, 149) and signs of habitation were observed in the form of fire-cracked stones in the mound's fill material. At that point in time, therefore, phosphate mapping was carried out on a small scale and gave increased values to the NE, E and SE of the cemetery. No attempt was made on that occasion to locate the settlement remains.

The Department of Archaeology at Umeå University was established in 1975 and the excavations at Genesmon were commenced in 1977. The investigation is part of a research programme concerning among other things the establishment of Central Norland's peasant society and its development during the first millennium. The author was designated as the excavation leader, despite limited field experience.

In the initial stage, the aim was to expose the settlement remains which were so uncommon in the rest of Norland. The first search trenches were dug in artificial layers, a method that was soon abandoned in favour of digging with spades and sieving. This was motivated principally for two reasons: partly that there were no indications of any man-made sequence of layers and partly that the floor surfaces were not preserved more than sporadically, together with the fact that the more painstaking method was far too time-consuming.

By chance the archaeological investigations coincided with Örnsköldsvik commune's building plans for Genesmon, so that the study had something of a flying start. Since then the commune has shown great interest in the project and has contributed with material support, which is to be continued up to and including 1985. As the Regional Employment Board (Länsarbetsnämnden) in Härnösand found the excavations at Genesmon to be advantageous from a labour market point-of-view, it has supported the project annually by means of locally-recruited manpower.

These two authorities together with the Department of Archaeology in Umeå have through the years provided the economic backbone for the project, without which the investigation could not have been carried out.

Up to and including the field season of 1982, the excavations have resulted in the finding of a total of nine house foundations which have been fully or partially exposed and investigated. Over 1000 features have been uncovered and so far the total area of investigation comprises c. 5000 m² (Fig. 4:1).

The future course of the excavation will mainly be in the form of detailed studies of the features thus far exposed, together with more thorough investigations of the signs of habitation which have been found outside the now-known foundations. Thus there are indications that there are more buildings in the area than have so far been found. Accordingly this thesis has an obvious weakness regarding the development of settlement within the locality. There is even the possibility that, for example, house foundations from the Late Iron Age may be found, although I believe the chances to be small. As I see things at the present time, the main part of the settlement has already been found and the other traces are probably of different types of out-house or such-like structures.

3.2. PHOSPHATE MAPPING

3.2.1. PHOSPHATE MAPPING FOR LOCALIZATION

As mentioned above, phosphate mapping was carried out in 1962 on a small scale around cemetery No. 22. Since then, starting in 1977, at least 3000 samples have been analysed for a sampling area corresponding to c. 23 ha, in association with the known prehistoric remains (Fig. 3:9). All the phosphate figures used in this thesis are $P^0$, where 1 $P^0 = 10$ mg P/kg dry soil and the phosphate is extracted by citric-acid.

The aims of these samplings were as follows:

1. **Rough localization** of possible dwelling sites or activity surfaces within a wider area. The samples were taken at 20 m intervals.
2. **Detailed localization** and delimitation of particular dwelling site or activity surfaces within a smaller...
area. These samples were taken at 10 m intervals.

3. Proof or repudiation of activities or functions inside a known structure or feature. Normally the samples were taken at 1 m intervals for horizontal sampling and vertically within certain special layers.

The first two methods are aimed at localizing objects and it is these that will be taken up here. The third type of analysis will be dealt with in relation to the structures themselves.

The soil profiles in the three different soil zones (Fig. 3:2) vary somewhat in appearance. One recurring
feature however is that the podzol layer often has traces of soot or charcoal which shows that forest fires have occurred. From later times it is also known that Genesmon was utilized as forest grazing land. Weakly-developed or non-existent podzol horizons are predominant in the fine-grained area east of the settlement. There are also a number of overgrown drainage ditches, which indicate that the area in question has been arable land in later times.

In order to illustrate the phosphate content in the different zones, reference samples were taken in the area. These samples aim to show how the phosphates...
Fig. 3:3. Phosphate profiles at Genesmon. A = eluviated (podzol) soil, B = illuviated (iron enriched) soil, C = unaltered soil. Cf. Fig. 3.2.

The diagrams show two general features which were also shown to be normal for podzols (Bakkevig 1980:76), namely low phosphate content in the leached layers and high in the illuvial layers. Both these characteristics are completely in accordance with the prevailing soil chemistry. A certain portion of the phosphate which lands on the surface is taken up by the vegetation while the remainder is mostly leached and concentrated in the lower parts of the B-horizon. It is also common for a certain amount to be transported further down to the C-horizon, which can then show a peak (Fig. 3:3). Also worthy of note are the high values at the 5 cm level, evident in the curves 2 and 3 in Figure 3:3. For curve 3 this value is the highest in the series. Such peaks reflect a youthful stage of phosphate accumulation where insufficient time has elapsed for the down transport to have taken place. For curve 3 the highest peak is caused by the arable land use of modern times. This ought to be the case also for curve 2, despite its test pit being located in fine sandy material and west of the known drainage ditches.

Through the excavation of grave 22:6 (Sect. 4.3.3.) one could see the profile of the old ground surface on which the mound was built. On the basis of this a test series of 10 phosphate samples was made in the same way as the previous reference tests. The profile (Fig. 3:4) differs markedly from the others in that it does not exhibit any peak in the B-horizon. On the other hand there is a pronounced peak a little way down in the C-horizon. This phosphate profile can serve as an example of what happens to a piece of ground which is shut off from normal ground-chemical processes. By means of the c. 0.45 m thick mound mantel, the ground-chemical processes have been greatly impeded on the original surface and during the period of at least 1500 years the original phosphate concentration in the B-horizon was slowly leached and concentrated a little lower in the C-horizon.

The practical difficulties consisted mainly in differentiating between disturbed and undisturbed material in the sandy zone and in finding undisturbed material in the silty zone. The reference pits 1–3 were placed in direct relation to the known parts of the settlement while the pits 4–6 were placed c. 100 m to the north (Fig. 3:2). No completely undisturbed silty area could be found. On all the places where tests were made the leached horizon was either missing or only weakly developed. Reference series No. 6 was taken west of the drainage ditches where there was a very weakly developed bleached horizon and where there was a lightly leached humic soil. The same problem of finding clearly disturbed sand was encountered. Test series No. 1 was therefore taken as near as possible to the known settlement remains (Fig. 3:2).

The reference series was taken first in the podzol layer, normally c. 0.05 m below the raw humus. Thereafter a further nine samples were taken at decimetre intervals down to a depth of 0.95 m (Fig. 3:3).

The samples were thus taken according to the following matrix (see also Fig. 3:2):

<table>
<thead>
<tr>
<th></th>
<th>Sand</th>
<th>Fine sand</th>
<th>Silt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disturbed</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Undisturbed</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

behave under different soil conditions in disturbed or undisturbed soil for example (cf. Bakkevig 1980:75ff). The test locations were selected on the basis of two criteria: (a) phosphate samples should be obtained from the three soil zones — sand, fine sand and silt respectively; (b) in turn the samples should also be taken partly from man-influenced and partly from unaffected areas.
These observations lead to the formulation of the following, somewhat simplified principle for phosphate accumulation:

\[ \begin{align*}
& B < \bar{M} \\
& A < \bar{M} \quad 1 \\
& A > \bar{M} \quad 3 \\
& B > \bar{M} \quad 2
\end{align*} \]

A and B represent the phosphate values in the leached and enriched horizons respectively, while \( A > \bar{M} \) etc. represent the relationships between the actual phosphate values and the mean value (\( \bar{M} \)). If accordingly one takes two samples in each test hole, one in the A-horizon (A-sample) and another in the B-horizon (B-sample), the relationships given in the four-field table can be interpreted in the following way:

1. no phosphate-producing activity,
2. early phosphate-producing activity,
3. late phosphate-producing activity,
4. early and late phosphate-producing activity.

In the broad localizing sampling in Gene the samples were taken at 20 m intervals and two samples were taken in each sampling pit, A- and B-samples. For this 441 test pits were dug and 882 samples were collected (Tabs. 3:1-2). In connection with this sampling, the profile and eventual finds were also noted and this was later shown to be of great importance.

In order to investigate the correlation between the A- and B-samples, calculations have been carried out on the material. If the same phosphate-producing activity produced increases in both the A- and B-horizons then the correlation coefficient is expected to be +1 and if they are totally independent of each other it should approach ±0.

For simplicity the material has been divided into classes with an arbitrarily-selected class intervals (\( c_0 \)) of 50 \( P^0 \). Generally in correlation calculations the larger the class divisions the nearer the coefficient is to ±0. Accordingly, in this case the selection can give a somewhat misleading result, but the level of exact-

---

**Table 3:1.** Frequency table for samples taken in A-horizon of the northern part of Genesmon. Provisional mean value (\( M' \)) = 74.5, class width (\( w \)) = 50, mean value (\( M_y \)) = 67.8 and standard deviation (\( S_y \)) = 51.5.

<table>
<thead>
<tr>
<th>Class intervals</th>
<th>Mid-point ( p^0 )</th>
<th>Frequency ( f )</th>
<th>%</th>
<th>( y' )</th>
<th>( f(y') )</th>
<th>( f(y')^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 49</td>
<td>24.5</td>
<td>196</td>
<td>44.5</td>
<td>-1</td>
<td>-196</td>
<td>196</td>
</tr>
<tr>
<td>50 - 99</td>
<td>74.5</td>
<td>160</td>
<td>36.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>100 - 149</td>
<td>124.5</td>
<td>48</td>
<td>10.9</td>
<td>1</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>150 - 199</td>
<td>174.5</td>
<td>25</td>
<td>5.7</td>
<td>2</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>200 - 249</td>
<td>224.5</td>
<td>10</td>
<td>2.3</td>
<td>3</td>
<td>30</td>
<td>90</td>
</tr>
<tr>
<td>250 - 299</td>
<td>274.5</td>
<td>1</td>
<td>0.2</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>300 - 349</td>
<td>324.5</td>
<td>1</td>
<td>0.2</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>441</td>
<td>100.0</td>
<td></td>
<td>-59</td>
<td>475</td>
</tr>
</tbody>
</table>

**Table 3:2.** Frequency table for samples taken in B-horizon of the northern part of Genesmon. Provisional mean value (\( M' \)) = 124.5, class width (\( w \)) = 50, mean value (\( M_x \)) = 122.0 and standard deviation (\( S_x \)) = 44.4.

<table>
<thead>
<tr>
<th>Class intervals</th>
<th>Mid-point ( x^0 )</th>
<th>Frequency ( f )</th>
<th>%</th>
<th>( x' )</th>
<th>( f(x') )</th>
<th>( f(x')^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 49</td>
<td>24.5</td>
<td>23</td>
<td>5.2</td>
<td>-2</td>
<td>-46</td>
<td>92</td>
</tr>
<tr>
<td>50 - 99</td>
<td>74.5</td>
<td>100</td>
<td>22.7</td>
<td>-1</td>
<td>-100</td>
<td>100</td>
</tr>
<tr>
<td>100 - 149</td>
<td>124.5</td>
<td>219</td>
<td>49.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>150 - 199</td>
<td>174.5</td>
<td>77</td>
<td>17.5</td>
<td>1</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>200 - 249</td>
<td>224.5</td>
<td>19</td>
<td>4.3</td>
<td>2</td>
<td>38</td>
<td>76</td>
</tr>
<tr>
<td>250 - 299</td>
<td>274.5</td>
<td>3</td>
<td>0.7</td>
<td>3</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>441</td>
<td>100.0</td>
<td></td>
<td>-22</td>
<td>372</td>
</tr>
</tbody>
</table>
ness has not been judged to be so high that a smaller class interval was justifiable.

For a general orientation in the statistical procedures the reader is referred to Vejde (1962). In Figure 3:5 the values have been set out in a correlation table from which no particular relationships seem evident. After having arranged the values in a table of calculations (Fig. 3:6) the correlation coefficient \( r_{xy} \) was calculated to be 0.29, using the formula:

\[
r_{xy} = \frac{n\Sigma fx'y' - \Sigma fx'\Sigma fy'}{\sqrt{n\Sigma f(x')^2} \cdot \sqrt{n\Sigma f(y')^2} - \langle \Sigma f(x') \rangle^2 - \langle \Sigma f(y') \rangle^2}
\]

This result suggests a very weak relationship between the phosphate values in the A- and B-horizons respectively. It should therefore be statistically proven that eventual increases in both the sampling horizons do not have any connection with each other. Generally the relationship can be said to imply that the increased phosphate values in the A-horizon belong to a younger phase and high B-values to an older.

As expected, the mean values for both of the sampling horizons differ greatly from one another. For the A-samples, \( M = 68 \ P^o \), and for the B-samples \( M = 122 \ P^o \). Figure 3:7 shows the distribution by classes and it can be seen that, for example, c. 80% of the A-samples are below 100 \( P^o \) while at the same time the highest value occurs in the A-horizon.

---

Fig. 3:5. Correlation matrix of phosphate values from northern part of Genesmon (square in Fig. 3:2). Y = phosphate degrees for A-samples. X = phosphate degrees for B-samples.

Fig. 3:6. Table of calculations for correlations in Fig. 3:5.

Fig. 3:7. Relative phosphate frequencies for A- and B-samples from the northern part of Genesmon.
Fig. 3.8. A-sample distributions in investigated area (square = Fig. 3.2). Dashed line shows border between coarser sediments in the west and finer sediments in the east.

Mapping the phosphate concentrations of both levels, one thus obtains a simplified picture of certain forms of land use during two different periods — one younger (A-samples) and one older (B-samples). This is shown in Figures 3.8–9, in which isorithms have been employed. In both maps the lower limit has been set at 150 P°. It is clear that the high values in the A-horizon are mostly dependent on the soil type, i.e. the concentrations occur mainly in the fine-grained zone 3 where silt predominates and, to a certain degree, even in the fine-sand zone 2. The concentrations in the B-horizon seem on the other hand to be less tied to the underlying soil and occur throughout the different zones.

A natural interpretation in this context is that the concentrations in the A-samples relate to later arable land, when a part of this area lies inside old drainage ditches. They might also belong to the limited settlement which has been ascertained in the area and which is mainly 13th century (Sect. 4.2.3.). From Figure 3.9 it can be seen that a large part of Genesmon is affected and that the concentrations tend to lie in a band perpendicular to the contours and, in fact, are roughly coextensive with the present forest road.

Certain but not all of the concentrations can possibly be accounted for by, for example, the age of the road. As shown by Figure 3.10 this phosphate mapping was further extended to the south and in this connection test trenches were dug through all the surfaces which exhibited phosphate concentrations in the B-horizon. By means of these provisional excavations there appeared, for example, features and finds from the Migration Period in the SW edge of concentration D, i.e. area J, fire-cracked stones in concentration E, and a hearth in concentration K (Sect. 4.4.2.). A more intensive study of some of these concentrations will be carried out in future campaigns.

Five of the B-sample concentrations lie in the fine-grained area (zone C) and they might well be related to prehistoric areas of cultivation or cattle pens, as settlement cannot be regarded as being very likely here. Test trenches have not encountered any signs of settlement in this zone. It appears from Figure 3.9 that the SE part of the investigation area has been fairly intensively used in earlier times but one sees an interesting decline in values parallel with the 18 m contour. A few smaller concentrations directly E of cemetery No. 22 are signs of the settlement so far en-
countered. The only way in which these differ from the concentrations to the north is in their proximity to the larger continuous area with higher phosphate levels (cf. also Fig. 3:10).

One circumstance which shows the limitations of phosphate mapping as a localization method is the fact that nothing of area G, i.e. House VI (Fig. 3:10), shows up in the form of phosphate concentrations. One of the sample pits landed inside House VI (Sect. 4.2.5.) and gave phosphate values below the respective mean. What was of importance in this case was the finding of fire-cracked stones and the partially sooty profile seen in the sample pits.

The use of phosphate mapping for localization can thus be summarized by saying that a number of indications have come to light, but as yet they cannot be verified as settlement remains. However, through tests in both the A- and B-horizons possibilities have been created for the interpretation of the cultural landscape in relative temporal terms. Furthermore, important observations were made in connection with the sampling itself which have proved to be of significance regarding localization. Hence there are a number of reasons why archaeologists or palaeo-ecologists themselves ought to carry out this type of sampling.

Prior to the present investigation, the first map made of Genesmon in 1977 (Figs. 3:11–12) was restricted to an area of c. 90 × 70 metres, directly E of cemetery No. 22. The aim of the map was to locate the dwelling site in detail, so that the position of the initial search trench could be determined and the settlement delimited. The latter was not possible as the extent of the settlement proved to be much larger. Samples were taken at 10 m intervals following the coordinate system and a total of 67 sampling pits were dug. Otherwise the sampling method employed was the same as above.
Most of the western sampling pits contained traces of soot/charcoal and in several cases even fire-cracked stones (Fig. 3:11). In one pit a piece of burnt clay was encountered and the profile showed soot/charcoal. On the basis of these indications the three initial search trenches were marked out. One of these ended up in House I and another in House II, while the third just touched House IV which had not been registered during the first season.

In retrospect, further comments can be made. It is clear that House I and VII produced the highest phosphate values while, for example, the S part of House II has comparatively low phosphate contents. This was confirmed by later phosphate analyses of House I and II (Chap. 5.2.). The reason for these differences can be sought along three main lines: 1. that House I had a higher level of phosphate-producing activities and that the houses had the same length of life, 2. that the houses had the same level of phosphate-producing activities but that House II had a much shorter period of usage, and/or 3. that later cultivation activity over Houses I and II caused the variations.

Fig. 3:10. Investigated areas at Genesmon. Test trenches indicated. For more detailed trench plans for areas A, B, G and J, refer Fig. 4:1. General map as in Fig. 3:9.

Fig. 3:11. Phosphate map of areas A and B. Samples taken in A-horizon and every 10th metre. Observations in sampling pits indicated. House foundations shown schematically. For phosphate scale see Fig. 3:12.
Further conclusions about the phosphate distributions within the foundations cannot be reached in this case, since the sampling intervals were too great. In this context, comparisons have also been made between the A- and B-samples. A correlation index of 0.4215 (Pearson Correlation, SPSSONL) was obtained which suggests a low but perhaps not entirely insignificant connection (cf. the above result for N Genesmon). This relatively high correlation is also evident in Figures 3:11 and 3:12, where the A-samples reveal a concentration right above House I, but this eventual connection must probably be assigned to chance.

It can be added that the mean value of the A-samples was 88 P° and of the B-samples as much as 203 P°. These figures can also be compared with the results for the N part of Genesmon, which were 68 P° and 122 P° respectively. The settlement area (area B) forms a sub-part within the above-mentioned coarsely-mapped area and in Figure 3:13 the three localizing maps are compared with regard to their respective distributions of phosphate concentrations. In the northern part of Genesmon 74 % of the B-samples are below 150 P° and on the southern part the corresponding figure is 57 %. On the other hand, in area B only 15 % of the samples are below 150 P°. This difference is obviously linked with the concentration of settlement to this specific area and confirms the phosphate concentration shown in the coarse-sample map. On this latter map, five adjoining samples occurred within area B with a mean value of 201 P°, something which according to Figure 3:9 could not be observed anywhere else on Genesmon in zones A and B.

Fig. 3:12. Phosphate map of areas A and B. Samples taken in B-horizon and in same sampling pits and with same observations as in Fig. 3:11.
3.2.2. SOME NOTES ON SOURCES OF ERROR

322.1. Correlation between samples taken at the same place, but with a 1-year interval

After Houses I and II were exposed, phosphate samples were taken inside the foundations to try to establish room divisions and activity areas (Sect. 5.2.3.1.). During the 1979 and 1980 field seasons, samples were taken for Houses II and I respectively. On these two occasions the sampling systems overlapped each other so that 112 sampling pits coincided in the area where the houses had common wall sections (cf. Figs. 5:11, 5:13). At the time of sampling in 1979 the area in question had lain under plastic sheeting for one winter and hence in 1980 for two winters, the latter one however without the protection of plastic. As the digging entailed the removal of the whole B-horizon the samples in both cases were taken at the same depth, i.e. c. 5 cm down in the C-horizon. Compare this level with profile 2 in Figure 3:3, which shows the phosphate profile c. 15 meters E of the area under consideration.

It should be mentioned that the samples taken in 1979 were analysed by the Technical Division at the Museum of National Antiquities, Stockholm, whereas the 1980 samples were analysed by the Department of Archaeology at Umeå University. The same method of analysis was however employed on both occasions.

In order to compare these two sample series, correlation calculations have been carried out (following the same principle as in Section 3.2.1.). In this way the expected linear relationship can be tested.

The arithmetic mean value for the respective sample series was $\bar{M}_x = 151.3 \, P^o$ (1980) and $\bar{M}_y = 157.7 \, P^o$ (1979). The standard deviation for the 1980 samples was 50.4 and for the 1979 samples 31.3. This means that the samples for 1979 cluster significantly more than those for 1980 and this is also shown by Tables 3:3 and 3:4.

In order to proceed further in the correlation calculations the values have been arranged in a correlation matrix (Tab. 3:5). In this table the squares in the vertical axis correspond to the class divisions for the 1980 data (Tab. 3:3) while the 1979 data (Tab. 3:4) are arranged in a similar way on the horizontal axis.

As is already evident from the distribution of the samples in the correlation matrix, only a weak correlation between the two sample series can be expected. By means of the calculation table all the values necessary for the calculation of the product moment correlation ($r_{xy}$) have been obtained and the correlation between the 1979 and 1980 samples is 0.23.

This low value for $r_{xy}$ suggests that there is practically no correlation at all between the two sample series. It may be noted, however, that the class divisions led to a somewhat lower correlation than if all the samples had been compared individually (cf. below).

How can this lack of correlation be explained? Naturally the fact that the two series were analysed in different laboratories must play a part, but this should not affect the correlation between the series. On the other hand it is common that the absolute
### Table 3.3: Frequency table for samples taken 1980 on area A.

<table>
<thead>
<tr>
<th>Class Intervals</th>
<th>Mid-Point</th>
<th>Frequency</th>
<th>%</th>
<th>$f^2$</th>
<th>$f^2/p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 9</td>
<td>4.5</td>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 19</td>
<td>14.5</td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 29</td>
<td>24.5</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 - 39</td>
<td>34.5</td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
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<td>40 - 49</td>
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</tr>
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<td>60 - 69</td>
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<td>70 - 79</td>
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<td>100 - 109</td>
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<td>1</td>
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<td>TOTAL</td>
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<td>90</td>
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### Table 3.4: Frequency table for samples taken 1979 on area B.

<table>
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<tr>
<th>Class Intervals</th>
<th>Mid-Point</th>
<th>Frequency</th>
<th>%</th>
<th>$f^2$</th>
<th>$f^2/p$</th>
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</tr>
<tr>
<td>20 - 29</td>
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<td>10</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>12</td>
<td>1</td>
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<td></td>
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<td>40 - 49</td>
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</tr>
<tr>
<td>50 - 59</td>
<td>54.5</td>
<td>15</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 - 69</td>
<td>64.5</td>
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<td>70 - 79</td>
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<td>80 - 89</td>
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<td></td>
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<td>TOTAL</td>
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<td>90</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
phosphate values do not agree. The possibility remains that the phosphate content has been irregularly affected, as the sampling points lay fully exposed over the winter and spring. At the moment this is the most plausible reason for the variations.

3.2.2.2. *Correlation between samples taken at the same time, but with 1 year between the analyses*

In connection with a doctoral course in soil chemistry at the Department of Archaeology in Umeå, the laboratory exercises included the analysis of a number of soil samples for which the phosphate content had earlier been determined. The sample collection and the first analysis had been carried out by K. Thunqvist (Dept. of Archaeology in Umeå) during 1980.

The sample series in question also came from Gene and the sampling area lay between House IV and pit T1 (Figs. 3:1, 5:14). The series involved a total of 44 samples. Since they were taken, these samples had been kept in tightly-closed plastic find bags. The first analysis was carried out within 4 months of the sample collection and the second analysis 16–17 months after sampling. The results of these $2 \times 44$ analyses are plotted, sample-pair by sample-pair, in Table 3:6. As is evident from this matrix, the correlation between the samples is surprisingly poor. In order to obtain a measure of this relationship, a correlation calculation is made here too.

It can be observed that the samples analysed in 1980 (x) obtained an average value of 173 P°, whereas those analysed one year later (y) had an average value of scarcely half that, namely 84.5 P°. One sees also from Table 3:7 that each individual sample from the 1981 analysis was lower than its counterparts from 1980.

The individual samples are listed in Table 3:7 together with calculations made for correlation purposes. In this case the correlation coefficient ($r_{xy}$) is

*Table 3:6. Correlation matrix for 44 samples taken at the same time, but with 1 year between the analyses.*
**Table 3.7.** Table for calculation of the correlation coefficient $P^o_x = $ phosphate value for samples analysed 1980, $P^o_y = $ phosphate value for samples analysed 1981.

<table>
<thead>
<tr>
<th>COORDINATE</th>
<th>$P^o_x$</th>
<th>$P^o_y$</th>
<th>$x - M_x$</th>
<th>$(x - M_x)^2$</th>
<th>$y - M_y$</th>
<th>$(y - M_y)^2$</th>
<th>$z_x$</th>
<th>$z_y$</th>
<th>$z_xz_y$</th>
</tr>
</thead>
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<td>194</td>
<td>125</td>
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<td>125</td>
<td>69</td>
<td>-48.1</td>
<td>2313.6</td>
<td>-15.5</td>
<td>240.3</td>
<td>-0.8</td>
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<td>219</td>
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<td>144</td>
<td>99</td>
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<td>846.8</td>
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<td>63</td>
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<td>14.5</td>
<td>210.3</td>
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</tr>
<tr>
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<td>116</td>
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<td>462.3</td>
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<tr>
<td>518</td>
<td>178</td>
<td>69</td>
<td>147</td>
<td>68</td>
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<td>681.2</td>
<td>-16.5</td>
<td>272.3</td>
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</tr>
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<td>153</td>
<td>76</td>
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<td>99</td>
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<td>846.8</td>
<td>14.5</td>
<td>210.3</td>
<td>-0.5</td>
</tr>
</tbody>
</table>

**n = 44**

150946.8  38487.5  +15.29
obtained by the standard point \((z)\) method, which means that each value has been standardized and translated into standard points so they are therefore comparable.

By adding the sum of the last column \((+15.29)\) in Table 3.7 in the formula for the correlation coefficient

\[
 r_{xy} = \frac{z_xz_y}{n}
\]

the \(r_{xy}\) value of 0.35 is obtained.

Here too we are faced with the fact that the sample series show an unexpectedly weak relationship and obviously this requires an explanation. Naturally, it can be connected with the laboratory situation and with the fact that the later analyses were not carried out with sufficient exactitude. The circumstance ought, however, to give rise to a careful follow-up.

To summarize this criticism of the phosphate analyses, it can be said that over long periods a certain redistribution of phosphates takes place on free-lying surfaces. Individual samples cannot therefore be employed for detailed analyses, but rather an average value for several nearby samples should be used (cf. Sect. 5.2.3.1.). Furthermore, it is wise to carry out the actual phosphate analysis as soon as the samples have been collected. But the causes of the lack of correlation should be a matter of investigation. Is it a result of different and inadequate laboratory treatment, or is there a real and discontinuous change of the chemical character of the samples when stored in plastic bags?

3.3. A SHORT PRESENTATION OF THE HOUSE FOUNDATIONS IN GENE

House I: This is completely exposed and is the most fully investigated, consisting of a three- and partly five-aisled long-house, c. 39 m long (N–S) and 9 m wide in the centre, narrowing towards the ends and with rounded corners in the south. In the northern fifth there are no signs of the wall. The walls that are evident vary however in their construction, for both traces of posts and sill logs occur along the wall line. Since the wall was single, it was therefore both supporting and insulating. Four definite entrances have been found, indicated by portal posts set c. 1 m in from the line of the wall. The two southern entrances faced each other. The house has had at least four rooms, including living and stable quarters. A number of large and small hearths occur, one of which was in the stable area. In the living quarters the supporting structure has been strengthened, which is interpreted as signifying a heavier roof than that covering the rest of the house. The house had burnt down.

**Finds:** Within and around the foundation one finds clay, mostly very hard-burnt, on which a number of different impressions of the house construction have been made. The burnt clay is mainly concentrated around the living quarters. A stone club with its hafting-groove broken off was found half-way down in a post-hole. Other finds, such as occasional iron tools and beads, occurred in the southern part of the foundation outside of which an iron fibula was found. In the northern half only one find was made.

C-14 datings: Five radiocarbon analyses are available at present, four of which are datings for post-holes and one for a hearth. The mean values for the post-holes vary between 10 B.C. and 495 A.D. while the hearth is dated to 180±85 A.D.

House II: This is also exposed and almost fully investigated, consisting of a three- and partly five-aisled long-house c. 38 m long (N–S) and 8 m wide in the centre, narrowing towards the ends and with rounded corners in the south. In this case, too, traces of the wall are missing in the northern fifth of the house, otherwise the walls are fairly regularly constructed. The wall is double, the inner part of which consists of post-holes, set on average 0.8 m apart to form the supporting section. Outside this there was a trench in which it probably stood a weaker insulating wall.

The rest of the foundation has a layout similar to House I regarding room divisions and entrances. The stable is obviously subdivided with a special section for about 10 cows. There are fewer hearths, however they are also found in both living and stable areas.

Also in this case, it seems probable that the roof over the living section was heavier than over the other parts. The house had not burnt down.

**Finds:** Compared with House I, there are fewer finds so far and a few isolated iron rivets and fragments of iron objects have appeared.

C-14 datings: Five radiocarbon datings are available. Three of the hearths fall between 385–515 A.D., a post in the southern gable section gave a date of 225±230 A.D. and a hearth under the western trench gave 345±110 A.D.

House III: Fully exposed and investigated, this is a timbered building c. 7 × 7 m in size. The foundation is bounded by stone rows in the N, S and W. In the...
corners there are larger flat stones. A collapsed corner hearth was found in the SW which contained a couple of m² of stones in varying sizes, the greater part of which were fire-cracked and the larger ones were burnt. In and around the central part of the hearth there was a sooty layer on the old ground surface. In and beneath this layer a number of finds were also discovered and were assigned to the underlying House X. Along the inside of the S and N walls, earthen embankments were found in the form of low ridges. No inner supporting elements were encountered. Burnt?

Finds: Inside the foundation, in association with the hearth, burnt and unburnt clay and burnt bones were discovered. Outside the hearth but still within the foundation a ring buckle in bronze, bronze sheets, a few iron tools and a whetstone came to light.

C-14 datings: Dating of charcoal from the corner hearth gave 1215±95 A.D.

House IV: Fully exposed and partially investigated, this three-aisled house was at least 13 m long N–S and fully 5 m wide. The W and N part of the foundation showed up the most clearly with red-brown colourations. In this area three different foundations coincide – House IV and the older Houses VII and IX. The best-preserved western part of the foundation has the same wall construction as House II, although of a somewhat weaker design. In the eastern part there is a short stretch with three parallel rows of post-holes, which has been interpreted as the place where the three houses coincided. So far this part seems to be empty of finds. No room divisions or definite hearths have been observed. The house had burnt down.

Finds: Over the surface of the above-mentioned foundations there were relatively abundant finds, mainly concentrated in the S and SW of House IV but also in a band across House IX. Apart from fragmentary iron artifacts the material was characterized by fragments of moulds and crucibles, typical of the Migration Period. A pair of wrist clasps in bronze together with melted and bronze-sheet fragments were also found along with some sherds of asbestos-tempered pottery.

C-14 datings: Two of the post-holes are dated: 340±80 A.D. (charcoal) and 420±80 A.D. (birch bark) respectively.

House VI: Partially exposed and investigated, this was probably a three-aisled house of c. 16 m in length (NW–SE) and 8 (?) m in width. This foundation differs from the above in several ways. Firstly, it was visible before the excavation in the form of an almost horse-shoe shaped earthen bank. Secondly, it lies some way away from the other foundations (known at present) and, thirdly, it has a NW–SE alignment. Furthermore, there are charred timbers under the bank which have been interpreted as belonging to a collapsed roof. At the moment no more definite interpretation can be given, as only one part of the charred material has been studied in detail, but it is suggested that the bank is the remains of a collapsed sod roof. In a row along the central line of the house there are two large and two small hearths. In the former two there were abundant residues of iron-working (slag, burnt clay, iron fragments, etc.). The house had burnt down.

Finds: The remains of iron-working mentioned above were concentrated in two places, namely inside the house around and in the two larger hearths and also around a hearth to the south of the foundation. The fragmentary iron finds — nails, rivets, rods, etc. — showed exactly the same pattern of occurrence.

C-14 datings: The charcoal under the bank has been dated to 375±85 A.D. and one of the larger hearths in the centre of the house to 410±90 A.D.

House VII: Completely exposed and partially investigated, this is a three-aisled long-house probably 23 m long (N–S) and 5 m wide. It is rather difficult to interpret in its northern and southern limits. The fragmentary remains of its walls in the middle part are reminiscent of House I, where both sunken posts and a sill trench are found. There is one certain entrance with recessed posts. Regarding the supporting structure, the northern half has a weaker design and throughout lacks traces of walls. Furthermore, the central aisle in the northern half is markedly broader than in any of the other houses. On the other hand, the southern half has the normal layout found at Gene. The house has probably been divided into at least two parts and in the northern section there is a hearth. The house had not burnt down.

Finds: See House IV.

C-14 datings: None are available. It can however be mentioned that post-holes and other features belonging to the foundation are filled with fire-cracked stones which, together with their stratigraphical position and general appearance, show the house to be older than House IV.
House VIII: Completely exposed and partially excavated, this house is three-aisled and c. 13 m long (N–S) and 6 m wide. In the northern third of the house there is no sign of the wall while in the south the corners are rounded. In the southern part of the foundation the walls consist of inner and outer sections, each standing in a trench. The outer wall is stronger and has posts at approximately 1 m intervals, while the inner trench and its posts are of lesser dimensions with the posts placed at about every other metre. The outer wall had the main supporting function and the inner one was mostly for insulation. The gap between the inner and outer walls is c. 1 m. The house foundation has been divided into two parts, the northern half comprising of a lighter structure and (as in House VII) containing the single hearth. The house had not been burnt.

Finds: See House I.

C-14 datings: None are available. Stratigraphically the house is later than House I but older than a hearth which lies in the supposed line of the wall. This hearth is dated to 480±75 A.D.

House IX: Completely exposed and partially investigated, the extent of this house is uncertain and it partly coincides with House IV. One interpretation suggests that it was three-aisled in the southern half and two-aisled in the north. The length is 16 m (N–S) and the southern half is somewhat narrower than the northern section, both however being c. 5 m wide. The southern corners are rounded and there is an entrance in the western long wall. Possibly there may have been a dividing wall between the two halves. As in Houses I and VII, the wall line of the foundation contains traces both of sunken posts and sill trenches. Possibly it was burnt down.

Finds: See House IV.

C-14 datings: One post in the assumed dividing wall gave a date of 225±90 A.D.

House X: Completely exposed and partially investigated. The foundation was uncovered as late as 1983 and the finds and features are not yet analysed. The western trench goes under House III. The foundation is three-aisled and 17 m long (NNE–SSW) and 6.8 m wide in the centre. Unlike all of the other foundations traces of both the gable ends are visible. In general lay-out it is similar to House VIII, but House X has a much weaker double-wall construction. The only certain entrance is placed in the middle of the east long wall and connected with a trestle. The house has probably been divided into two halves. The house had probably burnt down.

Finds: Apart from scattered iron fragments of tools there are also a concentration of iron working residues outside and within the northern part of the foundation. The amount is not yet calculated but it is not as much as in and around House VI.

C-14 datings: None are available.

3.4. SOME NOTES ON ANCIENT MONUMENTS, FINDS AND EARLIER INVESTIGATIONS

3.4.1. ANCIENT MONUMENTS AND STRAY FINDS

During the previous century large numbers of ancient monuments have been lost through cultivation in Medelpad and Ångermanland. Baudou (1968:112f) calculates that 36.8 % of ancient monuments in the form of mounds were destroyed by cultivation along Northern Ångermanland's coast during the last 100 years. Selinge (1977:167) estimates the loss for the whole of Västernorrland (i.e. Medelpad and Ångermanland) as c. 33 %. Only 2700 of the county's c. 4000 original Iron Age monuments remain today. The degree of destruction was probably greatest during the nineteenth and early twentieth centuries (Selinge 1977:175ff).

The stock of ancient monuments within the provinces of Hälsingland, Medelpad and Ångermanland is completely dominated by graves (Fig. 3:14), which
Fig. 3:15. Ancient monuments in the vicinity of the Gene site. The figures indicate parish numbering given by the Central Board of National Antiquities. The 15 m curve is shown by a solid line.
therefore form the basis for calculating the degree of destruction by cultivation. There is no way of estimating losses of the hidden types of monuments and the house foundations shown in Figure 3:14 only represent the terraces visible on the surface.

As is evident from Figure 3:14, the number of monuments visible on the ground decreases steadily up to and including Angermanland. The most northerly farm cemetery found so far, of the type that characterizes central Norrland's Iron Age settlement, lies at Arnåsbacken (Fig. 3:15). North of Angermanland, i.e. along the coasts of Västerbotten and Norrbotten, such cemeteries do not occur. Mounds are occasionally found, however, spread along this coast as far as Sangis in Nederkalix parish, and they are dated to the transition between the Merovingian and Viking Periods (Serning 1960:139f). More typical for this northern stretch of coast are the bare stone settings and cairns from the Iron Age (cf. Serning 1960).

Angermanland's monuments have been the subject of a comprehensive analysis, in which a total of 1356 Iron-Age monuments are listed (Selinge 1977:195). Of these, 537 are mounds, 168 turf-covered stone settings, 16 other graves and 630 known grave sites, now lost through cultivation. Other types of ancient monuments include 4 prehistoric hillforts and 1 house foundation terrace (cf. Fig. 3:14).

Of those monuments preserved today, the majority occur along the coast or by water-courses directly connected with the sea. Valleys, typical for the province, contain the graves. The largest of these valleys, that of the river Angermanälven, has Iron Age graves as far up as Resele parish above Solleftäta (Fig. 1:1). The densest concentrations are along the Angermanälven, particularly in the area where the river bends in a westerly direction. In the parishes of Styrmäs, Torsåker, Botteå, and Överlännäs, graves and cemeteries are grouped on both banks of the river, but to a higher degree on the northern side. In Överlännäs, near the Björkå ironworks, Västernorrland's largest cemetery is found with c. 50 visible mounds (Selinge 1977:314).

Another of the province's monument-rich environments is in the parish of Nora where, around the church and the present lake (Norasundet), some 90 graves remain today out of a former total of c. 160 (Selinge 1977:195).

Iron-Age monuments occur on a somewhat smaller scale farther north, around Vägsjärdens in Nordingrå parish, Ullängervärd in Ullängervärd parish and around the inner parts of Dockstafjärden and Norrfjärden in Väbyggervärd parish (Selinge 1977:195). This brings us to the central part of Hoga kusten, the High Coast region, marked by the 293 m high Skuleberget and the nearby island of Mjältön which, at 236 m, is Sweden's highest island. Skuleberget also marks the start of a c. 11 km long stretch of forest, Skuleskogen, which in more recent times has formed a natural boundary between the southern farming districts and that of Nolaskog to the north.

Approximately in the middle of Skuleskogen Nätra parish begins, adjoined to the north by that of Själevad in which Gene is situated. Nätra contains at least two larger valleys where Iron Age settlement is theoretically possible. There are, however, no known Iron Age monuments but a Late Iron Age settlement is indicated by a couple of stray finds (Selinge 1977:294). This apparent paucity of Iron Age remains is possibly caused by later cultivation and inadequate reconnaissance.

After the probably ostensible emptiness of Nätra parish with regard to monuments, Själevad and Amäs parishes form the northern outposts for this form of Iron Age settlement (Fig. 3:15). Burial mounds occur in 16 locations, of which 7 are in Själevad parish, but the extension of the Iron Age settlement has been greater. The preserved locations are grouped around Själevadsfjärden and its adjoining bays and valleys while in Amäs they lie along the bays which link up with Idbyfjärden (Fig. 3:15).

The cemetery on Amäsbacken (No. 1, Figs. 3:15—16) lies on a steep, narrow part of an esker, which is 31 m above sea level at its highest point (Fig. 3:16). The esker runs NW—SE and most of the graves are placed on its narrow crest and SW slope. The inventory of ancient monuments made for the Economic Map registered 13 mounds in this cemetery.

In connection with the author's survey and mapping in summer 1982 two house foundations of terrace type were also found, NE of the cemetery (Fig. 3:16). Connected to these a couple of low stone settings were observed.

While investigating the terraces with an anauger, charcoal- and soot-rich soil was encountered in several places, often quite deep down, which clearly shows that the site was used in early times. The terraces' level sections are obviously cleared of stones which appear, however, to a larger extent on the side slopes, particularly in the NE foundation.

The end limits of the terraces are not clear, although in the SE a steep c. 1 m-high step occurs followed by a disturbed and partially-cleared surface. This step is possibly a construction as it sometimes contains large stones and may thus belong to a part of the foundations. In the NW both terraces are obviously damaged by former cultivation, for a completely
different type of vegetation (richer in species) occurs and the otherwise stony and block-rich morainic ground is completely stone-free in this area. Along the edge of the present arable land there are a number of clearance cairns, two of which are very well-built and grave-like.

There is a small depression before the crest, directly SE of graves 1—3 (Fig. 3:16). On one occasion, in a pair of wheel-tracks left by a tractor, dark-coloured soil was seen in this hollow, with indications of habitation in the form of burnt bones and fire-cracked stones.

On the other side of the crest there is an area with a number of visible signs of settlement (Arnäs No. 2, Figs. 3:15—16). According to the register of the ancient monument inventory there should be 3 mounds. However, this is very doubtful and it is probably a question of house foundation remains — usually squarish in shape and with sides of 5—8 m in length. Altogether there are c. 5 structures, rather varied in appearance. Most have a bank-like boundary and a somewhat depressed central part. A few have marked depressions in the centre which suggests that they are sunken structures, tentatively cellars. Inside and partly outside these features there is a substantial sooty cultural layer and burnt clay was observed in the anauger in one such feature. No burial structures can be ascertained here with any certainty and much suggests that this is a case of a "non-pagan" settlement.

Finally it can be mentioned there is yet another mound registered (raä No. 3, Fig. 3:16) in the arable land directly E of the cemetery and there are supposed to have been many mounds here (Nätterlund 1925:36). Quite a number of Iron Age monuments have been lost through cultivation in Arnäs and, according to Baudou (1968:112), this parish is one of the worst affected.

The terraces on Arnäsbacken comprise the second location in Ångermanland containing foundations visible on the surface. According to local traditions, there are also other places with remains of habitation (Selinge 1977:334). Arnäs is one such place where, interestingly enough, the traditions are apparently correct. Clearly, closer reconnaissance ought to produce further locations with terraces, but it is uncertain by how much the number would increase.
Fig. 3:17. Roman bronze coin found at the village of Bäck, Nätra parish, cf. Fig. 3:15. Struck 6 B.C. in the time of Caesar Augustus (30 B.C.—14 A.D.). Weight: 7.53 g. Diameter: 25 mm. Face side text: VST PONT MAX = (CAESAR AVG) VST PONT MAX (TRIBVNIC POT). Reverse text: SC = senator consul. P IVRIVS AGRIPIA III VIR AAAFF.

The find material will not be gone through fully here, but two categories will be taken up. The more important finds from the county are dealt with in detail by Selinge (1977) while the finds from Medelpad and Jämtland had been taken up earlier by Slooman (1950). In connection with the Iron Age monuments mentioned here, there are no definitely datable finds from the Early Iron Age north of Skuleskogen. One exception, however, is the depot find from Storkåge, near Skellefteå in northern Västerbotten. This find is attributed to the Late Roman Iron Age and all of its objects have close counterparts in the Eastern Baltic (Serning 1960:21ff, see also Hjärne 1917).

In connection with sedentary settlement in Ångermanland, no finds have been made from the Roman Iron Age (cf. Selinge 1977:249). Despite this, present knowledge suggests that there is settlement that can be dated to the Roman Iron Age.

There is possibly one indication in that direction. In the village of Bäck on the western side of the entrance to Bäckfjärden (Fig. 3:15) a Roman bronze coin has been found, struck in 6 B.C. at the time of the emperor Augustus (Fig. 3:17). The circumstances of the find are not clear but the coin probably came from one of the village's fields (Söderström 1983, Malmer & Wisfén 1983:8). The coin may have reached Bäck at a date long after Roman Iron Age, but the chronological and spatial connection with the Gene farm is interesting. Malmer & Wisfén (1983:8) also suggest the possibility that at least one of Ångermanland's four finds of Early Iron Age bronze coins may be authentic. In one case, however, it has been recorded that coins came along with gravel ballast from the Mediterranean area in recent times.

From the point of view of settlement, Bäck forms a compact unit. The c. 25 ha of arable and meadow land lie in a narrow valley which cuts into the steep hills. An Early Iron Age settlement would here obtain a well-sheltered site with nearly as much sediment soil as today. The topography of the site is considerably more narrow and compact than that of the Gene farm, but it is probably well-suited to a combined economy with for example farming and fishing. The possibility that Early Iron Age settlement has existed even here must therefore be kept open, despite the fact that no ancient monuments or other Iron Age finds have yet been found in the village of Bäck.

After the publication of Malmer & Wisfén (1983) yet another Roman bronze coin has come into light, of the same type as that from Bäck (Arne Söderström,
pers. comm.). This find was made during the 1960s in the village of Sund close to Gene (Fig. 3:15). Even if the find circumstances for these coins are mostly uncertain, their appearance may be connected with contemporary (i.e. Roman) activities. That Roman bronze coins really could be a part of the Early Iron Age society is clear from, for instance, a grave find in Österbotten, Finland (Meinander 1977:25).

At present the known finds from southern Ångermanland embrace the Migration to Viking Periods and the oldest of them occur in the town of Härnösand, in Adalen and in the parish of Nora (Selinge 1977:26ff). That it is a question of a population already established during the Migration Period is indicated by, for example, grave No. 2 in the cemetery at Holm (Överlännäs parish in Adalen). This is a mound-type grave containing, among other things, glass beads with applied loops of glass thread (Selinge 1977:269, Fig. 44).

Types of finds without given datings include ingots of iron and gold. It has been shown that iron ingots vary in appearance between different geographical areas (cf. Hallinder 1978:33, Figs. 3, 12). In Norrland spade-shaped iron blanks dominate, especially in Medelpad, Jämtland and northern Hälsingland, but they also appear in isolated places in Gästrikland, Uppland, Ångermanland, Dalarna, Västmanland, Södermanland, and in Tröndelag, Norway (Hallinder 1978:31). One isolated blank has also been found on Åland (Kivi­koski 1973:127, taf. 109). The distribution of finds shows, however, a clear centre of concentration in the provinces of central Norrland and the most northerly separate find was made in Brösta village, Arnäs parish in northern Ångermanland (cf. Fig. 3:15).

From the compilation made by Hallinder (1978:37) it appears that spade-shaped iron blanks are geographically grouped according to length and weight. Generally, Gästrikland pieces are the heaviest and longest whereas those in Hälsingland are the shortest and lightest. Iron blanks from Jämtland and Medelpad form an intermediate group. From existing analyses it appears that the Ångermanland iron blanks correspond most closely to those from Jämtland–Medelpad (cf. Hallinder 1978:35f). These data indicate that the proposal made by Hyenstrand (1979:147), saying that weight of the iron blanks increases the further away from the Mälar Valley they are produced, ought to be reformulated. Obviously there are variations in this pattern but, from the material presented thus far, the fairly well-defined areas imply that it is a case of an area of consumption which coincides with that of production. If the production and consumption areas were different then a less clear pattern ought to have emerged.

With regard to casting and goldsmith work, the raw ingots of gold are interesting finds. One such find was made on Hornön in Nora parish, where two curved gold bars were found together with a gold ring and two gold beads weighing a total of 300 grammes (Selinge 1977:379f, Fig. 86). This find category can clearly have been used as means of payment but, just as likely, it can have been the raw material for jewellery production and gilding.

3.4.2. - PREVIOUS INVESTIGATIONS IN THE GENE AREA

During the above-mentioned period of destruction by cultivation the ancient monuments in Gene village were also affected. It has since long been assumed that five mounds in Gene village were destroyed during 1860s and 70s (Lagerström 1932:21, Selinge 1977:195, Ramqvist 1980:24). However a local historian in Gene, Gustaf Eklund, has recently shown that probably only three mounds were destructed during that period (1983:34f). In one case only the find material has survived. It comprises a set of jewellery for a woman’s costume of the Viking Period, including among other things two oval brooches, an equal-armed bronze brooch and a ring pin of bronze (Fig. 3:18). Nothing is known about the other two destroyed graves.

The location of the destroyed mounds are not known in detail, but there are a couple of pieces of information that ring in the area. The first concerns a measurement given by Sidenbladh who in the mid-1860s recorded three mounds 1200 feet (c. 360 m) SW of Örnsköldsviksflädjarden and S of the river Mö­ålven (cf. Lagerström 1950:15). The other indication comes from the laga skifte (enclosure) map of 1852, i.e. before the destruction of the graves. The village lands were then subjected to a thorough description. On the map (Fig. 3:19b) there are adjacent four small parts of the meadowland with the designation ”Högen” (Mound). This area is c. 60 x 30 m and coincides well with the vague descriptions of the location, given when the graves were destroyed. It was said by the Gene-farmers in question that the mounds were surrounded by arable land and that they wanted to take that piece of land into cultivation.

Even though these two pieces of information do not quite coincide (Fig. 3:19b), they probably refer to the same mounds. The area that has thus been ringed is located 10–15 m above sea level, probably nearer the former. This level is fully supported by the above-mentioned dating to the Viking Period. The distance...
to the settlement and cemetery on Genesmon is thereby c. 1 kilometre (cf. Fig. 3:19a).

In 1925 Nätterlund published a list of the monuments known in northern Ångermanland. The list is based on Nätterlund's own notes and on those of K. Sidenbladh and E. Olsson. In the case of Gene only the three graves (No. 21) are included on the list, while the larger and more easily distinguished cemetery No. 22 is not mentioned (Nätterlund 1925:12).

This latter cemetery had still not come to the knowledge of researchers when Lagerström (1932) made his study of the monuments of Själevad parish. In a footnote, however, he mentions an undated newspaper clipping, given to him by Nätterlund, in which the cemetery is described. Nevertheless, he paid no regard to this as the locational information is vague (Lagerström 1932:22).

In 1955 an inventory of Själevad parish was made by Berggren & Winberg (1957) in preparation for the cairn investigations along the coast of northern Ångermanland, initiated by Själevad’s Hembygdsförening (Baudou 1958, 1968). This inventory registered cemetery No. 22 for the first time, and the earlier known burial mounds No. 21 were naturally re-registered. The cemetery was first mentioned in the literature by Baudou (1959b:9). In accordance with the actual state of research at that time, the mounds were attributed to the latter part of the Iron Age. With the marked deficiencies in archaeological material for the whole of the Early Iron Age, it was then assumed that permanent agricultural settlement in northern Ångermanland had originated during the Late Iron Age (cf. e.g. Baudou 1968:150 and Selinge 1977:358). This opinion was held even after the excavation of the three mounds on cemetery No. 22 (Baudou 1968:139). This late dating, however, is rejected in section 4.3.2.

During the period 1957–1962, Baudou investigated a total of 32 cairns or cairn-like stone settings in northern Ångermanland (Baudou 1957, 1958, 1959a, 1959b, 1968). Seven of them were situated in Själevad parish (Figs. 3:15, 3:19a) and, among others, two were excavated on Vestmansberget (No. 25) 1 km S of the Gene settlement, one in Paddal (No. 18) 2 km WSW of Gene, and one on the NW slope of Solandsberget in Domsjö (No. 30) 2 km E of Gene. To these can be added the investigations of one cairn on Gnusberget (No. 8) and another in Nordanås (No. 43).

Two of these cairns can be dated to the Iron Age, namely No. 30 in Domsjö and No. 8 on Gnusberget. In the latter the burnt bones of a woman appeared outside a cremation layer, near to which a glass bead of the Viking Period was found (Baudou 1968:41, 58f., Figs. 24, 167). Another as yet uninvestigated cairn exists on the site, lying on the edge of a hill that slopes abruptly down towards the valley at a height of c. 55 m above sea level. The damaged cairn below Solandsberget lies at about the same level and, at the bottom of the cairn, a rectangular grave (2.5 m × 1 m

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**Fig. 3:18.** Part of the Gene find. Encountered during removal of mound in 1869. SHM No. 4180. Find on display at Örnsköldsvik's Museum.
in area and 0.6 m deep) was found in the sandy hill. At the bottom there appeared a colouration from a skeleton (Baudou 1968:169). The dating was probably Migration to Viking Period (Baudou 1968:48).

These two graves thus had similar heights above sea level and, furthermore, they both had foot chains comprised of stones c. 0.5—1.0 m in size. There were also marked differences, namely the state of the graves, the foundation (bare rock at Gnusberget and sand at the other), and their position in relation to the coastline at the time of their construction. At a rough estimate, the cairn at Gnusberget lay c. 75—100 m from the shoreline in the Viking Period, whereas the cairn below Solandsberget lay c. 1.3 km from the sea in the 6th century and even further away during the Viking Period.

Foot chains as a morphological feature also appear under cairns or cairn-like stone settings dated to the Bronze Age (Baudou 1968:53), but then in connection with dry-stone walling. Selinge (1977:231ff) believes that, as a morphological feature, the foot chain can be ascribed to the Early Iron Age. We have, however, seen that such features occur from the Bronze Age to the end of the prehistoric period.

Unfortunately the cairns are very poor in finds. Attempts at plundering have often been successful and, furthermore, the contents of the graves have been subjected to severe erosional damage because of their porous superstructures. In Norrland there are only a few cairns or cairn-like stone structures that are datable by means of their artifacts (cf. Baudou 1968:58, Fig. 24).
As shown by the above presentation, it is difficult to date cairns with any certainty without thorough investigations. Their topographical locations do not necessarily exclude any of the Iron Age–Bronze Age periods if the feature in question lies over 25 m above sea level. Because of land uplift, all features below this height in Angermanland/Medelpad must be younger than the Bronze Age. During excavations, however, indications of dating often appear — mainly in the form of morphological elements (cf. Baudou 1968:102).

In principle, cairns other than those with typical elements from the Early or Late Bronze Ages are difficult to date. Such is the case for stone setting No. 25:2 on Vestmansberget near Gene (Baudou 1968:169), in which the rectangular stone setting lacked any inner construction. This small stone structure had an area of $5.5 \times 4.5$ m and a height of 0.5 m. It was placed on a crest of exposed rock, together with a cairn with a body-length cist, which made it datable to the Early Bronze Age (Baudou 1968:102). When sea level was at the present 30 m contour (corresponding to c. 800 B.C.) this area consisted of an island of $300 \times 150$ m (i.e. 4.5 ha) and the 35 m contour describes two smaller islands of c. 1 ha each, on which the three cairns were probably erected.

The long cairn in Paddal (No. 18) can be dated to the Early Bronze Age on the basis of the man-length cist found in its northern part (Baudou 1968:168f). It lay 36 m above sea level and nearby, at the 30 m level, there is an uninvestigated stone setting (Fig. 3:15).

Approximately 1 kilometre SE of the settlement at Genesmon (Figs. 3:15, 3:19a), a badly damaged mound was recently discovered in Vågsnäs. The mound was not previously recorded and during the summer 1983 it was excavated by the author. The mound had originally been about 8 m across and at maximum 1 m high. The thin outer mantel of sand — which was almost entirely destroyed — covered a core-cairn 7.5 m across. On the original surface there was an extensive cremation layer c. $4 \times 3$ m (NE-SW). Scattered charcoal was found outside this central area. The cremation layer was damaged to c. 30 % and the central part of the layer, where it was thickest, was damaged to c. 50–75 %.

Most of the finds came from the central part of the cremation layer and scattered finds occurred in the peripheral parts of this layer. According to traditional chronology, the find material (Fig. 3:20) belongs to the Migration Period. This dating is primarily based on the bone comb, which is composite and held together by small iron rivets. The tooth plate has an edge on which the two connecting plates should rest. This type of comb is typical for the Migration Period (Ambrosiani et al. 1981:180).

Fragments were also found of at least two bone arrow-heads with triangular cross-sections, which occur in graves throughout the Early Iron Age (i.e. 1–600 A.D.), for instance in Medelpad (Seling 1977:258). The other finds include a bone ring or bead, a piece of a bronze buckle (?), a bronze thread, bear phalanges, a couple of melted iron fragments and a few pieces of lightly burnt clay.

The mound is situated 17 m above sea level which means that the probable contemporary shoreline must have been at least 15 m above sea level. According to the land upheaval rate in this area (Fig. 3:22) the mound could not be older than the middle of the first millennium A.D. There is thus a good correlation between the archaeological and the land upheaval datings.

It should be mentioned that there are no natural stone occurrences within a 100 m radius of the site, which means that the stones in the grave must have been brought to the site.

Fig. 3:20. Recently excavated finds from the grave mound at Vågsnäs, Själevad parish.
To conclude this section of earlier archaeological excavations in the area, it can be stated that there is a clear spatial continuity in the vicinity of Gene from at least the Early Bronze Age. There are also several Stone Age finds and sites in the vicinity (Baudou 1968:139), which support this spatial continuity. However, there is a lack of indications from the Pre-Roman Iron Age and the Merovingian Period. This is not unexpected though, since it is a characteristic feature for the major part of coastal Norland. On the other hand it is difficult to designate individual cairns and stone settings to a specific period, which might to some degree fill up the transition period between pre-sedentary and sedentary settlement. Approximately 4% of the cairns and stone settings occur in northern Angermanland on levels (20—30 m.a.s.l.) that theoretically could be dated to that transition period (cf. Baudou 1968:86, Tab. 3).

To a certain degree there are also features overlapping between the Bronze and Iron Ages. This is very clear when Iron Age cairns occur in typical Bronze Age environments and less clear, but probable, when cairns or mounds with core-cairns are built at Iron-Age sedentary settlements. Thus, on this local level there are features indicating continuity between Bronze and Iron Age in the burial customs at least.

Some other very important investigations have however been carried out in Själevad and adjoining parishes, namely the pollen analyses initiated by the Early Norrland-project (Huttunen & Tolonen 1972) and by bio-stratigraphical investigations (Miller & Robertsson 1979, Miller 1982).

The pollen analyses aimed at throwing light on the development of prehistoric agriculture in northern Angermanland. As far as possible the sample basins were selected in relation to excavated or otherwise known monuments. The results of samples taken, for example, in Norrböle by Anundsjö (Anundsjö parish) were rewarding. This lake lies c. 50 m above sea level and c. 30 km up the Moälven, i.e. the very river which reaches the sea near the Gene settlement (cf. Fig. 1:1). On a stretch of c. 5 km along the N shore of the lake there are 11 known settlements of Stone-Age character which contained various combinations of artifacts (Baudou 1977:56ff).

One of the pollen samples from Norrböle showed that wheat (Triticum) and barley (Hordeum) were presented in the area between 2500—2000 B.C. In this level there were also so-called cultural indicators (Huttunen & Tolonen 1972:21). During the end of the sub-boreal period (i.e. c. 500 B.C.) there are also indications of a thinning out of forest, but direct evidence of cultivated plants is lacking (Huttunen & Tolonen 1972:21).

Settlements which were partially investigated by the Early Norrland-project can be related to both of these periods of human influence (Baudou 1977:56ff). The settlements from the older phase originally lay beside a narrow inlet. A site, which coincides with the later phase of forest clearance, lay by the then cut-off lake (Anundsjön). The find material from the latter settlement differs from the former, e.g. through the presence of asbestos-tempered textile pottery, but for both types of settlement there are no archaeological indications of agriculture and/or cattle raising (Baudou 1977:60ff).

One pollen sample has been taken in Själevad parish, namely from Åtessjön, 9 km due west of the Gene settlement (Fig. 3:15). The distance to Gene is too great to obtain a picture of the development of its cultivation, but both locations lie at approximately the same height (Åtessjön is c. 19 m.a.s.l.). Together with Skrikesjön and Norrtjärnssjön, the lake and surrounding land form a narrow N—S valley which in principle links the very broad river valley of Moälven in the north with the smaller plains landscape near the mouth of the river Nättra in the south (Fig. 3:15).

According to the graph of shoreline displacement (Fig. 3:22) Åtessjön was cut off from the sea some time around 200 A.D. Huttunen & Tolonen (1972:27) dated the isolation of the lake to 600±350, which must be regarded as wrong in the light of later research. This date of isolation is nevertheless interesting because, at that level in the pollen diagram, barley (Hordeum vulgare) occurs (Huttunen & Tolonen 1972:28). This is however an isolated appearance but, between the level for the sub-boreal to sub-atlantic transition (c. 500 B.C.) and the isolation level, there are also clear indications that the landscape was opened up and cleared (Huttunen & Tolonen 1972:28). This is marked by a sudden increase in NAP (non-tree) pollens at the same time as pollen appears from juniper (Juniperus), sorrels (Rumex), goosefoots (Chenopodiaceae) and wormwood (Artemisia). At the time of this clearance AP (tree) pollens decline temporarily. These increase, however, up towards the isolation level where goosefoots reappear together with cerealia.

As there are great difficulties regarding C-14 datings for the layers (Olsson 1972), the date of the establishment of the sedentary settlement by Åtessjön cannot be determined. Based on the rate of sedimentation at the lake bottom, Huttunen & Tolonen (1972:28) suggest that it began around 1000 A.D. If, instead,
one uses the graph of shoreline displacement in this area (Fig. 3:22) and takes into consideration the new dating obtained for the isolation level, this obviously affects the calculation of the sedimentation rate. According to this latter alternative and with the same reservations about precision as Huttunen and Tolonen, the permanent cultivation begins during the 8th century.

The pollen diagram from Åtessjön thus indicates that clearings were already made during the Pre-Roman Iron Age in the immediate vicinity of Gene, activity which may be interpreted as preparation for new pasture land. During the Roman Iron Age there was some, perhaps temporary, cultivation a little way from the lake while at a rough estimate sedentary settlement was established beside this particular lake during the 8th century.

The bio-stratigraphical studies which began in the mid-1970s in the Anundsjö area (Miller & Robertson 1979) have been extended to several locations in the actual coastal region. These investigations include for example the so-called "Kapellmossen" in Sörvåge (Fig. 3:15), 5 km SE of Gene (Miller 1982). Among other things the investigations aim at constructing a graph of shoreline displacement in northern Ångermanland and the preliminary results can be seen in Figure 3:22.

The investigations attempt to localize, take the level of and date the isolation of different lake basins. For this, vertical bore samples are taken from marshes and lakes and their pollen and diatom contents analysed. A number of interesting indications were obtained as a bi-product of the sample in "Kapellmossen" (15 m a.s.l.). It appeared that the sample from this bog contained carbon particles, cereal and other culture-indicating pollens at a level corresponding in time to 200–500 A.D. (Miller 1982:12). In conjunction with the topographical position of the location, this shows that there has been settlement near the small channel which existed here before isolation (Fig. 3:15). In several respects the site is equivalent to that of the Gene settlement and beside the bog there are some hearth pits, stone settings (?) etc. that should be closer investigated.

There is a tenacious tradition in the farming community that this area was the site of Själevad’s first church (Lagerström 1950:19, Eklund 1981). Such traditions also point to the area’s great interest.

To sum up this section, it could be concluded that the few scientific investigations indicate that there was some kind of agricultural activity in the area during the Pre-Roman Iron Age. Furthermore, there are other sites contemporaneous with the Gene-settlement, showing that it was not an isolated phenomenon in this northern part of the country.

3.5. THE PHYSICAL SETTING

3.5.1. PHYSICAL REGIONS ALONG COASTAL NORRLAND

From a topographical viewpoint the stretch of coast between the cities Sundsvall and Örnsköldsvik differs from that to the north and south. The coast of Medelpad and Ångermanland is characterized by a fairly extensive archipelago and by very hilly terrain even offshore where, for example, we find Sweden’s highest island, Mjälltön (236 m). For the most part the region lies below the highest shoreline (HK) and between the fine-grained sediments in the valleys there is generally a continuous cover of moraine. The traditional settlement is strongly tied to the slopes of these valleys or to impediments within them.

In 1977 the Nordic Council of Ministers presented an up-to-date system of physical divisions for the Nordic area. The classification is based on a number of variables, primarily using vegetation zones but also taking climate and geomorphology into consideration. The Nordic area has thus been divided into 60 regions, some of which are further subdivided. In order to illustrate the areas that are of interest here, the coastal regions of Norrland will now be presented, numbered according to the report:

No. 27: The woodlands north of the Norrland boundary (limes norrlandicus), containing the coast of the county of Gävleborg between the rivers Dalälven and Ljungan in Medelpad.

No. 28: The hilly lands of the southern boreal region, comprising the area between the rivers Ljungan and Gideån in northern Ångermanland. This region is subdivided into two parts, one of which relates to the coast — namely 28a: very hilly coastal area (the High Coast) in Ångermanland and Medelpad, together with the lower parts of the three deeply incised valleys of the rivers Ångermanälven, Indalsälven and Ljungan.

No. 29: The coastal plains and valleys with marine sediments around the northern part of the Gulf of Bothnia, comprising the coastal area between the rivers Gideån and Ijo älv in northern Finland. The river Pite älv divides this stretch of coast into 29a (south) and 29b (north).
Thus there are four different physical sub-regions which characterize the coast of Norrland and as it looks today, Roman Iron Age sedentary settlement are not found in region 29. If it occurs it must be in a quite different form. Region 28a, in which the Gene settlement is located, is obviously of central interest. In the general description of the dissimilarities between the regions considered here, the brokenness of the coastal part of region 28a stands out as the most important topographical feature. The region to the north in particular is largely characterized by plains and low hilly terrain, and in parts with a very productive shore zone containing appreciable shore meadows. This type of topography also reappears on the Finnish side of the Bay and Sea of Bothnia. The coastal section around Umeå for example contrasts strongly with the steep, hilly Höga kusten region which starts c. 100 km S of Umeå itself.

Nowhere in the Baltic region is there such a great difference in height between the hills in the immediate coastal belt and the offshore deeps as in the Sea of Bothnia. Region 28a also belongs to the hillest part of the country where the difference between hilltops and valley bottoms, i.e. the relative height, often exceeds 200 metres (Rudberg 1962:22).

In a physical geographical study Rudberg (1962) has described the county of Västernorrland (region 28a) in more detail and he sees the valleys as providing the grain of the region. He differentiates between the area of the mountain rivers (Ljungan, Indalsälven, and Ångermanälven) and that of the lesser forest rivers of NE Ångermanland, and he implies that each area has its own distinctive character (Rudberg 1962:24ff). The latter area, to which the Gene settlement belongs, is mainly characterized by the forest rivers Gideälven and Moälven, both with relatively well-developed networks of tributary valleys. In the lower sections these valleys attain dimensions that are fully comparable with those of the mountain rivers. Other rivers too have wide valleys, e.g. that of Selångersån between Ljungan and Indalsälven. Beside Selångersån lies for example the above-mentioned site of Högom (Sect. 2.2.1.).

The three great mountain rivers in the county also have their own distinctive characters and, with its relatively narrow and steep-sided valley, the river Indalsälven differs somewhat from the other two. The relative height in this valley is regularly over 200 metres and locally as much as 400 metres. This wall-like valley only permits a limited degree of settlement.

The Ljungan and Ångermanälven are more varied in that respect. Widening and constrictions occur, most noticeably in the Ljungan valley. Where the valleys open out large plateau-like features occasionally appear, consisting of sediment accumulations laid down when these sections constituted delta areas. Settlement is mostly located on these plateaux.

There are few boulder eskers in the coastal zone and they are mostly well-eroded, but in NE Ångermanland they are better developed than in other parts of the county. One such example is found in connection with Moälven’s long valley and, with a few breaks, one of its branches links up with the Ångermanälven via the smaller rivers Anundsjöån and Bergsjöån (Rudberg 1962:41, see also Burström 1974: 48ff). These eskers, together with the rivers and lakes, form the natural basis for communication.

Regarding climate it can be mentioned that the coastal part of the county has an average summer temperature of c. +15°C (even higher locally in the larger valleys), which corresponds closely with conditions in southern Sweden. The coast is also characterized by low precipitation, c. 400–500 mm per year, while the number of sunshine hours is among the highest in the country with 2000–2500 hours per year. The length of the growing season, i.e. the number of days over ±0°C, lies around 180 days which can be compared with 210–220 days in Mälar Valley or c. 250 days in Bohuslän, SW Sweden (Rudberg 1962: 49ff).

In evaluating the preconditions for agriculture it is not merely a question of the length of the growing season for, during summer, the rate of plant growth is higher as the length of day increases farther north. The high total of sunshine-hours along Norrland’s coast shows partly that there is less cloud and partly that, in proportion, these sunshine-hours occur during the growing season to a higher degree than in the south. Hence the shorter growing season is somewhat compensated. Certain phenological data can be interpreted as showing that the growth lead which the southern part of the county has during spring, has already been taken in by the northern part in July (Rudberg 1962:54f).

3.5.2. LOCAL GEOMORPHOLOGY ON GENESMON

The sandy heath (Swed. mon) of Genesmon is located some 300 metres SSE of Genesåsberget, around which lies most of the present-day settlement. The heath is c. 1 km long and 500 m wide and consists of well-sorted soils (Fig. 3.21). Genesåsberget reaches a height of 60–65 m above sea level and its slopes consist mainly of morainic boulders and stones. The sorted material does not extend above a height of c.
40 m above sea level.

The heath is bounded in the W and S by the inlets of Bäckfjärden and Vägfejärden respectively and, in the E, by a valley which forms the historical boundary between the villages of Gene and Domsjö (Fig. 3:21). The highest point of the valley lies at c. 17 m above sea level.

As mentioned above Genesmon consists of sorted material, mainly sand. Altogether there are only a handful of small erratic boulders on the whole heath and gravel only appear sporadically in connection with beach ridges (see below). In association with the phosphate sampling a map of soil types was also produced and, at the sampling points, the grain-size of the material was determined together with the general appearance of the ground profile (Fig. 3:25).

Broadly, the heath can be divided into three zones (A–C) from W to E (Fig. 3:2). Zone A lies in the N and W and is characterized by a sandy podzol. Zone B is a narrow transition zone, consisting of a fine sandy podzol with certain humus soil elements. Finally, zone C lies in the E and is mainly composed of finer sediments, fine sand and silt. Interspersed in zones B and C, there are a few solitary occurrences of clay in level sections. In zone C the profiles are only weakly podzolised and sometimes pure humus soil occurs.

The tendency towards humus soil in zones B and C is the result of cultivation carried out earlier on. Judging from the weak podzolation this cultivation ceased at a rather late stage. There are two sure signs that the areas of arable or meadow land have been significantly larger than today: Firstly, a number of drained ditches occur in zone C (these ditches are mapped in Fig. 6:2) where spruce forest now exists and, secondly, a couple of the beach ridges are clearly truncated in their eastern sections. In the two cases discovered so far, the beach ridges are cut off some 20 m W of the nearest drainage ditch. This is particularly evident in the area N of the settlement site. Whether this phase of expansion has also affected the
area of habitation is rather unclear, but there are two indications that it did so, i.e. the increased phosphate content in the A-horizon (Figs. 3:8 & 3:11) and the isolated plough or ard tracks across Houses I and II (Fig. 4:2).

The three soil zones are also evident in the vegetation. Zone A is characterized by forest of *Vaccinium vitis-ideae* type, the main trees being pine. The ground vegetation is dominated by lingonberry but there are also isolated areas of bilberry. Zone C comprises forest of *Vaccinium myrtillus* type with spruce as the dominant tree type and the ground vegetation contains mainly bilberry, *Maianthemum bifolium* and *Lastrea dryopteris*. Again zone B is transitional. In the northern part of Genesmon the forest recently has been thinned out and zones A and B are differentiated even more clearly regarding their flora. Zone C is significantly richer in species than zone A and the boundary coincides exactly with that of the former arable land.

The large Houses I and II (Fig. 3:1) are located in zone B, which is only c. 40 m wide at this point. This reflects a deliberate choice of habitation site and corresponds closely to the transition zone in Hyenstrand's (1974:35) model for the settlement units of the Mälar Valley. There, however, the habitation site is usually obvious as the transition zone is formed by impediments between the arable fields and meadows of the lowland zone and the forest zone behind.

3.5.3. SHORELINE DISPLACEMENT

In the question of shoreline changes two main factors must be taken into consideration: The first is partly the rate of land uplift and the other is eustatic conditions, i.e. fluctuations in the level of the world's oceans. If sea level rises faster than land uplift then transgressive phenomena appear. Such transgressions may lead to coastal sites being covered by marine

![Fig. 3:22. Shoreline displacement curve for northern Ångerland since the ice age. Curve is preliminary above 150 m a.s.l and below 40 m a.s.l. HK = highest shoreline = angylus limit. (From Miller 1982.)](image-url)
FAST SHORELINE DISPLACEMENT          SLOW SHORELINE DISPLACEMENT

<table>
<thead>
<tr>
<th>Period</th>
<th>M.a.s.l.</th>
<th>Rate (mm/year)</th>
<th>Period</th>
<th>M.a.s.l.</th>
<th>Rate (mm/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7100-5300</td>
<td>H.C.—</td>
<td>129</td>
<td>5300-5000</td>
<td>129—122</td>
<td>23.3</td>
</tr>
<tr>
<td>5000-4000</td>
<td>122—83</td>
<td>39.0</td>
<td>4000-3100</td>
<td>83—75</td>
<td>8.9</td>
</tr>
<tr>
<td>3100-2700</td>
<td>75—56</td>
<td>47.5</td>
<td>2700-2300</td>
<td>56—54</td>
<td>5.0</td>
</tr>
<tr>
<td>2300-1800</td>
<td>54—40</td>
<td>12.0</td>
<td>1800-1100</td>
<td>40—34</td>
<td>6.7</td>
</tr>
<tr>
<td>1100—600</td>
<td>34—24.5</td>
<td>19.0</td>
<td>600—0</td>
<td>24.5—21</td>
<td>5.8</td>
</tr>
<tr>
<td>0—650</td>
<td>21—12</td>
<td>13.8</td>
<td>650—1000</td>
<td>12—10</td>
<td>5.7</td>
</tr>
<tr>
<td>1000—1500</td>
<td>10—4.5</td>
<td>11.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3:8. Approximate separation of periods with fast and slow shoreline displacement. The figures are obtained from Fig. 3:22.

sediments. The actual displacement of the shoreline is thus an interaction between land uplift and changes in sea level (Modig 1979:105).

Transgressions are not considered to have occurred north of Gävle since c. 5000 B.C. so that eustatic uplift along the coast of Norrland has only resulted in slowing up the rate of the lowering of the shoreline (cf. Broadbent 1979:201).

The graph of land uplift shows a general tendency to level off so that the rate of uplift successively declines. The region with the highest rate of land uplift today lies along the coast of northern Västerbotten, where it is calculated to be 9.1 mm per year. The present rate in the Örnsköldsvik area is 8.0—8.3 mm per year (cf. Broadbent 1979:202, Fig. 83). It is possible however that the centre of land uplift may have varied through time.

At present there are two graphs of shore displacement for Ångermanland, constructed by two quite different methods. On the one hand Lidén's (1938) graph builds on tests from Ådalen, in which the datings are based on counting laminated sediments from the now-exposed delta (created at various points in time by the Ångermanälven). Lidén's graph describes an almost linear course. There are, however, a number of objections to the graph (Broadbent 1979:215).

The other graph (in part preliminary and covering northern Ångermanland) has been constructed by Miller and Robertson (1979) and later completed by Miller (1982). Using diatom analyses and radiocarbon datings these authors have established the point of isolation for some 20 basins in the area and in this way the graph of shoreline displacement has been produced (Fig. 3:22). This graph exhibits step-like breaks where shore displacement took place more slowly. Due to the margins of error inherent in C-14 datings, the dating of the steps in the graph is only approximate. One way of obtaining a more precise dating would be to analyse annually laminated sediments in basins of deposition (Renberg 1978). The step-like character of shoreline displacement is nevertheless interesting. A table has been constructed from the graph just to illustrate the course of events more clearly. The values are calculated from Miller’s graph and may contain errors (Tab. 3:8).

If this tendency is correct it has certain implications for archaeological research. We can for example note that the shoreline was only lowered c. 6 m during the Early Bronze Age, whereas the corresponding lowering during the Late Bronze Age was almost 10 metres. The opposite sequence occurred during the Iron Age (A.D.) with a rapid fall until the 7th—8th centuries and a stagnation thereafter until the 11th century. Here it may simply be suggested that this course of events can for example have significance for the interpretation of shore-bound features such as the coastal cairns, their concentration at specific levels, and the lack of them at other levels, etc.

3.5.4. THE BEACH RIDGES ON GENESMON

North and west of the settlement there are a number of major and minor terrace formations which are judged to be beach ridges (Fig. 3:23). They always face Bäckfjärden and for the most part follow the same line as the present shore (i.e. mostly E—W in the north and N—S further south), starting at about the same height as the settlement remains.

The terrace formations are not particularly regular and exhibit marked variations. The possibility exists that they may reflect the course of land uplift, even though it is difficult to determine which factors have been decisive in their formation. Examples of such factors include the location of the beach and its
exposure towards open water, the behaviour of the winds, and the bottom topography together with the available types and quantities of material (Königsson & Frängsmyr 1977:102).

From the appearance of the terraces it is surmized that the terrace-forming factors have been active throughout the whole period that Genesmon has been above sea level. The highest terrace lies at 29.09 m a.s.l. and the lowest that can clearly be identified is at 5.78 m, corresponding in time to c. 1000 B.C. and 1200–1300 A.D. respectively. The material in the beach ridges is sand throughout, apart from the lowest points in the terraces where washed gravel or pebbles occasionally occur, so that the terraces thus consist of very easily moulded material.

The mean value for the 17 beach ridges between 29 and 5 m a.s.l. NW and W of the settlement, is 1.1 m in height and 11.8 m in length. The largest, which is right to the W of the settlement, is over 2 m high and 12 m in length.

On the E side of the settlement there are no traces of beach ridges. This could be explained partly by the fact that this side has not been exposed and partly by the agricultural activity in this area. As was mentioned above, a couple of beach ridges have been cut off by recent (and maybe prehistoric) agriculture. Thus the beach ridges have been formed farther to the east than is visible in the terrain today.

The beach ridges have apparently had a certain function for settlement, since burial mounds have been placed on or close to the edge of the ridges. This is most clear with respect to mounds nos. 10–11 (Fig. 3:1), which lie on the outer edge of one of the largest ridges. The mounds thereby have an exposed and, from the W, an easy visible location. As was mentioned earlier, it was these three relatively small mounds that were discovered first on Genesmon.

3.6. RESOURCE POSSIBILITIES

A farm's resource utilization is naturally dependent on the direction of its production. The degree of utilization is restricted by several factors, the most important being the proximity to the resources and the technological level of the society. Proximity to available resources is probably a question of weightings, in which a conscious calculation of the costs relating to the resource exploitation forms the point of departure.
The available possibilities for resource exploitation are thus limited by the level of technology and the proximity to the resources. In a purely agrarian system Chisholm (1965:114) identifies five basic elements as being of prime importance in the location of a farm or village:

1. water supply
2. availability of arable land
3. availability of grazing land
4. fuel supply
5. availability of building material.

He means here that the significance of distance to these resources varies. For example, the transport of water from river or water-hole to the settlement might be equivalent to 10 units of cost per kilometre. His corresponding figures for the other resources are: arable land 5 units/km, meadow and fuel 3 units/km, and for the less frequently required building materials only 1 unit/km.

This assessment of the importance of the different resources is based on a pronounced agricultural system, in which water supply is the most important location factor followed by the availability of arable land. Water was probably not the most important locational factor in Norrland, since the area is quite rich in springs, lakes, etc. In the immediate coastal area the high ground-water level also favoured the water supply. Chisholm (1965:58) has demonstrated that the distance factor is central to the utilization of arable land and to its net yields. A common phenomenon seems to be that the net return declines significantly if the arable land lies over 1 km from the settlement (Chisholm 1965:73). This relationship is very clear from the data he quotes for Finland and it should apply, too, in the case of Norrland.

Chisholm (1965:54f) has furthermore demonstrated that the inputs of labour and manure decline with increasing distance from the farmstead. The Finnish data also supports this and there is thus a close connection between the settlement and the most intensively used arable land.

Naturally the total resource utilization of a farm and the mutual importance of the different branches of its economy are together crucial for the location of the farmstead. Fishing settlements are located in direct connection with the sea, preferably in the outer archipelago where distances to fishing places are short. We know in broad terms what economic activity there was in Gene during the Early Iron Age (see Chapter 6) and already it can be premised that the main elements were agriculture, stock-raising and hunting/fishing. As the sea was an important source of resources it is also a significant location factor for

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**Table 3.9. Distribution of soil types within 500 and 1000 metres from the settlement, and above 20 and 15 m a.s.l.**

<table>
<thead>
<tr>
<th>WITHIN 500 METRES FROM SETTLEMENT</th>
<th>20 m.a.s.l.</th>
<th>15 m.a.s.l.</th>
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<tr>
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<td>ha (%)</td>
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<tr>
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<td>11 (13.9)</td>
<td>24 (30.4)</td>
</tr>
<tr>
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</tr>
<tr>
<td>water</td>
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<td>35 (44.3)</td>
</tr>
<tr>
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<td><strong>79 (100.0)</strong></td>
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</tbody>
</table>

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<th>15 m.a.s.l.</th>
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<td>ha (%)</td>
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<tr>
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<td>87 (27.7)</td>
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<td>138 (44.0)</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>314 (100.0)</strong></td>
<td><strong>314 (100.0)</strong></td>
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</table>
settlement and it is possible that this resource was at least as important as, for example, arable land. Similarly, a farm which carries on various forms of metal working must place a higher value on timber supplies for charcoal.

This digression illustrates that the local economy of a farm must generally form the starting-point for its location in the terrain. Hence, as far as Gene is concerned, Chisholm's location strategy is not of immediate interest in every respect.

Two circles have been drawn round the Gene settlement, with radii equivalent to 1 km and 0.5 km (Figs. 3:24—25, Tab. 3:9). The 15 m contour represents the coastline around the middle of the first millennium A.D. and, as the 20 m contour is only a little over the actual shoreline at the time of the settlement's foundation, it too has been included.

From the area within 500 m of the settlement and over 20 m above sea level, it is clear that the choice of settlement site is partly maritime and partly agrarian. Of the land surface within the area, 100% consists of sorted soils which gives a number of advantages for most of the activities (Fig. 3:24, Tab. 3:9). The total land area comprises 24 ha of which 11 ha consist of fine-grained (fine sand/silt) soils. In the initial stage of agriculture these types of soil are very easily worked.

The continuously changing and newly-formed beach zone is soon invaded by typical shore vegetation which mainly consist of plants with potential fodder or pasture value, including species of rush, sedge and, a little way from the beach notch, white alder, alder, birch and mountain ash, etc. (cf. Ericson 1972).

Then, as now, forest of Vaccinium vitis-ideae type
was probably dominant on the coarse-grained sediments (13 ha). In this beach zone rushes and sedges also occur, but to a lesser extent due to the coarser sediment and the steeper topography. In more recent times this area has been used for forest pasture, something that was fully possible during the Early Iron Age.

About 500 m N of the settlement there has probably been a small lake of c. 30 m x 30 m (Fig. 3:25) which is now completely drained (Eklund 1983). As far as we can see, here is the only clayey feature on Genesmon.

To the WSW of this marshy area and c. 500 m from the settlement there is another area of c. 1 ha (Fig. 3:25) which is rather low-lying and which has probably received water from the adjacent moraine ground. In the description of outlying property prior to laga skifte there are a number of reports of marshy and wet areas (e.g. E of the settlement), so that there has evidently been no problem in finding fresh water.

Looking at the soil distribution within the circle of 1 km radius above 20 m a.s.l. (Fig. 3:25), we see that morainic areas occur in the NW and E. The sea forms 55.1 % of the area and fine-grained sediments 11.1 %, i.e. 35 hectares. Of the latter, some 23 ha lie on the same side of the valley as the settlement. As shown by the 20 m contour in Figure 3:25, the bottom of the valley was that time filled with water.

Table 3:9 shows that the total area of fine-grained soils within 500 m of the settlement more than doubled during the c. 500 year period that is represented by the lowering of the shoreline from the present 20 m to 15 m contours. Thus around the 6th century, 30.4 % or 24 ha consisted of fine-grained soils which are also mainly found on the same side of the valley as the settlement (i.e. the western side).

The corresponding increase in the area of coarse-grained soils is less, rising from 13 to 20 ha and only occurring in the steeper area to the W and S of the settlement.

During this period no morainic land was exposed within 500 m of the settlement and only sorted soils occur.

What is not evident from Figure 3:25 is that in the valley a minor lake at the 15 m level was removed. That this does not show up depends on the inadequacy of the contours on the Economic Map which formed the basis of Figure 3:25 (on Figure 6:2, however, more precise contours have been employed so that, among other things, the creation of the lake is illustrated).

Angermanland is a well-established and very interesting botanical boundary where hundreds of species have their northern boundaries.

In Själevad parish there are over 500 pieces of higher flora (Mo 1969:6) and it is impossible to include a detailed account here. The beach flora, however, will be briefly touched upon. From the point of view of grazing and meadow land, the shores of the shallow sheltered bays are of interest. Grey alder and occasionally common alder dominate this plant community but various willows (Salix), bog myrtle (Myrica gale), grasses and sedges also occur and provide suitable grazing and fodder plants. Lowest down near the water level there are, for example, clumps of common spike rush (Eleocharis palustris). Further inland these herbaceous and broadleaf tree zones give way to spruce or sometimes pine forest of varying type (Guvä 1970:39).

Ericson (1972) has examined the broadleaf vegetation along the coast of Norrland and also takes up fodder production within this ecotype. His special study area is the archipelago of Holmön, off the southern coast of Västerbotten. On the marshy meadows (the wetlands) such plants as common spike rush (Eleocharis palustris) and various sedges (Carex) were utilized in association with the sea shore. On the dry meadows (on solid ground) conditions are most suitable for gramineous plants, which occur close to the grey alder and birch belt (mountain ash is also present). When this deciduous woodland vegetation is thinned out and low shrubs are kept down, gramineous plants are favoured.

With regard to the fodder collection of the early 1900s, broadleaf trees played an important role and the gathering of foliage affected all such species, among which mountain ash seems to have been particularly popular (Ericson 1972:248).

Concerning the livestock’s summer grazing, the forest grazing common in more recent times must certainly have been of the greatest importance during the Early Iron Age. As the available summer pasture was often inadequate the fäbod system (transhumance) was utilized, involving the movement of livestock (often over tens of kilometres) to particular forest areas where forest grazing could be utilized. This system is regarded as having been normal practice south of Västerbotten during the 16th century (Bylund 1956:334), but its origins are unknown. It is scarcely likely, however, that the fäbod system was part of resource utilization during the Early Iron Age.

Animal life is regarded as being more abundant in the coastland than in the interior. Furthermore, when the coastline is broken and the archipelago extensive a rich fauna is favoured, regarding both species and numbers.
Elk and to a certain extent roe deer predominate among the larger land animals. To these must be added lynx which occasionally seeks out the islands of the archipelago (Höga Kusten 1974:69). Occasionally beaver also occur down towards the coast, although their main area lies around the inland waters.

Among the small game are found blue hare, fox, badger, pine marten, stoat, weasel and squirrel.

Obviously the comparatively rich archipelago and inlets provide a guarantee that sea birds both breed and land there during migration. Breeding species include mallard, merganser, eider, razorbill, golden-eye, velvet scoter and tufted duck. In addition the coast is visited by such migrants as long-tailed duck, particularly during the break-up of ice in spring (Ekman 1910:186).

Seals and fish comprise the main marine resources. In prehistoric times the main types of seal were probably the ringed seal (*Phoca hispida botnica*) and perhaps the grey seal (*Halichoerus grypus*). Judging from the utilization of seals along the coast of Norrland during the Stone Age, the ringed seal was the main prey (Baudou 1977:44, Broadbent 1979:185). During recent times this has also been the most common species in the Baltic and the Sea of Bothnia (Almkvist et al. 1980:7).

The distribution and occurrence of the ringed seal is believed to be related to the appearance of the coast. The more complex the coast, the more secure are the conditions for reproduction (Broadbent 1979:185). Adult seals also tend to reside in complex sections of the coast and even in summer they tend to concentrate around channels, inlets and islands. The Swedish name for this species (*Vikaresäl*) is derived from the word *vik*, meaning an inlet or bay (Broadbent 1979:185f). Several place-names in the investigation area indicate the presence and perhaps importance of seals, i.e. *Sjöll* in the parish-name Själevad means 'seal' (cf. Bucht 1972).

Among the most important types of fish that occur may be mentioned such migrant fish as salmon, salmon trout, eel, bream, ide, lamprey, whitefish, and smelt, together with such shoal fish as the Baltic herring. In addition cod, a deep-sea fish, also appears in these waters and frequents the deeps outside Höga Kusten, which reach 300 metres. During spawning however the cod approach the shore (Ekman 1910:347).

This summary presentation of potential resources has aimed at illustrating the subsistence possibilities that have existed in the region. Naturally there may have been small variations in the natural occurrences of 1500–2000 years ago, but in general the historically known conditions should apply even for the Early Iron Age.

Practically all the above-mentioned resources have been exploited to a varying extent during historic and modern times (e.g. Ekman 1910 regarding the fauna and Frödin 1952 regarding the flora). On the other hand it is doubtful whether one can say that this resource utilization also applied to the period studied here.

As a summary of the resource potentials within 1 km of the settlement during the Roman Iron Age, it can be said that half of the area consisted of water surrounding the settlement on three sides, namely the west, south and east (Fig. 3:25). The narrow channel E of the settlement must have been favourable both for fishing and seal-hunting. Here, using fixed equipment or collective fishing, salmon for example can be caught on their way up the river Moälven.

Some 23 ha of soils, suitable for agriculture and meadowland, are found along the level western slope of the valley and a further c. 12 ha lie on the other side of the channel. The greater part of the 106 ha of morainic and coarse-grained soils can be used for forest-grazing land. There was at least one minor fresh-water pool adjacent to the settlement.

Of course not all of the resources needed on the farm were collected from within a radius of 1 km, particularly in the cases of hunting, fishing and forest grazing. Continuous hunting within such a limited area would quickly empty it of game. Fish have comparatively low transport costs and the catch can well outweigh the costs of labour and transport.
4. THE SETTLEMENT ON GENESMON

4.1. METHODS

To date, an area of approximately 5000 m² has been cleared at Genesmon (Fig. 4:1). As the excavation has progressed, so the methods employed have been successively altered. Since only a couple of the objects were visible on the surface, it was clear from the start that the use of different sorts of search and test trenches would be necessary. However, at an early stage it became clear that metre-wide trenches would be too narrow to provide an adequate picture of the existing features.

Two different coordinate-systems have been used. The first comprises area B (i.e. Houses I, II and VIII) while the rest of the investigation area, including the phosphate mappings, is based upon another system. Both of the coordinate-systems are oriented with the X-axis in N—S and the Y-axis in E—W. The systems are not quite congruent (cf. Fig. 4:2).

The initial test trenches were dug in artificial layers using trowels, but we began spading and sieving. From the 1978 season, we went over to following completely the natural earth layers, which means that the A- and B-horizons were removed and that the upper part of the C-horizon was exposed. The reasons for doing this were two: firstly, there were no indications of more than one cultural layer; secondly, the floor surfaces were not distinguishable other than sporadically by a pale red layer immediately under the podzol. In addition, much time was gained by spading and sieving. Where clear layers could be seen, these were naturally followed, as in the case of House VI (Sect. 4.2.5.). The exposed surface is called "clearing level" (RN).

When features or indications of constructions were discovered, the searching trenches were widened, thus providing us with the starting-point of our further study. Parts of Houses I and II were discovered as early as in the first metre-wide searching trench in 1977.

The documentation is based on the coordinate systems, and plans were drawn up covering each 5-metre square. Vertical tower photography took place generally prior to profile digging, and photographs were taken in most cases covering one 5-metre square at a time.

Plans and tower photography operated as two separate and distinct modes of documentation, differing from a qualitative point of view, the photograph constituting an instantaneous picture, in most cases a very good one, but sometimes rather difficult to interpret. On the other hand, the plan is drawn up from observations, made over a period of days, and in individual cases over a period covering several seasons. This can be crucial to the very documentation of some features. It is a well-known fact that the visibility of features is affected for the better or for the worse by the light and the level of dampness (cf. Baudou 1973:13), and such features left freely exposed over a winter, have been more visible the following season. Sunny and dry periods, such as occurred in 1979 and in 1982, are very disadvantageous. Such conditions are especially difficult in investigations where the ground is morainic and where the excavation takes place over a severely limited period of time, as is the case for the majority of archaeological excavations in Sweden.

In Gene, difficulties with documentation are, however, not crucial; they are mild in comparison with the difficulties caused by morainic ground, for example. The ground conditions in Gene are almost perfect, and we are therefore able to observe clearly the results of changes in conditions of light and dampness.

Of the 1000 features hitherto made at Genesmon (Fig. 4:2), in many cases, half the feature has been saved for "future use". Standing profiles of Houses I and II were technically inappropriate for saving.

In principle, every feature is excavated in profile, which, as regards the post-holes, is made to run at a right angle to the house's length. Larger features, such as wall trenches and the like, often require a different procedure. At right angles across the longer wall trenches, between one and two metres apart, several 0.3 to 0.5 metre wide profile trenches were dug. Having documented the walls and the bottom of the wall trenches, the intermediate areas were excavated in layers. Thus, the existing post-holes and pits in the wall trenches were exposed, these then being treated as separate features.

To this are added Houses III and IV and the pit T1, which, apart from the hearth pits, were the only
Fig. 4.1. Map of excavated areas on the central part of Genesmon. Area A = Houses IV, VII and IX, area B = Houses I, II and VIII, area G = House VI, area J = area with several features and finds.
structures visible before excavation. These were levelled prior to the study in half-metre and one metre intervals. This mapping then formed the basis of the contour curves that were established, and which constitute a documentation of features prior to excavation.

The finds have been treated in different ways. Burnt clay, slag and bone have been collected in metre squares; in some cases these have been positioned more exactly, in which cases they have been allocated a find number. All other finds have, where possible, been registered and documented with precision down to the nearest centimetre. Where layer excavation has been the case (Houses VII, VI and pit T1) all categories of find have been ascribed to their respective layer (clearing level) and otherwise treated in the manner described above.

Since 1978, we have conducted continuous floatations of the contents of post-holes, hearths and other features. This sampling was designed primarily in order to extract macro-fossilised material. On average, a bucket containing 10 litres of earth from each feature has been water-floated in the field using a 0.25 mm sift. These macro-fossil samples have then been analysed by Roger Engelmark, palaeoecologist at the Department of Archaeology, Umeå University.
4.2. THE HOUSE FOUNDATIONS

The following sections contain a survey, at times rather detailed, concerning the construction of house foundations and features. Attempts have been made, as far as possible, to generalise, and the supporting constructions of the foundations have been classified into a number of types, based on their assumed function.

The types of constructions are broad in definition, and those that will be covered in the following sections are:

- Inner roof-supporting posts. Covers paired posts (trestles) situated closest to the mid-axis of the house. The index value (house width—H_{br} divided by distance between the posts in a trestle—B_{br}) being around 4.0 (for details concerning index see Sect. 5.1.1., Fig. 5:1).
- Outer roof-supporting posts. Usually paired posts, placed close to a line between the mid-axis of the house and respective long wall. Index value around 2.0.
- Mid-posts. Roof-supporting posts, single or in a row, situated along mid-axis of the house.
- Posts along wall line. Placed in a dug trench, or sunk separately. Occur in rows.
- Posts along wall line. Inserted in sill beam which can be placed on a stone foundation, directly on the floor level or sunk in a trench.
- Portal posts. Posts in pairs, set in around 1 metre from wall line. Can be compared with wall posts.

In addition to these types, where the function has been designated, there are also posts where the function is uncertain. Examples of these are the recurring posts in the gable end of the long-houses—paired and situated about a metre inside the corner of the house. These are neither parallel with the direction of the gable end, nor with the closest pair of inner roof-supporting posts. Other posts of uncertain function are here only treated parenthetically.

Hearths and other pits (not post-holes) have not been categorised in this manner, since too few have as yet been studied, and since their functions are not self-evident to the same extent.

In this chapter, there is also a discussion of some of the find material that was encountered in connection with the excavation of the foundations.

4.2.1. HOUSE I

4.2.1.1. The lay-out

Parts of this foundation were unearthed during the first campaign. Because of the existence of burnt clay and a high phosphate content, one of the test trenches

![Fig. 4.3. Features within House I. Black indicates subsurface features; post-holes and wall trenches. Arrows and E-numbers mark entrances. Nos. 1–10 = Post-groups. Other figures = A-numbers of features mentioned in text.]
The position of roof-supporting posts in House I, cf. Figure 4:3. Left column shows the post group No. and the second column shows the distance between the post groups. \( H_{br} \) = house width at post group. \( B_{br1} \) = distance between the outer roof-supporting posts in post group. \( B_{br2} \) = distance between the inner roof-supporting posts in post group. The measurements are taken from the mid-point of each feature. \( \bar{M} \) = mean value.

<table>
<thead>
<tr>
<th>south gable</th>
<th>distance between trestles</th>
<th>( H_{br} )</th>
<th>( B_{br1} )</th>
<th>( B_{br2} )</th>
<th>( H_{br}/B_{br1} )</th>
<th>( H_{br}/B_{br2} )</th>
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<td>—</td>
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<td>—</td>
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<td>2.4</td>
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<tr>
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<td>9.1</td>
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<td>—</td>
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<td>—</td>
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<td>—</td>
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<td>—</td>
<td>4.4</td>
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<td>north gable</td>
<td>39.0</td>
<td>( \bar{M} = 8.5 )</td>
<td>( M = 4.3^* )</td>
<td>( M = 2.1 )</td>
<td>( \bar{M} = 2.1^* )</td>
<td>( \bar{M} = 4.0 )</td>
</tr>
</tbody>
</table>

*Post groups 1 and 10 not in the calculation.

was placed directly over the centre of the foundation. During the 1981 campaign, the whole foundation was uncovered.

The foundation has no clear N limit, but by analogy with the appearance of the S gable end, the house has been 39 metres long. It was widest in the middle, 9.1 metres, measured from the middle of the wall. The house narrows towards each end, the gable width measuring 7.7 metres (Fig. 4:3).

Within the foundation area, approximately 150 post-holes and other features have been documented. Of these, 16 have been able to be ascribed to a system of paired posts (trestles) running through the house. The two posts forming the trestle are placed on either side of the house’s centre line. This means that the structure of the house becomes divided into three aisles: a narrow mid-aisle flanked by two wider side-aisles. Table 4:1, column \( B_{br2} \) refers to the width of the mid-aisles.

Outside these trestles, there are further fairly regularly placed outer roof-supporting posts in the central part of the house. This means that we can refer within this part of the foundation to a five-aisled structure. These outer posts are thus set farther apart than those mentioned previously, which is reflected in column \( B_{br1} \) (Tab. 4:1).

In the southern and central parts of the foundation, there are also two mid-posts. These are located close to a trestle, but shifted along the length of the house in relation to the trestles. The central mid-post is the only post-hole which is lined with stones (Fig. 4:6).

Traces of the walls are found preserved everywhere except in the northern c. 20 % of the foundation. The western and eastern walls have somewhat different appearances. Only the south-east and north-east areas of the wall sections are quite untouched either by later buildings or other activities.
Fig. 4.4. The diameters and depths of post-holes in House I. Innermost post = the pairwise placed posts closest to the mid-axis of the house. Outermost post = the posts placed outside of the above. Wall post = posts in wall line. Gable = the widely-spaced posts inside the gable ends, i.e. post groups 1 and 10 according to Fig. 4.3. Mid-post = the two mid-posts in the southern half of the house. Portal post = posts marking entrance.

Fig. 4.5. Profile of three inner roof-supporting posts in House I. A109 from southern part, A16 from central part and A125 from northern part of the foundation. Observe the different appearance of the carbonized posts.
4.2.1.2. The roof-supporting elements

A. The inner roof-supporting posts

These posts are throughout the strongest of the entire construction (Fig. 4:4). The different dimensions of the various posts are summarized in Table 4:2.

It is clear from the table that the pits in which the posts were placed have an average diameter of 0.8 m, while the average diameter of the identified posts is 0.3 m. The reliable measurements vary from 0.25 m to 0.40 m diameter. The posts are always round, in cases where it has been possible to establish the form. There are no examples of trimmed or shaped timber in this type of post.

All of the inner roof-supporting posts were wrapped with birch-bark, which in many cases was discovered in its original position under and around the outer edge of the lower part of the post. By this wrapping the part of the post to be buried could be protected against rot and rapid decay.

From Table 4:2, it is also apparent that the posts were considerably better preserved in the northern part of the house. From post-group No. 6 and northwards (Fig. 4:3), remains of the lower parts of the posts were preserved in almost all cases. It was also possible to establish that the posts had a more or less flat bottom part. In other cases, the carbonized or sooty part of the post-hole ended in a horizontal border—which points to the same phenomenon.

The posts in the central part of the house were more difficult to interpret as regards the diameter of individual posts. The post-holes in the central—and to some extent also the southern—parts of the house contained burnt clay of the same type that was found spread over the central part of the foundation (Fig. 4:15) and it has occurred where the posts have subsequently shifted. This is apparent from its position in the post-hole, and from the amount that has sometimes been discovered. For example, in midpost A5, c. 8.5 kg of burnt clay was found, while the surrounding squares contained on average approximately 2 kg. Burnt clay and other material has obviously been deliberately swept into the post-hole after the remains of the post have been removed.

Such removal has occurred in the majority of cases in the central part of the house, while in the southern and northern parts this is not the case. The exception to this is where actual parts of the posts are to be found—in some cases also in the central part of the foundation (Fig. 4:5).

B. The outer roof-supporting posts

These are found only in the central part of the foundation. They occur, with one exception (group 5a, Fig. 4:3), together with the inner roof-supporting posts. They are located outside trestles 3, 4, 5, and 6 (Fig. 4:3). The two free-standing posts, group 5a, are situated in line with the N of the posts, marking the entrance E3 in the eastern long wall. It may be

Table 4:2. Details of the inner roof-supporting posts in House I. In the left-hand column, the post group to which the individual posts belong is indicated, followed by the name of the individual post. The depth and diameter of each post pit is then given together with, wherever possible, the diameter of the post itself.

<table>
<thead>
<tr>
<th>POST-GROUP</th>
<th>FEATURE</th>
<th>PIT Ø</th>
<th>PIT DEPTH</th>
<th>POST Ø</th>
<th>PIT Ø/POST Ø</th>
</tr>
</thead>
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<tr>
<td>2</td>
<td>A 109</td>
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<td>0.55</td>
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<td>3.8?</td>
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<td></td>
<td>A 106</td>
<td>0.78</td>
<td>0.76</td>
<td>?</td>
<td>~</td>
</tr>
<tr>
<td></td>
<td>A 24</td>
<td>0.90</td>
<td>0.50</td>
<td>0.40?</td>
<td>2.3?</td>
</tr>
<tr>
<td></td>
<td>A 21</td>
<td>1.00</td>
<td>0.80</td>
<td>0.30?</td>
<td>3.3?</td>
</tr>
<tr>
<td></td>
<td>A 16</td>
<td>0.82</td>
<td>0.53</td>
<td>?</td>
<td>~</td>
</tr>
<tr>
<td>4</td>
<td>A17a*</td>
<td>0.80</td>
<td>0.70</td>
<td>0.30</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>A17b*</td>
<td>0.80</td>
<td>0.22</td>
<td>?</td>
<td>~</td>
</tr>
<tr>
<td>5</td>
<td>S 4</td>
<td>0.55</td>
<td>0.50</td>
<td>0.20?</td>
<td>2.8?</td>
</tr>
<tr>
<td></td>
<td>S 3</td>
<td>0.50</td>
<td>0.55</td>
<td>0.20?</td>
<td>2.5?</td>
</tr>
<tr>
<td>6</td>
<td>A 46</td>
<td>0.60</td>
<td>0.58</td>
<td>0.30</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>A 50</td>
<td>0.70</td>
<td>0.70</td>
<td>0.40</td>
<td>1.8</td>
</tr>
<tr>
<td>7</td>
<td>A 122</td>
<td>0.70</td>
<td>0.64</td>
<td>0.25</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>A 136</td>
<td>0.87</td>
<td>0.65</td>
<td>0.40</td>
<td>2.2</td>
</tr>
<tr>
<td>8</td>
<td>A 125</td>
<td>0.92</td>
<td>0.55</td>
<td>0.30</td>
<td>3.1</td>
</tr>
<tr>
<td></td>
<td>A 127</td>
<td>0.78</td>
<td>0.55</td>
<td>0.35</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td>A 139</td>
<td>0.99</td>
<td>0.55</td>
<td>0.30</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>A 146</td>
<td>0.75</td>
<td>0.60</td>
<td>0.30?</td>
<td>2.5?</td>
</tr>
</tbody>
</table>

M = 0.80

*In the same post-hole.
Table 4.3. The outer roof-supporting posts in House I. For details cf. Table 4.2.

OUTER ROOF-SUPPORTING POSTS

<table>
<thead>
<tr>
<th>POST-GROUP</th>
<th>FEATURE</th>
<th>PIT Ø</th>
<th>PIT DEPTH</th>
<th>POST Ø</th>
<th>PIT Ø/POST Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>A 61</td>
<td>0.45</td>
<td>0.11</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>A 23b</td>
<td>0.44</td>
<td>0.10</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>A 23a</td>
<td>0.38</td>
<td>0.23</td>
<td>0.25?</td>
<td>1.9?</td>
</tr>
<tr>
<td></td>
<td>A 15</td>
<td>0.40</td>
<td>0.24</td>
<td>0.20?</td>
<td>2.0?</td>
</tr>
<tr>
<td>4</td>
<td>A 18a*</td>
<td>0.36</td>
<td>0.40</td>
<td>0.20?</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>A 18b*</td>
<td>0.36</td>
<td>0.40</td>
<td>0.19</td>
<td>2.9</td>
</tr>
<tr>
<td></td>
<td>S 6</td>
<td>0.35</td>
<td>0.24</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>S 5</td>
<td>0.32</td>
<td>0.27</td>
<td>0.15?</td>
<td>2.1?</td>
</tr>
<tr>
<td></td>
<td>S 1</td>
<td>0.45</td>
<td>0.30</td>
<td>0.20</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>A 1c</td>
<td>0.35</td>
<td>0.08</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>S 2</td>
<td>0.30</td>
<td>0.15</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>5a</td>
<td>S 7</td>
<td>0.34</td>
<td>0.22</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>A 48</td>
<td>not investigated</td>
<td>0.40</td>
<td>0.23</td>
<td>0.20?</td>
</tr>
<tr>
<td>6</td>
<td>A 47</td>
<td>0.22</td>
<td>0.16</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>A 39</td>
<td>0.30</td>
<td>0.12</td>
<td>?</td>
<td>-</td>
</tr>
</tbody>
</table>

\[ \text{M} = 0.40 \quad 0.23 \quad 0.20? \quad 2.3 \]

\*In the same post-hole.

noted that the posts in group 3 are also placed in line with the N post of the south-eastern entrance.

These post-holes are of considerably smaller dimensions than those covered thusfar (Fig. 4.4, Tab. 4.3). The diameter of the posts is about 0.2 m, although the exact diameter has generally been impossible to establish. The posts were sunk in pits measuring on average 0.4 m in width and 0.23 m in depth. Birch-bark was discovered in a few of these post-holes, thus showing that also these posts were lined in their lower parts.

Trimmed or shaped timber has not been found. In almost all of the post-holes burnt clay was discovered of the type mentioned above. This would indicate that the majority of these posts have undergone the same fate as that of the inner posts, i.e. drawn up after the fire.

The location of this type of post is closely connected with that of the inner posts. This may be for reasons of construction, or have to do with the division of rooms. One fact worthy of note is that the outer western posts in groups 3 and 4 are situated slightly farther out from the inner posts than is the case on the eastern side. This may indicate that the position of these posts were determined by the lateral roof beams; that is, these were placed under the lateral roof beams and bore these up directly.

C. Mid-posts

Along the central axis of the house foundation, there are two definite post-holes. The first is located just north of post-group 2, and the other just south of group 5 (Fig. 4.3). It is possible that an additional mid-post existed north of group 8—and among the as yet unexamined features.

A characteristic of both mid-posts is the lateral displacement in relation to the nearest group of posts. The southern mid-post is displaced 0.7 m from the nearest post group; the central one is displaced by 1.1 m (Tab. 4.1). The latter mid-post is also the only post in the entire foundation which has been lined with stones (Fig. 4.5).

In Figure 4.4, the dimensions of the mid-posts are given. The southern mid-post is the more flimsy of the two. Obviously, the stone-lined mid-post, situated in the central part of the foundation, supported a considerable weight for its dimensions and for its anchoring in the ground. Like the southern mid-post, it must have formed a direct support, at the same time indicating the position of the ridge beam.

Fig. 4.6. Profile of mid-post A5 in House I. One of the few stone-lined post-holes at Genesmon.
D. Posts and trenches in wall line

As mentioned above, there are no traces of the wall in the northern fifth of the foundation. The eastern long wall's central part is in addition disturbed by the wall belonging to House VIII (Sect. 4.2.7.). Similarly, the majority of the central part of the western wall is disturbed by the trench belonging to House II (Sect. 4.2.2.). In addition to this, the forest road passes directly over the otherwise undisturbed south-western corner of House I. However, these conditions have not constituted an undue hinder to interpretation. The untouched parts of the walls are thus the northern and the southern parts of the eastern long wall, and the southern gable end. Untouched is perhaps a description that requires amendment, since traces of plough or ard furrows have been discovered over parts of the wall (e.g. Fig. 4:3). These have, however, not affected the remains either in form or in character.

The eastern long wall consists of three larger sections—A37a, A37c, and A37d, counted from the north (Figs. 4:7–8). The middle of these sections has been disturbed by the western outer wall of House VIII (Fig. 4:8). A cross-section of the three trenches shows that the part belonging to House I has an evenly rounded bottom (Fig. 4:9a–c). In Figure 4:9b, it may also be seen that what we have here is adjacent and partially crossing trenches of distinctly different appearance.

The profile in Figure 4:9c, which was placed over one of the four soot marks seen on top of the trench (Fig. 4:7), showed that the soot marks neither ran into nor under the trench. This fact, together with the shape of the trench, can be interpreted as showing the remains of a sunken sill-beam in which weaker posts were anchored.

In the case of the central part of wall A37c, the trench has a couple of important details. The southern termination is straight and right-angled, but about one metre above the edge on the western side there is a "cut" at right-angles; there is another such "cut" approximately 0.5 m to the north (Fig. 4:8). About 1.5 m down from the northern edge of A37c, there is on the eastern side an exactly equivalent "cut" at right-angles; in this case, only one such "cut" has been discovered (Fig. 4:75). These "cuts" show that the west trench, belonging to House VIII, has not been laid out exactly parallel to the trench of House I. The direction of the trench of House VIII is thus inclined some degrees to the east in relation to the trench of House I. Trench A37c is also somewhat stronger in colouration than the two previously mentioned, and deviated from these in form. This may simply be explained by the fact that two different stages of construction took place probably involving the integration of two different types of wall.

It is thus possible to establish that no sunken posts existed along the eastern long wall. A reasonable interpretation at
this stage is that the wall consisted of a sunken sill-beam in which posts were anchored, presumably at intervals of 0.8–1.5 m. The distances between three of the soot marks in A37a were 0.8 m, while the distance to the fourth was 1.5 m.

In the western long wall, the situation is even more complicated. The relatively undisturbed southern part forms the end of the long wall, leading into the gable end with a slight rounding-off. In the corner itself, a trench-shaped appearance may be observed, which is different from the eastern long wall in that the form is repeatedly wavy. These showed to be post-holes that appeared at rather regular intervals (Fig. 4:10). From the gable end up to the SW entrance, six post-holes were identified at a distance from each other of an average of 0.7 m. Outside this curved row, there were a further four post-holes which ran parallel to the curve (cf. House II, Sect. 4.2.2.2.).

Just in front of the south-western entrance (E2), there were no post-holes, but to the north of this point, there occurred again an irregularly coloured trench shape. Since this is situated right in front of the SE entrance to House II, it may be ascribable to House I. At an early stage of the excavation, three evenly rounded features were discovered in this trench (Fig. 4:11).

North of this follows the E trench of House II (A8). It is
Fig. 4:10. Map of features in 5-metre square X380 Y435 in Houses I and II. Features with G-numbers. Cf. Fig. 4:2.

Fig. 4:11. Map of features in 5-metre square X385 Y435 in Houses I and II. Mostly features with G-numbers. Cf. Fig. 4:2.

Fig. 4:12. Tower photography and interpretation of the somewhat extended 5-metre square X405 Y435 in House II. Mostly features with G-numbers. Cf. Fig. 4:2.
over 20 m long and is in form, size and character repeated precisely on the western side of House II (e.g. Fig. 4:20). Both of these trenches break off level with X-coordinate 390, and both have distinct endings. The ends mark the southern opposed entrances (E1 and E2) to House II.

As early as during the first excavation cut into trench A8, circular post-holes became evident. These were placed at an average interval of 0.8 m, continuing until X-coordinate 399, where irregular shallow pits in the trenches began. In some of these post-holes, burnt clay was encountered. The southern post-holes are situated exactly side by side to the wall posts in House II; the post-holes farther to the north are displaced by approximately 0.4 m in relation to the wall post in House II. In this section—namely 13, between X-coordinates 390 and 399—there is however the same number of post-holes in each row.

At about X-coordinate 402, i.e. about 3 m north of the last post-hole in the trench, a weakly coloured trench was finally observed in the tower photographs situated between the eastern row of posts in House II and the eastern trench (Fig. 4:12). The trench has thus never been noticed in the field (this may be blamed on the psychological fact that in obscure cases, investigators see that which they expect to see). To judge from the tower photograph, the trench has the same appearance as the eastern long wall of House I. It is tempting to interpret this "stump" as the only remaining part of the northern part of the western long wall. However, its direction does not fit too well with House I (cf. Fig. 4:2). In any case there is a shift in wall construction on somewhere around X-coordinate 400, i.e. opposite the central entrance in the eastern long wall.

The dimension of the post-holes marking the western wall almost equate to the outer roof-supporting posts—to judge from the pit-sizes (Fig. 4:4). However, no remains of the posts themselves have been found. As to the decision as to which house the row of posts in trench A8 belongs, this is a matter of interpretation. I shall present three reasons—in order of importance—for my ascribing them to House I. (1) As will be made clear in Section 4.2.2.2., the western trench G100, belonging to House II, has no equivalent row of posts—rather, the trench bottom resembles that of trench A8, to the north of the row of post-holes. (2) The SW section of House I consists de facto of sunken posts placed at about the same intervals and post pit diameter as the posts in the trench. The row also forms a logical break for the entrance in the south-western face of the house. (3) On close investigation, the trenches revealed in some cases a difference in colouration between the sooty brown nuance of the trench, and the less sooty, reddish brown nuance of the post-holes.

In the northern part of the foundation, from about X-coordinate 411, there is on both sides no trace of the wall.

### E. Portal posts

House I possesses four certain entrances, E1–4, and one uncertain entrance, E5 (Fig. 4:3). The entrances are distinguished by one or both of the following:

- a) a break in the trench or row of wall posts,
- b) a pair of posts recessed from the wall line and parallel to it.

The four certain entrances are characterized by a pair of posts recessed from the wall line (Tab. 4:4). In three cases, they occur together with a break in the wall trench or row of wall posts.

<table>
<thead>
<tr>
<th>entrance</th>
<th>recession</th>
<th>width</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>1.10</td>
<td>1.40</td>
</tr>
<tr>
<td>E2</td>
<td>0.90</td>
<td>1.30</td>
</tr>
<tr>
<td>E3</td>
<td>1.35</td>
<td>1.40</td>
</tr>
<tr>
<td>E4</td>
<td>c. 0.90</td>
<td>1.25</td>
</tr>
<tr>
<td>E5 ?</td>
<td>?</td>
<td>1.10</td>
</tr>
</tbody>
</table>

\[ \bar{M} = 1.06 \]

\[ \bar{M} = 1.29 \]

Table 4:4. The width of entrances in House I and their relationship to the wall line. The recession of portal posts of E4 is uncertain because the wall line is reconstructed in this section.

[Fig. 4:13. Portal posts in entrance E1 in House I, (a) the northern, (b) the southern. Cf. Fig. 4:8.]
Not all of the portal posts are fully investigated. E1 and E3 have been fully studied, while only one of the post-holes in E2 and neither of those in E4 have yet been studied.

The best result was obtained from the study of E1, which turned out to consist of heavy hewn planks sunk in circular pits (Fig. 4:13). This is also clear from the tower photographs (Fig. 4:8). The planks had cross-sectional measurements of 0.40 x 0.10 and 0.32 x 0.10 m respectively. Both were lined with birch bark and the planks were situated parallel to the wall.

The southern post-hole (A25) is angled 22° to the east, while the northern post-hole (A60) is completely vertical. This angling must have occurred at the time of the collapse of the house, since it does not fit into any reasonable construction. It is also clear that the portal posts formed part of the supporting construction in the same way as the wall posts.

Regarding entrance E3 in the midsection of the house, no remains of the posts themselves were found. On the other hand, the location of the posts in relation to the adjacent hearths (Fig. 4:2) provided the knowledge that these two—the posts and the hearths—could not be contemporary. Since the posts form an integral part of the construction of the house, we may draw the conclusion that the hearths are more recent than House I.

F. Undetermined posts

To this group of posts belong such post-holes as cannot be integrated into the pattern given above, or such that demonstrate a clear pattern but where the function is nevertheless uncertain. The posts refered to in Figure 4:8 as gable posts, and which occur both in Houses I, II and VI, fall into this latter category. In Table 4:1 and in Figure 4:3, post groups 1 and 10 represent the gable posts. The gable posts may be characterized by their location just inside the corners of the house. In the southern gable end, where it is possible to take measurements, the eastern post is situated about 0.5 m north of the short wall, and about 1.3 m west of the long wall. The equivalent measurements for the western post are 1.0 m and 1.4 m respectively. From these measurements it can be seen that the posts are not parallel to the gable end.

It has not been possible to establish the exact dimensions of these posts. But from the size of the pit (Fig. 4:4a), one can state that the posts are less sturdy than the inner posts, but more sturdy than the outer roof-supporting posts.

4.2.1.3. Hearths

Altogether 14 hearths have been observed in and around House I (Fig. 4:3). However, it is apparent that these are not all contemporaneous with the building. From the location in relation to walls and posts, hearth A1, A2a and A3a can be relegated to a later stage. In the case of A1, this fact has also been confirmed by radiocarbon dating (Tab. 7:1).

In other cases, there are great difficulties in establishing which hearths actually belong to the different stages of the settlement. The most important clues in this context come from their position in relation to the foundation and its construction details.

The following may be regarded as belonging to House I:

- **A10:** a long hearth situated along the mid-axis of the building, exactly between post-groups 4 and 5 (Fig. 4:3).
- **A11:** smaller, circular hearth situated close to and thought to constitute a functional unit with A10.
- **A49a and b:** two small, circular hearths of similar type, but in which the one to the north, A49b, is situated over that to the south. These hearths are situated along the mid-axis of the house, somewhat to the south of post-group 6.
- **A121:** circular hearth in the W side-aisle SW of post-group 7. Part of a greater rectangular feature.
- **A123:** small, circular hearth, situated along the mid-axis close to post-group 7.

A further two hearths may be found on the mid-axis of the building, but these are more difficult to evaluate. The first of these is A143, which is situated in the north gable end and would have been excluded if the building had a gable wall, which, however, is the subject of some discussion (Chap. 5). The other such hearth is A46, which is made up of a double hearth, as in the case of A49a and b. Conditions here are, however, not as clear, since a further feature, A4b, is situated on the corner of the northern side of the hearth (Fig. 4:14). This means that we have here three distinct features which were originally made up of one hearth, A4a1, which was then superimposed by A4a2, which was in turn superimposed by a feature of a completely different type. A4b. All three features can theoretically belong to the building.

Hearth A6 and A7, situated close to the western wall, do not form an obvious part of the building because of their location. The fact that at least A7 probably does belong to the building has been established by radiocarbon dating, where the results were 180±85 A.D. (Tab. 7:1). These two hearths may complement each other functionally—hearths have often been seen to occur in pairs. By this reasoning, we should come up with a figure of altogether eight hearths within the area of the foundation, all of which need not necessarily have been used together. Some of these will be discussed further in the following.

The long hearth A10 differs from the others in its shape and construction. It was covered in a 0.01–0.15 metre thick layer of lightly burnt clay, which clearly differed from other samples of burnt clay found in the area of the foundation. The clay was found primarily in the northern part of the feature, the southern part being covered by a very thin layer of fine sandy soil, common to the area. The feature is 3.3 metres long and about 1.0 metre wide. On digging slightly deeper, the southern part of the feature took on another shape, and beneath the thin red layer, two large and one small hearth were revealed, together with a small depression (post-hole?).

The hearths had a more or less bowl-shaped carbon layer at the bottom, over which there was a lightly sooty filling. The two larger hearths contained fire-cracked stones, while the northern part contained no such stones. The reversed spread showed the burnt clay that mostly occurred in the far northern part of the feature, where there was about 1.5 kg. Scattered calcined bones could be found both in the northern and southern part of the feature.

Long hearth is thus a somewhat inadequate description, since the feature is in fact made up of four separate but functionally connected features. Listing from the north:
in relation to the triangular patch that was visible. The feature is altogether 0.53 m deep, and a line drawn between the central point of the feature and its central point at the bottom, there is an angle of 25° from vertical.

The feature contained approximately 3 kg of burnt clay of the type found in the foundation as a whole. The size of the clay pieces increased the deeper in the feature they were found. Several fragments of birch-bark were also found scat-
tered in the feature. Because of the lack of evidence of traces of carbonized wood, among other things, the distribution of the burnt clay and the appearance of the pit leads to the interpretation of the feature as having been an open pit at the time of the fire, in which debris from the construction of the house fell. The described distribution of burnt clay is found in no other feature within the foundation area. The pit may thus have been used as a storage pit or the like.

Feature A4b consists of an almost rectangular dark feature with burnt edges, the feature being about 1.1 m x 0.8 m and about 0.3 m deep at most. As may be seen in Figure 4:14, this feature cuts across the edge of hearth A4c2.

Pit A4b contained a mixture of a reddish-brown, sooty, carbon nature. No fired stones were found, but there was burnt clay of the type mentioned above, together with burnt bone in quantities unusual for this excavation (150 g). The interpretation of this feature is uncertain, but the relatively large quantity of bone leads us to the denotation waste pit.

4.2.1.5. Finds in and around House I

The find material is dominated by burnt clay (Fig. 4:15). Altogether approximately 200 kg of burnt clay was found in the House I, II, and VIII area (i.e. area B). The clay is generally severely or very severely burnt and about 15% of the clay being sintered. There are many pieces with imprints

Fig. 4:15. Distribution of burnt clay on area B. Shown in grammes/m².
Fig. 4.16. Examples of burnt clay on area B. (a) daub with triangular cross-section, (b) finger-imprints on daub, (c) textile impression on daub, twill weave, (d) fragment of mould for pin with profiled head, (e) schematic positive of mould F672 and an impression of ornamented ring or rod, F670. Drawing: P.H. Ramqvist.
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Other types of imprint and combinations of imprint—from planks and timber and, in some cases, also from textiles (Fig. 4:16a—e). The daub material is discussed in Section 5.1.5.4.

Generally, the clay emanates from House I and, as is apparent from Fig. 4:115, the centre of distribution is set at a central point in the foundation: around hearths A10 and A4d. The distribution is markedly limited on the north—south axle. In the northern area, roughly in a line with entrance E1 and post group 3, the individual features are most rich in burnt clay, e.g. A5 has 8.5 kg, S3 has 5.3 kg, A28 has 3.0 kg, and S4 has 2.0 kg.

The distribution of burnt clay in the foundation area thus provides a good picture of the original distribution, and the later ploughing activity that has been noted cannot have affected the distribution to any great extent.

Some clay fragments require further comment. These are a mould fragment (F672, Fig. 4:16d—e) and two fragments with imprints of an ornamented ring or rod (F670—671, Fig. 4:16e). The mould fragment was found directly over the eastern trench belonging to House II (Fig. 4:17). The mould was for a pin of a type which falls under Nerman's group 2: pin with profiled head dating from period VI: 1, i.e. Early Migration Period (Nerman 1935:6 and Taf. 10, Fig. 82). Morphologically, the pin equates to top- and arm-buttons on some of the Migration Period cruciform brooches (cf. Schetelig 1912: Fig. 273, 290; Selinge 1977:227, Fig. 50) and also to some extent one of the silver buttons illustrated by Schetelig (1912:57, Fig. 133) as dating from the Late Roman Iron Age. This type of pin was also produced on Helgö, together with a number of other dress-pin types (Lamm 1969:139, Fig. 50; Waller 1972). As mentioned in Section 2.2.1. the almost forgotten Högom material (see Selling 1952:354ff, Janson & Selling 1955) shows finds of both crucible and mould fragments. Among the mould fragments is one for just such a pin at issue here (Fig. 2.6).

The mould fragment F672 (Fig. 4:16d) differs from those found in House IV (Sect. 4.2.4.3.) not only in type and location (it was found 11 metres from the closest similar find, and 20 metres from the closest concentration), but also in character. The fragment is more severely burnt than others and has a somewhat sooty exterior.

Regarding the two fragments with imprints, F670—671, these have probably come about by chance and ended up in post-hole S3 in House I, where there was a considerable amount of burnt clay—5.3 kg. The rest of the clay in the post-hole was of the same character as those bearing the imprints, and was also the same as the rest of the clay found in House I. The imprints are identical in both cases—the rod(s) or ring(s) have been about 5 mm thick. About every fourth mm, there is a thickening of about 1 mm in width, and between these there are three or four smaller ridges (Fig. 4:16e). This regular pattern is one that can be seen in other objects from the Migration Period, for example the famous gold collars, to take an exclusive example (e.g. Holmqvist 1977:46ff, Figs. 50—54). But also other types of rings have this pattern (see e.g. Nerman 1935:Taf. 42, Fig. 411). This type of ornamental pattern also occurs during period IV: 1 (Almgren 1914:Taf. 10, Fig. 167).

The circumstances of these finds (that they were found in the post-hole) would lead to the conclusion that they are contemporary with House I, i.e. from the Roman Iron Age. However, this particular post-hole has yielded two differing C-14 datings, which would indicate later influence (see Sect. 7.1.1.). Nevertheless, it is unlikely that the clay should belong to this later period, bearing in mind its spread in relation to the house foundation (Fig. 4:15). All the indications point to the imprinted fragments being contemporary with the foundation, and that the objects that formed the imprints also come from the period during which the house was used. The ornamentation therefore dates to the Roman Iron Age (see Sect. 7.1.1.).

The bone material is not plentiful, most of the preserved material, with the exception of some tooth enamel fragments, being calcinated. This fact relates to the acidic (pH c. 4.5) and calcium-poor podzols typical for large areas of Sweden, particularly the north. In comparison, the Öland settlement at Bo yielded several hundred kilos of uncalcinated bone (Beskow-Sjöberg 1977:119), and the Vallhagar investigation on Gotland, where an average of 5 kilos per foundation was discovered (Geijervall 1955:799 Tab. 1). The explanation of this is the calcium-rich earth found on the two Baltic islands.

In Gene, area B (i.e. Houses I, II and VIII) yielded only about 1 kg of calcinated bone, for the most part in a very fragmentary condition. The distribution of the bone over the area is difficult to interpret and the bones could in principal relate to any settlement period at all.

In order to link the bone finds more surely to one particular house, the investigated features should be studied. Here there are also individual finds of calcinated bone, which more or less by chance have found their way into post-holes and other pits during the time in which the house was used, or in connection with the fire, when certain pits were deliberately filled up. This refilling of post-holes has also been suggested as an explanation for the existence of bone in certain post-holes, e.g. in Vallhagar (Klindt-Jensen 1955:151).

In Table 4.6, the features in House I that have yielded bone finds have been listed. The bone has been analysed by Rita Larje of the Osteological Research Laboratory at Stockholm University. Of the total of 2108 fragments in the features in House I, only 11.1 % (234 fragments) were possible to identify, which means that the bone material is very fragmented. The following species have been identified from House I: sheep/goat, pig and dog among domestic animals, and hare, seal, fish, fowl and an unidentified animal of prey.

Sheep/goat fragments are most common (139 fragments), followed by hare (82 fragments). Other species occur only as individual cases. However, this does not mean that it is possible simply to conclude that the frequency of finds reflects actual number of species, although this has been done (Odner 1969:67).

Generally speaking, when the material is so burnt and fragmentary as in this case, the chances are greater that characteristic fragments from smaller animals survive better than the equivalent from larger animals (Rita Larje pers. comm.). Therefore smaller animals are over-represented compared to larger ones. The bones of larger animals (e.g. cattle, horse, elk, bear, etc.) were probably also consumed to a great extent by other animals, and also used in the manufacture of tools etc. Some scholars have even expressed surprise over the fact that any bone at all remains on settlement sites, bearing in mind preservation conditions and the usefulness of bone both as food and as raw material (Reynolds 1979:47).

According to Larje, the 1874 unidentified fragments from the features in House I include a large number belonging to
Table 4.6. Features in House I containing bone. Number of fragments. Brackets: weight in grammes.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Ovis</th>
<th>Ovis/Capra</th>
<th>Sus</th>
<th>Canis</th>
<th>Lepus</th>
<th>Phocidae</th>
<th>Pisces</th>
<th>Aves</th>
<th>Misc.</th>
<th>Indet.</th>
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TOTAL 1 (2.2) 139 (58.5) 3 (2.2) 1 (0.1) 82 (13.3) 4 (1.9) 1 (0.1) 1 (0.1) 1 (0.1) 1874 (180.7)
<table>
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<th>Type of artifact</th>
<th>Length (mm)</th>
<th>Weight (g)</th>
<th>Feature</th>
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<th>Type of artifact</th>
<th>Length (mm)</th>
<th>Weight (g)</th>
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larger animals like cattle or elk. It is therefore impossible to rule out the existence of e.g. cattle merely on the grounds of missing osteological evidence.

The identified fish vertebrae were discovered by floatation, thus illustrating the well-known difficulties of discovering such bones by ordinary sieving. Fish bones, together with the seal bones, bear witness to marine resources which may have constituted a much larger portion of the resource utilization than is indicated by these individual bones. Quantifying different types, for example using MIND (minimum number of individuals) is out of the question in this kind of material.

All that can be said in this matter is to note that the pit A4b contains the remains of at least three individuals ovis/capra, since three talus bones of different sizes were found in the pit (Larje 1983).

Other finds are not particularly frequent (Fig. 4:17, Tab. 4:7). Simple iron finds, often fragmentary, are usual. The finds in area B generally occur in the central and southern parts of House I and in House VIII. The extent to which these finds can be ascribed to these houses is, however, uncertain. The reliability is low when it comes to dating individual foundations of the Gene type from finds.

Fig. 4:17. Distribution of finds on area B. Map excludes finds of burnt clay, burnt bone, slag, etc.
Cf. Tab. 4:7.
Some of the finds in or around House I should nevertheless be mentioned. The stone club F116 (Fig. 4:18) was found a little way down in the outer roof-supporting post-hole A23. In approximately the middle of the stone club there is a groove for a shaft, broken in two places opposite each other. It has clear signs of wear from blows on both flattened sides, which indicates that it was used as a hammer. The type is known from other finds coming under Indreko's (1956:56ff) type F.

Several of the stones mentioned by Indreko have no hitting surface and are naturally rounded (Indreko 1956:57), which indicates that they are net sinkers. The stones with signs of blows would therefore be hammers. The weight of this type of tool varies between 138 and 1000 grammes. The Gene club weighs 950 grammes. Type F occurs all over Sweden, more frequently in the south, but is also found in N and W Finland, and in the Ukraine in S Russia. On the other hand, this type is not found in SE Finland, northern and central Russia, or in the eastern Baltic states (Indreko 1956:58).

The type is difficult to date, and Indreko is of the opinion that the broken groove as a motive goes back to "Ältere Streitaxtkultur", and occurs far into the Bronze Age (Indreko 1956:60). The Gene excavation has demonstrated that the
Table 4.8: Carbonized seeds in features in House I.

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<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Berry-bearing plants (BBP)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Empetrum nigrum</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>6</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Rubus idaeus</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<td>-</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fragaria vesca</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>1</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>
type also occurred during the Roman Iron Age. From the geographical distribution, no more can be said than that the type is common.

Slightly to the SE of the S gable end of House I, a small bronze tweezer was found intact (F464 Fig. 4:18) and one blade of a larger tweezer (F238 Fig. 4:19). The smaller of these has a hole at the top of the blades. The tweezer was 20 mm long and 7 mm wide. Tweezers of the larger type are common in burial finds from the Migration Period (e.g. Schetelig 1912-75, Fig. 155, 148, Fig. 349; Stenberger 1933: 67, Fig. 47; Nerman 1935:Taf. 18, Fig. 231), but they also occur in period V:1 (Almgren & Nerman 1923:Taf. 28, Fig. 427). All of these tweezers resemble more the larger of the two found in Gene, and there is a parallel to the smaller one in Almgren & Nerman (1932:Taf. 38, Fig. 559) dated to period V:2. This is fastened to a ring, and is defined as a fastening (Zwinge).

Close by the interruption in the outer trench to House VIII and just outside the SE entrance to House I, an iron fibula was found (F353, Figs. 4:17, 4:19). It is 45 mm long, with a bow of rather even width (7 mm), ending with a slightly tapered foot. The spring sticks out about 8 mm on either side, the wires running under the bow, which is severely bowed; the pin-holder is 10 mm high.

No exact parallel to the fibula has been found, but a closely related Norwegian bronze fibula has been described by Schetelig (1912:20, Fig. 33) as being pure west Germanic from the 4th century A.D. This cross-bow fibula is also found on Gotland from periods V–VI (cf. Almgren & Nerman 1923:Taf. 22, Fig. 339–40; Nerman 1935:Fig. 364–65, among others).

Other finds scattered over area B (Fig. 4:17, Tab. 4:7) include a spiral bead of bronze, 25 mm long (Fig. 4:19). Similar finds occur in material from Gotland from periods V and VI, even if silver seems to be a more common material there (cf. Almgren & Nerman 1923:72, and Nerman 1935:Taf. 45, Fig. 452). Individual beads of opaque and translucent glass and clay, a fragment of a composite bone comb with a tiny edge on the tooth-plate (support for the connecting plates), two fragments of spindle whorls decorated with pits, together with iron fragments from knives, fastenings, rivets/nails and rods etc. are also found in and around the house.

As earlier mentioned, macro-fossil samples were taken continually. With regards to carbonized seeds the first preliminary results being published by Engelmark (1981). Hitherto, most attention has been devoted to House I. Most of the features in this foundation have been analysed (Tab. 4:8). Other studied features have been provided with analyses in individual cases, and these are presented together with the presentation of finds, and discussed further in Section 6.1.1.

In fire-damaged foundations, as in the case of Houses I, IV and VI in Gene, conditions are good for the preservation of seed material. In these cases, seeds do not only occur in hearths, but also often in post-holes and other pits, where they have landed by chance and been carbonized in connection with the fire. The distribution of plants in a foundation is an important factor for study, bearing in mind the type of plants that were used, and also how different parts of a house have been used (cf. Sect. 5.2.2.).

In Table 4:8, the 26 features analysed from House I and their carbonized seed content have been listed. The amount of material analysed in each feature varies between five and twenty litres of earth (usually c. 10 litres), which means that seed quantities in detail cannot be compared from feature to feature. On the other hand, a percentage distribution comparison can be made, and this is done in Section 5.2.2. (Fig. 5:10 and Tab. 5:2).

Engelmark has grouped the plants according to the following:

- cultivated plants (CP)
- arable weeds (AW)
- grassland plants (GP)
- ruderals (R)
- shore plants (SP)
- berry-bearing plants (BBP)

In addition to these, there are also isolated seeds from other plants (Engelmark 1981:41, Tab. 1), which has no meaning in this context. The CP seeds that were found are all hulled barley (Hordeum vulgare) and these occur in the central section of the foundation, in the long hearth A10, and in the surrounding features and one in the south part of the foundation. The only flax seed (Linum usitatissimum) can, because of the isolated occurrence, not be taken into consideration.

In the AW group, fat hen (Chenopodium album) dominates, occurring in almost every feature. The majority of the seeds from this group occur in the southern half of the foundation. Plants in the AW group usually bloom in spring-sown fields, but most of them can also appear as ruderals on rubbish tips and the like (Engelmark 1981:40).

In the GP group, white clover (Trifolium repens) is the most usual, occurring in a varied manner along the whole foundation. This is also the case with stinging-nettles (Urtica dioica).

In the SP group, common spike-rush (Eleocharis palustris) dominates completely, occurring in the largest numbers of all which, however, does not necessarily indicate that it was the most used of the plants. Plants do have a varied seed production, and common spike-rush has a particularly high seed production. The seeds from this plant, however, demonstrate a marked difference when it comes to distribution. To the south of post group No. 5 (Fig. 4:3) only three seeds were found of the total 730, and in the little post-hole S7, part of post group No. 5a, as many as 230 seeds were found. In northern Sweden the plant "grows on mud and fine-grained sediment substrates on sea shores subject to freshwater influence" (Engelmark 1981:40).

With regard to berry-bearing plants, only a few seeds were found scattered over the foundation. Examples of crowberry (Empetrum nigrum), raspberry (Rubus idaeus), wild strawberry (Fragaria vesca) and one rowanberry seed (Sorbus aucuparia) were found. However, carbonized seeds of lingonberry (Vaccinium vitis-idaea) and bilberry (Vaccinium myr- tillus) have not been found, while these berries must have constituted a common part of the diet during the autumn months, when these berries are edible. Probably, conditions were too unfavourable for the preservation of the seeds from these plants (Engelmark 1981:40).

4.2.2. HOUSE II

4.2.2.1. The lay-out

Before excavation nothing of the foundation was visible. In connection with the excavations in 1977, a
Fig. 4:20. Aerial view of the southern 4/5ths of House II in Gene from south. Part of House I seen to right (not completely exposed at that time). A forest road ran diagonally across the area shown. The northwest wall trench of House II could have been damaged during removal of the road.
couple of features were discovered, e.g. parts of the eastern trench, but not until the 1981 campaign the whole foundation was uncovered (Fig. 4:20).

A forestry road ran diagonally across the foundation (NNW—SSE). This was laid on the old ground surface, possibly preceded by some earthmoving. However, no part of the foundation was destroyed, but the material under the road was compressed and the features were, in their upper parts, filled with modern material.

The features were generally easily differentiable and clear. Differences in the character of colouration did exist, however, within the foundation. In the NE and SW areas, these were very difficult to differentiate, the nuances being in the first case light grey and in the second light yellow. In other cases, features were characterized by a sooty or humous-mixed material. An exception to this is the colouration in the northern central section of the House, feature G36, as is the case with G196 and G14 in the central western section of the foundation (Fig. 4:21). G186 also differed from the norm, with an intensely dark filling. The exceptions mentioned previously are reddish in colour and contain quite a lot of carbon and soot. This house did not burn down, and this fact explains the almost total lack of carbon and carbonized macroscopic material.

Around 300 features were discovered in the foundation. Of these, about 75 constitute certain post-holes along the line of the wall, and 16 constitute certain roof-supporting posts. In addition, there are four portal posts and four hearths. Another 40 or so features located in the surrounding trench also form part of the functionally identifiable features. There remains then about 100—150 features which do not immediately lend themselves to functional identification. As can be seen from the plans (Figs. 4:2—3), House II is more "messy" than House I.

Despite the number of features in House II, the roof-supporting parts are difficult to reconstruct in detail. The wall constitutes the least problem, as it is regular and has a rather distinct form with slightly curved long sides and rounded corners (Figs. 4:20, 4:22). As is the case with House I, there is no trace of the northern section or of the northern gable section. The inner roof-supporting posts yielded six identifiable pairs (Figs. 4:21, 4:23). In general, it can be said that the southern section is relatively undisturbed and easy to understand, with two clear post pairs of which one align with the opposed entrances (E1 and E2), and also has connecting outer roof-supporting post pair (No. 3 in Fig. 4:23). There is also a pair of gable posts in the farthest south section. Thus, in this

Fig. 4:21. Map of all features registered in House II. Figures concern G-numbered features mentioned in text. Hatched (diagonals) indicate greyish features and (squares) reddish features.
section, the distribution of construction elements is almost identical with that of House I. The most striking difference, however, is the formation of the wall.

In post group nos. 3 and 4 (Fig. 4:23), there are outer roof-supporting posts, and the lay-out can be said to be of the same type as that of House I.

A list of partly reconstructed and partly selected post-hole groups (8 in number) is provided in Table 4:9. The length of the house is c. 38 metres, the width of the central section being 8.2 metres, and of the flanking sections about 7 metres. The house is thus somewhat shorter and narrower than House I. The index $H_{br}/B_{br}$ is on average 3.8, which compares well to House I (cf. Tab. 4:1). However, it should be borne in mind that this table is made up of fewer and less certain dimensions. Post group No. 6 has been placed on the northern edge of the large features G36 and G161, and these features, together with G196 (Fig. 4:21) form a dividing wall in the foundation. The only certain one so far encountered at Genesmon. In connection with this dividing wall there are at least one smaller post. The dividing wall was partly sunk in a trench and based on the trestle No. 6.

![Fig. 4:22. House II from NNW.](image)

![Fig. 4:23. Supporting constructions in House II. Non-filled rings mark supposed post-holes. 1–8 = post groups. Arrows and E-numbers mark entrances. Cf. Tab. 4:9.](image)
Table 4.9. The position of roof-supporting posts in House II. For explanations cf. Table 4:1.

<table>
<thead>
<tr>
<th>Post group No.</th>
<th>Dist.</th>
<th>H_{br}</th>
<th>B_{br1}</th>
<th>B_{br2}</th>
<th>H_{br}/B_{br1}</th>
<th>H_{br}/B_{br2}</th>
</tr>
</thead>
<tbody>
<tr>
<td>south gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 1</td>
<td>1.4</td>
<td>7.2</td>
<td>4.8</td>
<td>–</td>
<td>1.5</td>
<td>–</td>
</tr>
<tr>
<td>group 2</td>
<td>2.0</td>
<td>7.8</td>
<td>–</td>
<td>1.6</td>
<td>–</td>
<td>4.9</td>
</tr>
<tr>
<td>group 3</td>
<td>3.0</td>
<td>8.2</td>
<td>4.3</td>
<td>2.2</td>
<td>1.9</td>
<td>3.7</td>
</tr>
<tr>
<td>group 4</td>
<td>9.2</td>
<td>8.2</td>
<td>4.0</td>
<td>2.2</td>
<td>2.1</td>
<td>3.7</td>
</tr>
<tr>
<td>group 5</td>
<td>5.2</td>
<td>8.0</td>
<td>–</td>
<td>2.4</td>
<td>–</td>
<td>3.3</td>
</tr>
<tr>
<td>group 6</td>
<td>5.4</td>
<td>8.0</td>
<td>–</td>
<td>2.0</td>
<td>–</td>
<td>4.0</td>
</tr>
<tr>
<td>group 7</td>
<td>8.0</td>
<td>6.8?</td>
<td>–</td>
<td>2.0</td>
<td>–</td>
<td>3.4</td>
</tr>
<tr>
<td>group 8</td>
<td>2.8</td>
<td>6.5?</td>
<td>4.8</td>
<td>–</td>
<td>1.4</td>
<td>–</td>
</tr>
<tr>
<td>group 9</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>north gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L = 38 m</td>
<td>M = 7.6</td>
<td>M = 4.2*</td>
<td>M = 2.1</td>
<td>M = 2.0*</td>
<td>M = 3.8</td>
<td></td>
</tr>
</tbody>
</table>

*Post groups 1 and 8 (gable posts) not in the calculation.

4.2.2.2. The roof-supporting elements

As in House I, there are several types of supporting posts represented in the foundation, the difference being that no mid-posts were found, and that a large number of the posts were relegated to the group with uncertain functions.

In Figure 4:24, all certain and uncertain post-holes are noted as to depth and diameter. Post-holes were classified according to appearance and location in the foundation.

A. The inner roof-supporting posts

These constitute the sturdiest posts in the house (Fig. 4:24), but the variation is much greater than in House I. The inner roof-supporting posts included in Figure 4:23 are also listed in Table 4:10, which shows that e.g. the diameter of the posts have been almost impossible to determine.

The clues that exist regarding the diameter of the posts lead us to suppose that these were similar to those in House I.

Fig. 4:24. Post-hole depth and width in House II. Black dot = inner roof-supporting post. Black square = outer roof-supporting post. Ring = post-hole in wall line. Black triangle = gable post (post group 1 according to Fig. 4:23). Filled star = post-hole of unknown function. Empty star = uncertain post-hole. P = portal post. H = corner post.
Table 4:10. Details of the inner roof-supporting posts in House II. Cf. Table 4:2.

INNER ROOF-SUPPORTING POSTS

<table>
<thead>
<tr>
<th>Post group</th>
<th>Post</th>
<th>Pit Ø</th>
<th>Pit depth</th>
<th>Post Ø</th>
<th>Pit Ø/Post Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>G9</td>
<td>0.55</td>
<td>0.34</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>G10</td>
<td>0.74</td>
<td>0.30</td>
<td>0.40?</td>
<td>1.9?</td>
</tr>
<tr>
<td>1977a</td>
<td>G11</td>
<td>0.90</td>
<td>0.40</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>G29b</td>
<td>0.75</td>
<td>0.30</td>
<td>0.28?</td>
<td>2.7?</td>
</tr>
<tr>
<td>4</td>
<td>G129</td>
<td>0.70</td>
<td>0.15</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>G36h</td>
<td>0.60</td>
<td>0.21</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>G138d</td>
<td>0.80</td>
<td>0.45</td>
<td>0.30?</td>
<td>2.7?</td>
</tr>
<tr>
<td></td>
<td>G36dd</td>
<td>0.55</td>
<td>0.25</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>G161</td>
<td>0.50</td>
<td>0.25</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>G186s1</td>
<td>0.50</td>
<td>0.30</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>G186a</td>
<td>0.75</td>
<td>0.20</td>
<td>?</td>
<td>-</td>
</tr>
<tr>
<td>M</td>
<td>0.69</td>
<td>0.30</td>
<td>0.32?</td>
<td>2.6?</td>
<td></td>
</tr>
</tbody>
</table>

The variation in the depth of the holes is also much greater than in House I, the holes being generally shallower. The diameter of the holes is that measurement which comes closest to House I.

Since this house did not burn down, there are no remains of posts or birch-bark linings. The sootiness that characterizes the surfaces of the post-holes and trenches in the central part of the foundation probably depends on soot and rubbish which collected around these areas during the time of settlement. Several other posts had stone supports and, in the case of the inner roof-supporting posts, one hole had a flat stone at the bottom, which was probably a base for the post.

B. The outer roof-supporting posts

This group of posts is poorly represented in the foundation, occurring in connection with post groups 3 and 4 (Fig. 4:23). The outer posts in group 4 are relatively clear with easily distinguished pits. This group borders on the large humous-rich features G29 and G138. The western of the post-holes consists of a large pit measuring 0.58 metres in diameter and 0.35 metres in depth, while that to the east, G210, is 0.6 metres in diameter and only 0.15 metres at its deepest point. The pits for the outer posts in group 3 are smaller and more shallow and have a lighter colour, which corresponds to the other features in that area of the foundation.

C. Posts and trenches in wall line

The foundation is bordered by a trench, continuous for long stretches. Approximately 0.6–0.8 metres inside this trench, there are about 75 post-holes which constitute the supporting part of the wall. The width of the surrounding trench varies between about 0.3 and 0.8 metres. Particularly along the east side, the post-holes and the trench are connected with each other through spread filling-material. It thus appears as though these are linked constructionally, which is not, however, the case. Instead they form two constructional elements. To the south of entrances E1 and E2, the trench ceases to be continuous, taking on a more broken form with occasional round post-holes.

Fig. 4:25. Tower photography of southern termination of trench G100a in House II. For interpretation cf. Fig. 4:26.

The wall posts are regularly placed, standing an average of 0.8 metres apart. In general, the post-holes appear as circular or oval features, sometimes having a sooty centre. The 65 wall posts excavated were usually 0.25–0.40 metres in diameter and 0.1–0.2 metres deep (Fig. 4:24). However, there are minor differences, the largest post being 0.5 metres in diameter and 0.35 metres deep.

Something that does not appear in Figure 4:24 is the shape of the holes. Unlike House I, 3 particular characteristics can be of interest:

1) Several post-holes along the line of the wall have an almost square or rectangular shape (Figs. 4:22, 4:25).
2) Some post-holes are oval with "tentacle-like" offshoots which sometimes coincide with the length of the house (Figs. 4:25, 4:26).
3) Some post-holes are round, but contain a darker rectangular centre (Fig. 4:25).

These traces may indicate that at least parts of the wall were made up of planks. The offshoots, and the oval quality of some post-holes are traces of the insulation in the space between the buried posts. In this case, bulwork or stave work seem to be probable constructions (cf. Fig. 5:1).
Fig. 4.26. Detailed map of trench G100a (cf. Fig. 4.21) and adjacent post row. Dashed lines indicate depressions or pits in trench bottom, which include hearth G238.

Fig. 4.27a–f. Profiles through trench G100a.
Fig. 4.29. Profiles through trench G100b.

The trench was deepest in the centre and to the south, and had a noticeable shallowing to the north. Trenches G100b–d were also relatively shallow, about 0.1 m at the deepest point (Figs. 4.28, 4.29a–b).

In Figures 4.26 and 4.28 the bottom features of the trenches have been drawn. No obvious pattern could be inferred, but there was a tendency for thinner posts to form pairs. Individual posts, apparently placed at random, also appeared, together with several irregular pits.

Under the trench, a hearth was found (G238, Fig. 4.26) which could be distinguished from both the trench and the house both stratigraphically and functionally.

We can thus establish that, as regards post-holes, the trench is quite unlike the one to the east. It is also dug deeper from the south-west entrance E2 up to a level with post group 4 (Fig. 4.23). In places, the trench has depressions designed for weaker posts max. 0.15 m diameter and up to 0.35 m below the clearing level (RN), i.e. 0.5 m below present ground.

The trench south of entrances E1 and E2 and the gable ceases to be a trench and becomes more broken up, consisting of partly connected depressions. These sometimes form circular post-hole-like shapes with diameters equivalent to those of the wallposts.

In the east gable part of the trench, there are also 3 post-holes which constitute a line parallel to the gable inside. The posts in the trench are not regularly placed, and there are thin posts in pairs or on their own.

With regard to the wallposts in the gable, there are 2 posts (G79 and G61 in Fig. 4.21) in each corner which are considerably deeper than the other posts in the wall line. There are also a number of stones, which probably constitute a lining for the posts.

D. Portal posts

As can be seen in Figure 4.23, 5 entrances have been noted (E1–E5). Of these, E3 and E4 should be seen as suggestions, since they are only based on the fact that the trench outside is interrupted at these points.
Table 4:11. The width of the entrances in House II and their relationship to the wall line.

<table>
<thead>
<tr>
<th>Entrance</th>
<th>Recession</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>0.9</td>
<td>1.3?</td>
</tr>
<tr>
<td>E2</td>
<td>0.8</td>
<td>1.4</td>
</tr>
<tr>
<td>E3a</td>
<td>-</td>
<td>1.0?</td>
</tr>
<tr>
<td>E3b</td>
<td>-</td>
<td>1.4?</td>
</tr>
<tr>
<td>E4</td>
<td>-</td>
<td>1.4?</td>
</tr>
<tr>
<td>E5</td>
<td>0.6</td>
<td>1.0</td>
</tr>
</tbody>
</table>

\[ \bar{M} = 0.77 \quad \bar{M} = 1.25? \]

The certain entrances are thus E1, E2 and E5, which are completely or partly indicated by portal posts and/or changes in the appearance of the trench.

As regards the certain entrances, only one portal post was found in E1, and therefore the width of the entrance is somewhat unsure (Tab. 4:11). Since no portal posts were found in E3 and E4, the recession column cannot be completed. Both of these entrances may be of another type.

There are no clear traces of any entrance leading directly into the central part of the house. However, there are one or two indications that such an entrance has existed. As mentioned above, hearth G238 (fig. 4:26) was found under the west trench. The area immediately to the east of this consisted of an area of diffuse greyish material without distinct boundaries (G24 in Fig. 4:21). This material may well have been drawn from the hearth beneath, and the width of G24 equate to the width of a possible entrance. If the trench was really interrupted in this section was not possible to establish during excavation. From the vertical photograph (Fig. 4:30), a slightly greyer tone dominates this particular section, and the trench that approaches from the south narrows slightly before disappearing in the greyish material. No portal posts were found in the patchy area (G24). At that time, no such questions were raised. Opposite this section, there is also a change in the east trench, which could be interpreted as an interruption of another trench running above, allowing the trench underneath, i.e. the western wall of House I, to come to light. This could also be interpreted as an entrance to House II which could mean that there are opposed entrances also in the middle of the foundation.

E. Undetermined posts

As was mentioned at the beginning of the chapter, the foundation had about 100–150 features, the functions of which could not be specified. The majority of these are post-holes which, in relation to the foundation, may be both primary and secondary. These occur both in and beside the rows formed by post groups 2–7. For example, post-hole G17 (Fig. 4:21) occurs in roughly the same line as those to the west of the inner roof-supporting posts but has no counterpart on the east side. The pit G18 (Fig. 4:21) is similar to the inner posts in group 3, but there is no trace of any such post on the east side. Instead, there are a good parallel to this feature in A28, House I (Sect. 4.2.1.4. and Fig. 4:3). The two features in question are related to their respective long-hearth in exactly the same way.

G13, however, is not in line with any sort of post, and like G17 it contains a number of fire-cracked stones. The conclusion would be that such posts had been deliberately pulled up and the holes filled in with these stones. This is probably also the case where the post-hole contains so many stones that it would have been impossible to fit a post in the hole (cf. Sect. 4.2.6.1., Fig. 4:73). The fact is, however, that for example the corner posts G61 and G79, which are clearly part of the construction, contain respectively five litres and two litres of partly fired stone. The larger stones in the feature were principally found at the edge, and they usually had one flat side facing the feature. The stones in this case obviously formed a lining, which included fired stones. It is thus extremely difficult to establish which posts actually formed part of the construction.
4.2.2.3. Hearths

In House II, a total of four hearths were found (Fig. 4:21). Along the outer side of the west wall, there are a further two, A19 and A26, and another, G238, under the trench (Fig. 4:26). Of these, G19, G20, and G28a certainly belong to the foundation, while G27 probably does not.

G27 differs from the other hearths in House II, G27 is situated somewhat to the east of the central line of the house, which in itself may mean nothing, but its filling also differed. This hearth was not evident from the vertical viewing other than by the hint of a carbon ring, while its centre was filled with almost untouched C-horizon material. This tendency was observed in a number of hearths, where the usual appearance was such, however, that the centre of the filling, despite a lower carbon frequency, nevertheless differed greatly from ordinary C-horizon material.

Hearth G20 belongs to House II and is functionally connected with G19 and G21, this hearth complex has been used for a long period. The hearth is filled with soot and carbon, without any carbon-layer proper, and the filling has a "greasy" character. On the other hand, G27 had a "one-off function" with a specialised use (?), with bone deposits.

G20 and G21 are features which together are extremely reminiscent of A10 in House I. G21 consisted of a wide spread layer of reddish burnt material which contained clay, often in a very grainy state. Such particles, together with some larger grey-reddish particles, also occurred in G20, where they could be better collected (cf. Tab. 4:12). Probably, the forest road caused a spreading of the material, but remains were found partly on and in G20, and also in an approximately 1.6 m long and 1.2 m wide belt of G21 (Fig. 4:21). Obviously the hearth complexes of G19, G20 and G21 have had the same function as the hearth complex of A10 in House I.

Hearth G28a, finally, is situated on the mid-axis of the house and contains a similar filling to that found in G19 and G20. Like G19, it also has a deeper southern section and is shallower to the north. It forms together with the large features G29 and G138 probably a functional unit (Fig. 4:21).

In addition, a number of other hearths occur outside the foundation, among these G249 which with regard to position is almost identical to hearth A143 in the northern gable of House I. G249 is not situated exactly at the centre of the house, which A143 is, but is instead slightly farther to the west. This may indicate that both of these hearths were placed by chance in a certain relation to their respective houses, but the similarity of location is remarkable.

4.2.2.4. Other features

As was mentioned at the beginning of this chapter, there are a number of features in the foundation, some of which should be mentioned in more detail here: the large and partly irregular features G29, G138, G36, and G186 (Fig. 4:21).

Despite the fact that they are not ordinary hearths, some of the features contain large amounts of carbon and reddish burnt material. This applies for example to G196 and G36 in the central northern section of the foundation. It would be reasonable to conclude that these features were secondary in relation to the foundation. However, their location in the room is rather limited, and they end at the north with a demarcation, in line with post group No. 6 (Fig. 4:23). A length profile through G161 shows that this probably was part of a dividing wall. Whether the burnt material indicates a partial fire, or whether it is the result of particular activities within the foundation cannot be established with certainty.

Looking vertically down at G36, the irregular and dark feature in fact divide up into a number of distinguishable features, each with a reddish and partly carbon-filled filling. In the north west part there is a rectangular hearth, G36d (Fig. 4:21, Tab. 4:12), which has a red filling with carbon flecks above a continuous layer of carbon. This hearth is situated in the western side-aisle and close to the dividing wall made up of the post-hole G36f, the northern border of G36 as a whole, the trenches G161 and G196 (Fig. 4:21).

To the south, on either side of the central line of the house, the features G29 and G138 occur (Fig. 4:21). At the bottom of G29 several post-holes were found, of which two

Table 4:12. The hearths in and around House II. For explanations, cf. Table 4:5.

<table>
<thead>
<tr>
<th>No.</th>
<th>Form</th>
<th>Width (m)</th>
<th>Depth (m)</th>
<th>BB (g)</th>
<th>BC (g)</th>
<th>BS (l)</th>
<th>Part of House II</th>
<th>Comm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A19</td>
<td>R</td>
<td>0.9</td>
<td>0.20</td>
<td>7.7</td>
<td>-</td>
<td>17</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>A26</td>
<td>O</td>
<td>1.0 x 0.9</td>
<td>0.25</td>
<td>2.6</td>
<td>-</td>
<td>5</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>A38</td>
<td>R</td>
<td>0.7</td>
<td>0.10</td>
<td>1.4</td>
<td>3</td>
<td>(X)</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>G19</td>
<td>O</td>
<td>1.6 x 1.0</td>
<td>0.25</td>
<td>0.3</td>
<td>14</td>
<td>20</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>G20</td>
<td>R</td>
<td>0.8</td>
<td>0.18</td>
<td>1.4</td>
<td>220</td>
<td>4</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>G27</td>
<td>O</td>
<td>0.86 x 0.74</td>
<td>0.20</td>
<td>43.3</td>
<td>-</td>
<td>1</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>G28a</td>
<td>O</td>
<td>1.6 x 1.1</td>
<td>0.16</td>
<td>0.8</td>
<td>1</td>
<td>18</td>
<td>Yes</td>
<td>F16</td>
</tr>
<tr>
<td>G36d</td>
<td>Re</td>
<td>1.2 x 0.8</td>
<td>0.30</td>
<td>0.5</td>
<td>3</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>G37</td>
<td>R</td>
<td>0.6</td>
<td>0.16</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>G186h</td>
<td>O-I</td>
<td>0.75 x 0.60</td>
<td>0.28</td>
<td>0.2</td>
<td>-</td>
<td>20</td>
<td>?</td>
<td></td>
</tr>
</tbody>
</table>
to the south formed part of the roof-supporting construction (post group 4, Fig. 4:23). Five small post-holes form a regular row in the direction of the length of the house, placed about one metre apart. A further three asymmetrical, rectangular and rhomboid pits are found outside this row. The two features G29 and G138 are situated in the centre of the side-aisles of the house, and have about the same area in plane, occupying the area between post group 4 and 5, i.e. 5.2 m in length (Tab. 4:9). G29 in particular has clear edges to the west, south and north. The distance to the posts in the wall line is 1 m on average.

The interpretation that comes most readily to mind is that these depressions in the side-aisles were caused by livestock, placed at right angles to the length of the house. The posts found in G29 could thus be the remains of the structures of the stalls.

Feature G186 in the northern section of the house was almost rectangular, c. 4 x 3 m (E–W), but with a rounded convex eastern side (Fig. 4:31). In the north, a large post-hole was found, which together with G186a (Fig. 4:31) constituted the trestle in post group No. 7 (Fig. 4:23).

The feature was dug in quadrants, and it was observed that the border between the upper lighter layer and the lower darker layer was wavy. In the west section, a tiny post-hole was found (Fig. 4:32).

The bottom of the feature consisted of a flatter section measuring c. 2 x 1.6 m. In the north section of this flat area a hearth was found measuring 0.78 x 0.68 m (E–W) and 0.28 m deep. The hearth contained a layer of carbon in which fire-cracked stones and some burnt bones were found (Fig. 4:33). At the bottom of the flat central section to the south of the hearth, there was a thin greasy layer of soot measuring about 0.5 x 0.4 m (E–W) and 0.03 m thick (Figs. 4:32–33). The hearth is C-14 dated 515±90 A.D. (No. 14, Tab. 7:1), which agrees completely with the dating for House II (Sect. 7.1.1.).

No certain roof-supporting structure has been discovered in feature G186, apart from the tiny post-hole in the west edge, which is why the feature is interpreted as an activity area in House II. This interpretation is confirmed by the remarkable similarities with conditions in House I, where similar types of features are found in the equivalent parts of the house (cf. Fig. 4:3). In other respects, G186 closely resembles the well known pit houses found on the Continent and in

Fig. 4:31. Detailed map of northern part of House II with feature G186 and post group No. 7.

Fig. 4:32. Profile A–B through G186. Cf. Fig. 4:31.

Fig. 4:33. Profile C–D through G186. Cf. Fig. 4:32.
It is a well known fact that sacrifices of animals or human beings occurred e.g. in connection with the building of houses in various parts of the world (Beskow-Sjöberg 1977:121). It would seem to be something of an exaggeration to conclude that the burnt bones that were found in the post-holes should be animal sacrifices (Beskow-Sjöberg 1977:121) since there is a spatial correlation, e.g. in Gene House I, between bones scattered on the surface and those discovered in post-holes and other features. In some cases the pits may be sacrificial pits, but it is more likely in most cases that the presence of bones was the result of their falling into the pits after the old (burnt) posts had been pulled up.

Horse teeth were also found in the walls in Vallhagar House 15 (Selling 1955:193), where this is related to similar Eastern Baltic finds which are considered to have had a magical function. Horse skulls placed on the walls also occurred on the Continent, and can be said to have reflected a more or less general North European custom during the Early Iron Age.

4.2.2.5. Finds in and around House II

Compared to House I, this foundation yielded few finds in all categories, from iron finds to macro-fossils (Figs. 4:15, 4:17; Tabs. 4:7, 6:1). However, the same tendency occurred as in House I, inasmuch as the northern section of the foundation yields considerably fewer finds than the southern section. As has earlier been mentioned, the burnt clay spread over the foundation can in all likelihood be linked to House I. Altogether in the excavated features in House II, only 0.3 kg of burnt clay and about 0.1 kg of burnt bone have been found, which can be compared with the equivalent figures from House I: 23.7 kg and about 0.4 kg respectively. 0.26 kg of the clay in House II was found in fire pits G19–G21 in the centre of the house.

A small concentration of finds can be noted in connection with pit G186 in the northern section of the house, where a couple of iron nails and a bead of opaque glass were found, breaking the emptiness of finds in the northern section of the foundation. More useful finds from the southern and central sections of the house include a fragment of a knife blade made of iron (F41) and polished stone (F118, Tab. 4:7). In the upper layer of House II's trench, five unburnt horse teeth were found, apparently lying in its original position (Fig. 4:34).

The bones in the features of House II have the same fragmentary nature as those in House I (Tab. 4:13). Altogether 542 fragments were found (in Table 4:13, only features containing identifiable fragments have been listed), which is considerably fewer than in House I. Of these, 68 (or 13 %) were identifiable (Larje 1983). The bones were almost all found in the hearths in the house and in the surrounding trench. If, as has been suggested above, hearth G27 is secondary in relation to the foundation, the amount of bone material belonging to the foundation is reduced considerably, although the relative number of different species remains the same (cf. Tab. 4:13). A few bone fragments were also found in feature G186 in the northern part of the house.

Fewer animal species were identified than was the case in House I. These are sheep/goat, pig, and a fragment of hare as the sole representative of wild animals. It is clear that preservation conditions were even less favourable in House II than in House I. Part of the explanation for the difference in the amount of bone material is found in the fact that the fire in House I contributed to a higher preservation frequency. In addition House I contains a far greater number of indoor hearths, which were probably used for cooking and the like. The length of time the house was in use is yet another obvious factor affecting the amount of bone remains.

**Table 4:13. Features in House II containing identifiable bone.**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Ovis</th>
<th>Ovis/Capra</th>
<th>Sus</th>
<th>Lepus</th>
<th>Indet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G19</td>
<td>H</td>
<td>1 (0.1)</td>
<td>—</td>
<td>—</td>
<td>4 (0.2)</td>
</tr>
<tr>
<td>G20</td>
<td>H</td>
<td>1 (0.3)</td>
<td>—</td>
<td>—</td>
<td>10 (1.1)</td>
</tr>
<tr>
<td>G27</td>
<td>H (0.9)</td>
<td>33 (12.4)</td>
<td>—</td>
<td>—</td>
<td>338 (30.0)</td>
</tr>
<tr>
<td>G100b</td>
<td>T</td>
<td>2 (1.3)</td>
<td>—</td>
<td>—</td>
<td>16 (0.9)</td>
</tr>
<tr>
<td>G100b</td>
<td>T</td>
<td>—</td>
<td>9 (1.1)</td>
<td>—</td>
<td>6 (0.1)</td>
</tr>
<tr>
<td>G186</td>
<td>P</td>
<td>—</td>
<td>—</td>
<td>20 (0.4)</td>
<td>4 (0.2)</td>
</tr>
<tr>
<td>G186h</td>
<td>H</td>
<td>—</td>
<td>—</td>
<td>1 (0.1)</td>
<td>9 (0.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1 (0.9)</td>
<td>37 (14.1)</td>
<td>29 (1.5)</td>
<td>1 (0.1)</td>
<td>387 (32.6)</td>
</tr>
</tbody>
</table>

*the fragments emanate from the same tooth.*

The number of different species remains the same (cf. Tab. 4:13). A few bone fragments were also found in feature G186 in the northern part of the house. Fewer animal species were identified than was the case in House I. These are sheep/goat, pig, and a fragment of hare as the sole representative of wild animals. It is clear that preservation conditions were even less favourable in House II than in House I. Part of the explanation for the difference in the amount of bone material is found in the fact that the fire in House I contributed to a higher preservation frequency. In addition House I contains a far greater number of indoor hearths, which were probably used for cooking and the like. The length of time the house was in use is yet another obvious factor affecting the amount of bone remains.
There are very few carbonized seeds found in this foundation, which can be explained by the facts that this house did not burn down and that not all features have been possible to analyse. However, a few burnt seeds were found in a couple of the hearths and in a post-hole (Tab. 6:1). It is thus impossible to conduct a spatial analysis, but we can note that e.g. oat (*Avena sativa*) occurs together with hulled barley (*Hordeum vulgare*). Admittedly we are only talking about one single seed, but oat is found also in the contemporary feature T1 (Tab. 6:1 and Sect. 4.5.1.2.). The large pit G186 in the northern part of the foundation contains the greatest number of seeds, in principle the same species as in House I (Tab. 4:8), but surprisingly large number of them are raspberry seeds (*Rubus idaeus*) which otherwise are rare.

4.2.3. HOUSE III

4.2.3.1. The foundation prior to investigation

Unlike most of the others, this foundation was visible prior to excavation, but not in such a way that it was apparent what kind of construction it was. On the surface, a pile of stones, covered in turf, about 0.4 m high and nearly 3 m in diameter could be seen. From the turf, there protruded a number of stones, fire-cracked and edged. In the south east of the pile there was a low earth bank about 0.2 m high, 2 m wide and 4 m long (E—W). About 5 m north of this there was a parallel bank which was somewhat longer and less regular (Fig. 4:35).

This feature was observed in connection with the phosphate samplings in 1977. It was not registrated by the Central Board of National Antiquities in connection with the inventory for the Economic Map. The phosphate mapping covered this area, five samples being taken in or directly around the foundation. The mean value of these was 207 P°, which is higher than the mean value for the area as a whole (cf. Chap. 3:2). This high value need not exclusively coincide with activities in this foundation since it covers the older House X (Fig. 4:2).

4.2.3.2. The lay-out

The pile of stones was found to be situated in the south west corner of a square stone formation which was made up of four corner stones which were linked on three sides by rows of stones (Fig. 4:35). Levelling showed that the two northern corner stones were 21.57 m above sea level, and the two southern corner stones were 21.52 m above sea level. The distance between the corner stones was 7 metres.

The pile of stones in the south west corner contained over one cubic metre of stones of varying size and appearance, most of which were affected by fire. Directly under the turf, the earth was sooty and greasy and contained finds (Fig. 4:36). This was particularly clear in the central section between the large

![Fig. 4:35. Elevation contours of House III before excavation. Stones from clearing level (RN) II (i.e. 0.2 m below present surface). Black stones mark the termination of the foundation.](image)
stones. The thick layer of turf, which covered the pile of stones had only a weak podzol horizon, which in this case can be taken as an indication of "moderate" age.

The stones, constituting the border of the dark material, particularly in the south and north were primarily flat raised stones which did not bear the appearance of having been part of an ordered dry-stone construction. The border to the east was a large almost round stone, while to the north and north east no certain stone border could be distinguished. The large border stones were to some extent dug into the original surface (Fig. 4:37) while only small parts of the carbon layer extended under this surface. This means that the hearth, as the excavation showed was the case here, was laid out on the surface of the ground, and on the stones in the ground between the big stones. Unburnt and partly burnt clay found between some stones indicates also that these were periodically "mortared" together.

Cuts through both banks also showed that they were laid out on the original ground surface. They were placed directly inside their respective rows of stones. This indicates that the foundation did not extend further into the as yet uninvestigated eastern surface.

In conclusion, we can say that the structure is probably the remains of a log house, 7 m square. In the south west corner there was a hearth, 1 m in from the south wall and 0.75 m from the west wall. The space between the hearth and the original log walls was probably filled with stones which fell down during the fire and formed the pile of stones. The low banks along the northern and southern walls indicate that wooden benches existed inside the walls. No inner roof-supporting construction was found, which indicates that the log walls bore up the whole weight of the roof, as is usual in log houses. The probable place for the entrance is in the east, bearing in mind the position of the banks and the hearth.

In the south and south east part of the foundation, a number of features were found, including several post-holes, together with pits with a surface of soot and sand forming a crust. However, these belong to a building period pre-dating that of House III, since parts of these features lie under the old surface on which the banks were placed.
4.2.3.3. The finds

Unburnt clay (total about 1 kg) occurred in and around the corner hearth. In the south east corner of the foundation there was also a small concentration of burnt clay, belonging to House X underneath.

The other finds were scattered thinly over the area studied (Fig. 4:38 and Tab. 4:14). In some cases it is extremely difficult to identify the 18 finds to the correct building period. Finds from the original ground surface—i.e. under the hearth and the banks—have been referred to the older period.

Finds from the banks themselves could theoretically belong to any period.

None of the finds can be dated with certainty. The ring buckle in bronze (F108, Fig. 4:39) is completely smooth and undecorated, and was found near the surface in the middle of the foundation. The pin was rounded on top and flat underneath and was bent over a narrow section of the ring. This type is found in pre-historic and Medieval contexts, and probably in this case belonged to the period of House III, i.e. the Medieval Period.

---

**Table 4:14.** The finds in and around House III (and House X). Cf. Figure 4:38.

<table>
<thead>
<tr>
<th>FIND NO.</th>
<th>TYPE OF ARTIFACT</th>
<th>LENGTH (mm)</th>
<th>WEIGHT (g)</th>
<th>BELONGS TO HOUSE III</th>
<th>OLDER THAN HOUSE III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>iron rivet</td>
<td>51</td>
<td>21</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>25</td>
<td>iron nail/rivet, fr.</td>
<td>29</td>
<td>7</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>26</td>
<td>iron nail/rivet, fr.</td>
<td>73</td>
<td>28</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>27</td>
<td>iron nail/rivet, fr.</td>
<td>41</td>
<td>4</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>32</td>
<td>iron nail/rivet, fr.</td>
<td>15</td>
<td>3</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>40</td>
<td>iron knife, fr.</td>
<td>90</td>
<td>29</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>42</td>
<td>spear/arrow head</td>
<td>175</td>
<td>28</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>44</td>
<td>iron fastening (3)</td>
<td>90</td>
<td>14</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>72</td>
<td>iron rod, fr.</td>
<td>33</td>
<td>2</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>76</td>
<td>iron rod, fr.</td>
<td>20</td>
<td>1</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>108</td>
<td>ring buckle, bronze</td>
<td>30 Ø</td>
<td>5</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>110</td>
<td>bronze sheet</td>
<td>44</td>
<td>3</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>111</td>
<td>bronze sheet</td>
<td>33</td>
<td>3</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>112</td>
<td>bronze sheet, 4 fr.</td>
<td>30</td>
<td>2</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>120</td>
<td>round stone</td>
<td>69</td>
<td>110</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>123</td>
<td>whetstone, 3 fr.</td>
<td>80</td>
<td>67</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>232</td>
<td>iron slag</td>
<td>70</td>
<td>92</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>233</td>
<td>flint</td>
<td>26</td>
<td>2</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>
Table 4:16. Number of carbonized seeds from the hearth in House III.

<table>
<thead>
<tr>
<th>CULTIVATED PLANTS</th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hordeum vulgare</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Avena sativa</td>
<td>10</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Secale cereale</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pisum sativa</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indet. cerealia</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| ARABLE WEEDS      |     |     |     |     |     |     |
| Chenopodium album | 6   |     |     |     |     |     |
| Spergula arvensis | 2   |     |     |     |     |     |
| Polygonum persicaria | 2 |     |     |     |     |     |

| BERRY-BEARING PLANTS |     |     |     |     |     |     |
| Empetrum nigrum     | 24  |     |     |     |     |     |
| Arcostaphylos uva-ursi | 11 |     |     |     |     |     |

| OTHERS AND INDET. PLANTS |     |     |     |     |     |     |
| 15                     |     |     |     |     |     |     |

Two of the finds, the iron rivet F26 and the arrow or spear head F42 (Fig. 4:39) were found under preserved parts of the ground surface upon which House III was built. They belong therefore to an older period. Many of the other finds, e.g. the thin sheets of bronze (Fig. 4:39) were found near the surface (A-horizon) and in such a way that they probably belong to House III, or at least to a period that was not followed by a particularly high degree of activity.

In and around House III, and especially in the corner hearth, a total of 327 bone fragments were found (Tab. 4:15—in the table only the metre squares with identifiable bone have been listed). Of these, only about 6 % or 19 fragments could be specified (Larje 1983). The species found are sheep/goat, cow, domesticated pig and dog, and fish. In addition, there are three fragments of horn from elk or reindeer.

The bone material is also here extremely fragmentary, and conclusions concerning un-represented species are unreliable. However, it can be pointed out that game such as hare and seal are not represented, which may agree with other indications—the seeds—that this period was one with a more agrarian life style.

Compared with the existence of carbonized seeds in House I (Tab. 4:8) there is in this case a far greater number of CP-species (Tab. 4:16), and we can distinguish barley, oats and rye together with about 30 whole and half carbonized peas (Pisum sativum). This is the first time that both peas and rye are found in Gene. Only a few arable weeds are found. More crowberry was found altogether, than was the case in House I, and even bearberry (Arnostaphylos uva-ursi) was found, which was not the case in House I.

The total picture is one of a broader agrarian pattern in which three grain types and peas were grown. Pea plants were advantageous to grow in connection with crop rotation together with one or more of the grain types because it provides nitrogen. The lack of e.g. shore plants and grassland plants together with a small quantity of arable weeds points to a seed combination reflecting primarily species for human consumption. The complete lack of grassland plants, for example common spike-rush, which was the most common species in House I, indicates that this plant is associated with animal fodder and that animals were not kept in House III. The berry-bearing plants also reflect human consumption.

Table 4:15. Metre-squares in House III containing identifiable bone. Number of fragments: Brackets: weight in grammes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>537 454</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 (0.1)</td>
<td>-</td>
<td>14 (1.1)</td>
</tr>
<tr>
<td>537 455</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>538 454</td>
<td>1 (0.7)</td>
<td>8 (6.5)</td>
<td>1 (1.6)</td>
<td>2 (1.0)</td>
<td>-</td>
<td>1 (0.1)</td>
<td>201 (33.3)</td>
<td></td>
</tr>
<tr>
<td>538 457</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3 (2.8)</td>
<td>-</td>
</tr>
<tr>
<td>539 454</td>
<td>-</td>
<td>-</td>
<td>1 (0.8)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>38 (5.8)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1 (0.7)</td>
<td>8 (6.5)</td>
<td>2 (2.4)</td>
<td>2 (1.0)</td>
<td>1 (0.2)</td>
<td>2 (0.2)</td>
<td>3 (2.8)</td>
<td>254 (40.3)</td>
</tr>
</tbody>
</table>
4.2.4. HOUSE IV

4.2.4.1. The lay-out

This foundation was gradually exposed between 1979 and 1982. During the trail excavation in 1977, trenches were dug to the north and to the south of the foundation. Nothing was found in these that directly indicated a foundation.

Diagonally across the foundation from the NW to the SE there is a sharp line between the areas of sand and fine sand which is the transition area between zone A and B (Fig. 3:2). The area with fine sand (zone B) to the east is grey and very compact in places. On the other hand, the sand (zone A) contains a rusty earth and reddish features belonging to House IV which distinguishes it from the greyer features in the fine sand area, which mainly belong to House VII (Sect. 4.2.6.).

The podzol profile, particularly over the fine sand area, is unnaturally wavy and this together with the tendency of drawn-out material in connection with the features indicates that this area was probably at one time used for cultivation. The surfaces covering the northern parts of Houses I and II, and the NE part of House IV, possibly even the whole area of House VII, have been exposed to limited cultivation activities probably during the Medieval Period. This means that the interpretation of Houses IV and VII is made more difficult.

There is no trace of the gable end in the north of the foundation, as is the case in Houses I and II. The southern gable end is complicated because of possible over-layering (Fig. 4:40). The eastern long side is similarly partly coincident with the west wall of House VII and the east wall of House IX.

The western long side of the foundation is completely intact and yields a post row inside a trench formation which is the exact equivalent of House II. The trench and the post row are rather heavily bowed, which indicates a limitation in the length of the house. Within the foundation there are about 60 features.

With regard to post pairs, three certain examples somewhat spread out have been able to be distinguished (Tab. 4:17). These are not situated exactly on either side of the centre line of the house. The regular pattern is that the west post is placed 0.2 to 0.4 metres west of the central line, while the east post is placed 0.8 to 0.2 metres to the east. To the south of post group No. 2, there is a post pair of the same type as the others (Fig. 4:40). However, here the west post is placed 1.0 metres west, and the east post about 0.4 metres east of the central line of the house. This is a reverse misalignment compared with post groups 1–3. The distance between this post group and post group No. 2 is only about 0.5 m, for which reason it can be ascribed to a rebuilding period, insofar as it belongs to this foundation.

The total length of the foundation is uncertain because of the great uncertainty of the location of both gables. Feature D1 (Fig. 4:40) is taken to be the southern gable, while the angular feature D23 is interpreted as a separate construction belonging to House IX (Sect. 4.2.8.).

In this foundation neither outer roof-supporting posts, portal posts or certain gable posts have been found.

4.2.4.2. The roof-supporting elements

A. The inner roof-supporting posts

As mentioned above, these deviate somewhat from the probable centre line of the house. Possibly, the eastern wall line is situated slightly farther to the east, i.e. in line with the eastern trench, D58. However, this means that the post pair slightly south of No. 2 has an even more unbalanced position in relation to the centre line at the same time as the east and west walls of the house have a completely differing construction. I have therefore chosen the above mentioned eastern post row from D55 to D72 as having constituted the bearing section of the wall (Fig. 4:40).

Regarding the roof-supporting posts a couple of important differences compared to House I could be observed, in addition to some similarities. One difference is that the carbonized part of the post consistently occurred near the surface, 0–0.3 m below the clearing level (RN), while no trace of a post could be observed lower down in the hole. The pits were on average 0.5 m deep below RN. In the northern section of House I conditions were the reverse. In the southern and central sections of the house, conditions, where observation was possible, were similar to those in House IV (cf. Fig. 4:5a–e).

<table>
<thead>
<tr>
<th>Post group No.</th>
<th>Dist.</th>
<th>H_{br}</th>
<th>B_{br}</th>
<th>H_{br}/B_{br}</th>
</tr>
</thead>
<tbody>
<tr>
<td>south gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 1</td>
<td>3.5</td>
<td>5.2</td>
<td>1.2</td>
<td>4.3</td>
</tr>
<tr>
<td>group 2</td>
<td>3.0</td>
<td>5.2</td>
<td>1.4</td>
<td>3.7</td>
</tr>
<tr>
<td>group 3</td>
<td>3.1?</td>
<td>4.7</td>
<td>1.5</td>
<td>3.1</td>
</tr>
<tr>
<td>north gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

L = 13.2?  \quad M = 5.0  \quad M = 1.4  \quad M = 3.7
Fig. 4.40. Features on area A. Black features interpreted to be connected to House IV. 1–3 = post groups according to Tab. 4:17. Numbers = D-features mentioned in text.
It has also been established that at least two of the investigated posts in House IV consisted of cloven log. The posts had an original diameter between 0.2—0.3 m. As was the case in House I, these posts were lined at the end with birch-bark.

**B. Posts and trenches in wall line**

The western wall is the most clearly defined, consisting of a trench 10.4 m long and 0.1—0.3 m wide. To the east of this, generally at a distance of 0.6 m, there is a post row, consisting of 16 post-holes 0.2—0.4 m in diameter situated 0.7 m apart on average (Fig. 4:41).

The post row was only visible in conditions of good light and humidity. No visible carbon was found and the filling consisted of a slightly reddish-brown material. No trace of the posts themselves was found. The post-holes were very alike, all being about 0.1 m deep below RN. The dimensions of the pits mean in principle that these wall posts were less sturdy than their equivalence in House II.

The trench was similar to that surrounding House II, except that the filling in this case was reddish material, unlike the sooty brown material found around House II. These differences are primarily dependent on the fact that House IV burnt down, while House II did not.
The trench was situated in the sandy area (zone A) which is easily dried and the features are occasionally difficult to interpret. The profiles (Figs. 4:41–42) are a bit inconsistent, but generally the trench has a bowl-shaped profile with a light red bottom layer and a dark red upper layer. On average the trench is dug 0.25–0.30 m below present ground level (Fig. 4:42). No depressions or sunken posts could be observed in the bottom of the trench (cf. western trench House II, Fig. 4:26).

The eastern long wall is altogether more problematical. Detailed investigations could not be conducted here. There are great similarities with the east wall in House II. Three parallel post rows occur (Fig. 4:40). As mentioned above, the one to the west has been linked to House IV and obviously the eastern one can be associated with House VII (Sect. 4.2.6.2). Between these, there is also a rather long and irregular trench which to the south appears in shape to equate to trench D2 outside the west wall of House IV. Below the southern section of the trench, post-holes were found 0.7–1 m apart. This post row has been suggested to belong to the E wall of House IX (Fig. 4:77). It should be noted that three parallel post rows only occur at a distance of about 1–2 m from X-coordinate 513.5 (Figs. 4:2, 4:72, 4:77).

C. Undetermined posts

Probably, a number of the features registered in the plan (Fig. 4:40) can be associated both to the construction itself and to secondary constructions and difficulties in deciding to which construction a feature belongs also exist here.

4.2.4.3. Finds in and around House IV

Since this is the area with the most activity during the period of occupation, the number and variation of finds is greatest here. Also, the problems are greatest with regard to ascribing individual finds to one particular foundation. Therefore this section covers all groups of finds in Houses IV, VII and IX.

Within this area more varied finds occur than was the case in Houses I and II (Figs. 4:43–45). The most common find categories are mould and crucible fragments. The total weight is not particularly large: approximately 4 kg mould fragments and 0.5 kg crucible fragments. Some hundred of the mould fragments still show their ornamentation or other distinguishable elements.

As can be seen from the three find distribution plans (Figs. 4:43–45), the majority of the finds lie in a belt running NW–SE, from the south of House VII, over House IX and the southern gable area of House IV, to the west of House IV. It is interesting that the area in which Houses IV, VII and IX, according to the suggestions, had the same siting of their respective walls, is practically free of finds (seen best in Fig. 4:45).

One probable explanation of this is that this area was the place of a wall during the greater part of the period of occupation, and this restricted the spreading of refuse.

A. Moulds

More or less all of the burnt clay found in this area probably came from moulds (Fig. 4:43). The pieces are generally red and lightly burnt with a yellowish tone on the cast surface. There are also a number of blue-grey pieces. The mould fragments occur primarily SW of House IV, over House IX, and in a small concentration directly to the south of House VII. Individual pieces were also found scattered to the north and east of the foundations. The distribution is thus rather wide, which is also demonstrated by the fact that four of the pieces which fit together lay about 5 m from each other.

No whole mould has been found, but pieces have been able to be fitted together to a complete head-plate for a relief brooch (Fig. 4:46). Altogether 115 identifiable mould fragments have been found, together with about a thousand fragments with no other characteristics than the quality of the clay. The identifiable mould fragments are listed in Table 4:18.

There are two main types of material: (a) the major part of the material is red, loosely burnt with a weak yellowish cast surface, and (b) a minor part is blue-blue-grey and in some cases browny, slightly harder with no visible difference between the cast surface and other surfaces. There are examples that fall between the two mentioned above, but it can be said in general that the blueish fragments often are moulds for rod-like objects. The technological analyses of one of the mould fragments (Excursus 1 and Sect. 6.5.2.) showed that the clay was tempered to about 10 % with chamotte and charcoal/ash. A similar technique has also been used at Helgö (cf. Lamm 1977:106f).

Of the types listed in Table 4:18, the first three have been judged to be moulds for what Meyer (1934:75ff) calls the "northern flat-footed brooches" (cf. Fig. 4:46b). According to Meyer's (1934:78) definition, the type is characterized by lobes at the arm- and foot-terminations, a cross ridge at the narrow section of the foot, and a disc on the bow. It should be mentioned that Meyer's "Sogne-group" is also characterized, among other things, by a disc on the bow (1934:71).

All of the fragments from Gene in types 1, 2 and 3 (Tab. 4:18) probably belong to these type of brooches. This is most clearly seen in fragment F284 and F682 (Fig. 4:46a) in which the greater part of the head-plate together with half of the bow and a small piece of the disc have been preserved. The disc is ornamented with a plaited edge (F284), like the smaller of the two brooches from Hällan in the parish of Jättendal in northern Hälsingland (Meyer 1934:122, Fig. 22; Koivunen 1975:15, Fig. 4:5).

Fragments F377 and F281 (Fig. 4:46a) are congruent parts of different moulds. That they actually belong to different moulds is suggested by their completely differing colour (blue-grey and brick-red respectively). These constituted part of the corner of the head-plate on a relief brooch identical to the lower left part of F682 (Fig. 4:46a). The ornamentation is not the same as that on F284. The fragments F283, F615 and F626 (Figs. 4:46a, 4:47) have identical ornamentation and they are, in turn, identical to the upper left part of F682 (Fig. 4:46a).
Fig. 4.43. Distribution of burnt clay on area A, shown in grammes/m².
Fig. 4: Distribution of moulds and crucible fragments on area A.
Fig. 4:45. Distribution of finds on area A. Map excludes finds of burnt clay, mould and crucible fragments, burnt bones and slag.
All together 8 relief brooches with bow disc and lobes at the arm- and foot-terminations are known in Scandinavia (Hougen 1967, Koivunen 1975), and of these five have a \( \Lambda \)-formed ornament on the head-plate (as in Fig. 4:46b). One of them has instead a \( \nu \)-formed ornament (Koivunen 1975:15, Fig. 4:3). The brooch from Lanseit in Norway is completely without a \( \Lambda \) or \( \nu \)-formed ornament on the head-plate (e.g. Koivunen 1975:15, Fig. 4:1).

Similar \( \nu \)-formed ornaments are also found on four of the fragments from Gene (F682, F126 and F614 on Fig. 4:46a, and F399). Only on F682 it could be determined that the ornament is \( \nu \)-formed. The others are not found on fragments with parts of head-plate and bow preserved, why it is impossible to decide whether the ornament is \( \Lambda \) or \( \nu \)-formed. Of the others F126 (Figs. 4:46–47) is best preserved and the \( \Lambda \) or \( \nu \)-formed ridge (as seen on a cast object) encloses a smaller similar ornament, which in turn encloses a crater-shaped ornament. The outer \( \Lambda/\nu \) -ornament's pointed section ends with a cross ridge. No similar composition occurs among the above mentioned brooches. In common with the brooches from Engelsby and the smaller brooch from Hällan (Koivunen 1975:15, Fig. 4:2 and 4:5), the Gene fragments have typical style I-ornaments outside the \( \Lambda/\nu \) -form.

A further fragment (F288, Fig. 4:46a) comes from the head-plate. From this it is apparent that, as in the case of F284, the termination on the head-plate is flat, completely unornamented and about 5 mm wide. In F284 the transfer to the flat outer border is raised and wavy (i.e. on a cast object, depressed), while in F284 there is a ridge (in the cast object). None of these elements are repeated in the above mentioned brooches (cf. Hougen 1967, Koivunen 1975). The head-plate termination on these being usually profiled.

Thus, with regard to the head-plates, at least six certain moulds can be noted. The \( \nu \)-shaped ornaments can theoretically belong to one of these, although not to F284 or F682. F126 is not like the other regarding the degree of burning, and since the ornamentation in question would be similar to each other in the moulds, the degree of burning should not vary to any great extent (assuming that it is not a question of secondary burning). Thus it is most probable that at least seven relief brooch moulds are included in the material. It could also be noted that three or four different kinds of relief brooches have been cast both with (F682) and without (F284) \( \nu \)-ornamented head-plate.

With regard to the bow of the relief brooch, there are three intact parts of the back portion of the mould (Fig. 4:54). In these three cases, the horizontal length of the bow is 17 mm in F295, 20 mm in F656, and 25 mm in F296. These back portions for the bow constitute complete pieces, which shows that the mould consisted of at least three parts (cf. Lamm 1973:3).

The usual three lobes on the foot plates on this type are generally only slightly in relief compared with e.g. the traditional clasp buttons (cf. e.g. Lamm 1972:70ff). Nothing in the Gene material indicates that clasp buttons were produced there. The 15 fragments with lobes should therefore belong to relief brooch moulds as above.

In case F282 (Figs. 4:46a, 4:47) there is in addition to a part of the lobe also a side field of the foot-plate preserved intact. The edge of the lobe is radially ornamented, like on the brooch from Amalienborg in Sør-Trøndelag in Norway (Koivunen 1975:15, Fig. 4:3). The side field is bordered with ridges on all sides (i.e. ridges on the cast object). This means that the brooch had a ridge running along its length dividing it into two halves. Such a central ridge occurs in the group in question on the brooch from Rogaland in SW Norway (Koivunen 1975:15, Fig. 46). The central ridge is common on other types of relief brooches (e.g. Lundström 1972:132ff).

Yet another example of a fragment belonging to the side field of a foot-plate is F612 (Fig. 4:46a). This has a slightly bowed and high ridge (on a cast brooch) beside slightly lower ridges, which come together to form a pointed angle. The probable site on a brooch would be the lower or upper part of a side field, and this brooch has probably also had a central ridge.

It is clear from the 8 known brooches with bow disc and lobes that the ornamentation need not be similar on the discs and lobes (Koivunen 1975:15, Fig. 4). However, there is a certain morphological connection but for example in the

<table>
<thead>
<tr>
<th>Type of fragments</th>
<th>No. of fragments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Decorated head- and footplates for relief brooch</td>
<td>27</td>
</tr>
<tr>
<td>2. Decorated round lobe or disc</td>
<td>10</td>
</tr>
<tr>
<td>3. Undecorated round lobe or disc</td>
<td>5</td>
</tr>
<tr>
<td>4. Striated ring</td>
<td>3</td>
</tr>
<tr>
<td>5. Decorated rods, square cross-section</td>
<td>1</td>
</tr>
<tr>
<td>6. Undecorated rods, square cross-section</td>
<td>9</td>
</tr>
<tr>
<td>7. Key</td>
<td>4</td>
</tr>
<tr>
<td>8. Undecorated rods, circular cross-section</td>
<td>3</td>
</tr>
<tr>
<td>9. Ingate to the mould, etc.</td>
<td>15</td>
</tr>
<tr>
<td>10. Back portion of the mould</td>
<td>16</td>
</tr>
<tr>
<td>11. Undetermined edge, ridge, etc.</td>
<td>22</td>
</tr>
</tbody>
</table>

**Total 115 determined fragments**
Fig. 4.46a. Mould fragments with style I ornamentation (also opposite page).
Mould fragments found in pit F32. Cf. Fig. 4.40.

Fig. 4.46b. Schematic drawing of one of the brooch-types cast in area A. Drawing: P.H. Ramqvist.
Fig. 4:47. Drawings of some mould fragments with style I ornamentation. Cf. Fig. 4:46a. Drawings: P.H. Ramqvist.

Fig. 4:48. Mould fragments on area A.

(a) Striated rings.

(b) Lobes on the foot-plate.

Fig. 4:48. Mould fragments on area A. (b) Striated rings.

Fig. 4:49. Drawings of mould fragments. Cf. Fig. 4:48. (a) Lobes on the foot-plate and striated rings. (b) Proposed reconstruction of ring on fragment F152. Drawings: P.H. Ramqvist.
Fig. 4.50. Example of mould fragment for ornamented rod or key shaft.

Fig. 4.51. Examples of mould fragments for rods or key shafts.

Fig. 4.52. Fragment of moulds for keys.

Fig. 4.53. Drawing of mould fragment F279. Cf. Fig. 4.42. Drawing: A.-K. Lindqvist.
smaller brooch from Hällan, the bow disc's edge has a plaited pattern and a round depression in the middle. The three lobes on the foot-plate, however, have quite different ornaments (cf. Åberg 1924:40, Fig. 94).

Apart from the partly preserved lobe on F282, the other lobes all have plaited edges (Figs. 4:48a–49). In the identifiable cases, the middle section of the lobe consists of a round depression. Such a variant has not been found in any other material. The point with the more usual type of depression has been the setting in of other decorative material, e.g. almandines as in the case in the larger brooch from Hällan. A couple of uncertain fragments (F146 and F646) give the impression that lobes with a depression in the middle also were produced.

There are also three fragments for striated rings (Figs. 4:48b–49). These can have belonged to the same mould. Judging by the shape in the best preserved fragment, it is clear that the diameter of the cast ring must have been 25–30 mm, i.e. not for finger, arm or neck. Two of the fragments have traces of depression which show that the ring has been decorated with knobs (F152, Figs. 4:48b, 4:49a). Knob-rings of this size are found in material from the Migration Period on Gotland and Öland, as well as on the mainland up as far as Hallingland (cf. Nerman 1935:7 and Taf. 11, Fig. 98), but these have no striations and are generally provided with nine knobs.

In both broken edges on fragment F152 there are hints of further depressions which means that the ring must have had an inner diameter of 30 mm in order that for instance nine evenly placed knobs should fit (Fig. 4:49b).

Fragments for ornamented and unornamented rod-like pieces (Figs. 4:50–51) are generally burnt in a different way to most of the others. The only ornamented fragment, F396, fits together with F278 (Fig. 4:50), which is made up of a rod with square cross-section. The ornamentation consists of a large ridge with three intermediate smaller ridges placed closely together. This type of ornamentation is found on many different types of objects from the Migration Period, e.g. on the shafts of bronze keys and the ends of gold neck-rings (Nerman 1935:85, Fig. 207 and Taf. 42, Fig. 411). As mentioned in Section 4.2.1.5., this rhythmic ornamentation occurred to some extent during the Roman Iron Age. No other example of rod-like pieces with square cross-section in combination with this ornamentation has been found, but key-shafts with square cross-section have been found (e.g. Schetelig 1912:135, Fig. 319).

That keys really were cast in Gene is apparent from several fragments, of which at least one was intended for a three-bit key (F279, Figs. 4:52–53).

In addition to the mould fragments mentioned above, there are several belonging to undecorated parts of moulds such as inflow channels and fragments of the back portion of the mould (Fig. 4:54). Summarizing the mould finds, remains were found of at least the following number of moulds:

- 7 relief brooches
- 1 knob-ring
- 2 keys

It is impossible to estimate the number of objects produced, bearing in mind that it is theoretically possible to cast several times in the same mould. However, it is uncertain as to whether this has been done in Gene.

Fig. 4:54. Mould fragments from area A. (a) Inflow channels, (b) separate back portion for the bow on a brooch.
B. Crucibles

No whole crucible was found in or around the foundations. However, one was found intact in pit T1 (Sect. 4.5.1.2., Fig. 4:86). The crucible, made of tempered clay (cf. Excursus 1), is of a closed type and is provided with a handle and mouth (cf. Lamm 1977:99ff). The outer dimensions of the crucible are: 58 mm long, 45 mm wide and 40 mm high. The handle is located almost in the middle of the top of the crucible and is rectangular (22 x 13 x 9 mm).

The crucibles have been constructed by placing an oval bowl-shaped upper part together with another lower part of the same shape but slightly smaller. The upper part was provided with a handle. Both parts, having been put together with more clay, were burnt at a temperature close to or slightly above the melting point of the clay (cf. Lamm 1969: 124). For this reason, the joint between the two parts is often unclear. The outside of the crucible is often quite vitriified having a generally dark green tint, although bright red and black patches occur.

Of the more than 100 crucible fragments found in and around the foundation the majority is of the same type as the intact crucible. There is a close palaeoecological connection between the crucible fragments and those of the mould (Fig. 4:44). It is difficult to come up with an estimate of how many crucibles were consumed, but the figure is probably somewhere between five and ten. A couple of features belonging to House IV contained crucible fragments.

There are several crucible fragments which show that an open type of crucible was also used. This type differs from the closed type in that it does not have a vitriified surface. It is not possible to establish exactly what the original crucibles looked like. In some of them, as is also the case with the closed crucibles, there are fragmentary remains of gold.

Both types of crucible, i.e. open and closed, occur on Helgö (Lamm 1977:99ff). The open crucibles are of several types, some wide and shallow, and some narrow and deep. The open crucibles are, however, considerably fewer in number than the closed ones, which is also the case in Gene.

It is also fairly common to find gold remains in open crucibles, which, according to Lamm (1977:103), have had another function than the closed ones and might have been used for gilding.

C. Other finds

One type of find which is common in settlements around Scandinavia during the Iron Age, but which seems to be very rare in the settlements investigated in Norrland, is pottery. On area A, altogether 15 sherds of asbestos-tempered pottery have been found (Figs. 4:45, 4:55, Tab. 4:19). The fragments probably belong to one and the same pot. The sherds were scattered in a belt running NE–SW, pointing towards the centre of the western long wall of House II. A couple of fragments were also found at the entrance to House VII, as well as just north of the west wall of House IV (Fig. 4:45).

All of the larger sherds are ornamented with grooves 1–2 mm wide and 0.5–1 mm deep placed close together (Fig. 4:55). On two of the largest sherds there is a clear indication that the lines are not parallel, but rather converging/diverging. The ornamentation seems, from the cases where this has been distinguishable, to have been placed vertically on the pot. The object in question is probably a bucket-shaped pot, i.e. cylindrical and slightly larger at the top than at the bottom.

<table>
<thead>
<tr>
<th>FIND NUMBER</th>
<th>TYPE OF ARTIFACT</th>
<th>LENGTH (mm)</th>
<th>WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>sickle, iron, fr.</td>
<td>70</td>
<td>29</td>
</tr>
<tr>
<td>46</td>
<td>handle to sheaf (?), iron, fr.</td>
<td>81</td>
<td>14</td>
</tr>
<tr>
<td>61</td>
<td>tool with tang, fr.</td>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>109</td>
<td>bronze sheet with 5 holes, fr.</td>
<td>44</td>
<td>5</td>
</tr>
<tr>
<td>113</td>
<td>bronze sheet with 2 holes, fr.</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>114</td>
<td>bronze sheet, fr.</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>202</td>
<td>tool with tang, iron, fr.</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>236</td>
<td>1/2 opaque glass bead, orange</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>237</td>
<td>bronze button for wrist-clasp</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>239</td>
<td>spindle wheel, clay</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>301</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>302</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>320</td>
<td>iron awl (?)</td>
<td>113</td>
<td>21</td>
</tr>
<tr>
<td>321</td>
<td>iron hammer (?), fr.</td>
<td>47</td>
<td>23</td>
</tr>
<tr>
<td>331</td>
<td>iron spiral to fibula (?), fr.</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>349</td>
<td>decorated bone, fr.</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>350</td>
<td>melted bronze jewellery with gilded buttons</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>351</td>
<td>bronze sheet, fr.</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>352</td>
<td>melted bronze</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>354</td>
<td>whetstone</td>
<td>116</td>
<td>62</td>
</tr>
<tr>
<td>355</td>
<td>whetstone</td>
<td>97</td>
<td>153</td>
</tr>
<tr>
<td>461</td>
<td>melted bronze</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>462</td>
<td>melted bronze</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>463</td>
<td>wrist-clasp with 3 buttons, bronze</td>
<td>32</td>
<td>6</td>
</tr>
<tr>
<td>465</td>
<td>bronze, fr.</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>466</td>
<td>bronze sheet, fr.</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>467</td>
<td>bronze button for wrist-clasp</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>468</td>
<td>decorated bronze button</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>472</td>
<td>perform to strike-a-light stone</td>
<td>83</td>
<td>210</td>
</tr>
<tr>
<td>473</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>41</td>
<td>8</td>
</tr>
<tr>
<td>474</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>41</td>
<td>6</td>
</tr>
<tr>
<td>475</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>476</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>477</td>
<td>asbestos-tempered pot sherd, decorated, 2 fr.</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>478</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>479</td>
<td>asbestos-tempered pot sherd, decorated, 2 fr.</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>480</td>
<td>asbestos-tempered pot sherd, decorated</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td>503</td>
<td>iron knife, fr.</td>
<td>71</td>
<td>10</td>
</tr>
<tr>
<td>505</td>
<td>fishing hook, iron</td>
<td>84</td>
<td>12</td>
</tr>
<tr>
<td>506</td>
<td>iron knife, fr.</td>
<td>69</td>
<td>20</td>
</tr>
<tr>
<td>523</td>
<td>iron ring</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>548</td>
<td>bronze, fr.</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>551</td>
<td>whetstone</td>
<td>155</td>
<td>260</td>
</tr>
<tr>
<td>553</td>
<td>whetstone</td>
<td>113</td>
<td>310</td>
</tr>
</tbody>
</table>

On the largest sherd (F473, Fig. 4:55) there are also small horizontal grooves interrupting the vertical grooves at the point of convergence. The diameter of the pot has been approximately 200 mm.

The thickness of the ware is 5 mm throughout, and in contrast to the grey-brown tinted and rather porous outside, the inside is black and hard. This black lining forms a kind of crust which is 1–2 mm thick. The tempering consists of crushed asbestos (i.e. Kryosite, see Excursus 1) which appears in the form of thin fibres, usually 1 mm, but occasionally 5 mm in length.

This type of pottery, i.e. bucket-shaped pots, is primarily found in SW Norway, particularly in Rogaland (Bee 1931: 164ff). Apart from the basic shape this type is often heavily tempered with crushed t alc, soap-stone or asbestos. According to Bee (1931:201) the type appears in the middle of the 4th century and throughout the middle of the 6th. Bee (1931:202) states that the type was most common during the 6th century when pots with thin walls began to appear. With regard to the general characteristics, the Gene sherds fit in well with Bee's (1931:171) descriptions.

Something that is not mentioned by Bee is whether the inside of the pot is black. However, he does say that many of the pots have a sooty outside (1931:203). This fact together...
with the advantages of the tempering material would indicate that at least some of the pots were used for cooking.

The black inside found on the Gene sherds is, however, common in the type of asbestos-tempered pottery found in the pre-sedentary period in Norrland (Linder 1966:140).

Yet another sherd of asbestos pottery (F480, Fig. 4:55), but of a completely different character, was found on area J about 30 m north of House III (cf. Fig. 4:1). This sherd is very fragmentary, but has parts of the outside and the inside preserved. The thickness is the same as in the previous cases, i.e. 5 mm, but the ware is yellow-red throughout and contains more and larger pieces of asbestos. In addition, there is no ornamentation (cf. Chap. 4:5).

Among other finds from area A (i.e. in and around Houses IV, VII and IX, Tab. 4:19, Fig. 4:45) some tools or tool fragments occurred. Scattered over the area were found whetstones, cutting tools, awl-like tools, pre-form to a strike-a-light stone, fishing hook of iron, a spindle whorl and some uncertain fragments of shears, part of a small iron hammer (?), fragments of sickle and chisel, etc. (Figs. 4:56–57). In addition there are about 50 nails or rivets as plotted in Fig. 4:45.

A certain amount of jewellery of the type common in the Migration Period was also found. F463 is one end of a wrist-clasp in bronze with three buttons (Fig. 4:56). A bronze jewellery damaged by fire had two gilded buttons preserved which were decorated with stamps (F350, Fig. 4:56). A further two bronze buttons (F237 and F467) belonging to wrist-clasps were also found (Tab. 4:19).

Just to the west of House IV a sheet of bronze (F114), a bronze melt (F461) and a bronze button (F468, Fig. 4:56) were found. A similar type of button is found on Gotland (Nerman 1935:Tab. 50, Fig. 524) from period VI:2, but this has an appearance more typical of the Migration Period with inlays of garnets and gold.

From the botanical point of view, so far only one post-hole has been analysed in this foundation (D35, Tab. 6:1), in which it appeared seeds of barley together with other species also found in House I.
4.2.5. HOUSE VI

4.2.5.1. Prior to investigation

This foundation could be observed prior to the excavation by the existence of a horse-shoe shaped bank formation (cf. Fig. 4:58) surrounded by a ditch on the three sides. The two parallel banks were about 20 m long and 2–5 m wide and the distance between them was about 5 m in the middle. The banks were low, only about 0.3 m at most. The bank at the NW gable end was low and hardly visible. The distance between the ditches running alongside was about 14 m, and the ditches were somewhat shorter than the banks. To the SE, the banks flattened out successively and in the NW, they joined the cross bank.

During the phosphate mapping, a sampling pit was

![Map of House VI](image)

*Fig. 4:58. Map of House VI. Shows three different clearing levels (RN I–III). Banks and ditches of RN I. Carbonized wood of RN II and post-holes and hearths of RN III. The square in the northern corner shows the area for closer excavation (cf. Fig. 4:59).*
placed between the banks. Both the A- and B-samples showed values considerably lower than the respective average, which was also the case in the surrounding sampling pits. On the other hand, rather a lot of fire-cracked stones were found in this area, and it was these indications that indicated the structure.

The first test trench was dug in 1978 in a N—S line over the SW trench and up past the NW ditch. It was thus found that the banks were artificial, and they contained a great amount of carbonized wood.

In the trial excavation in 1980, a couple of squares were located in and around the bank constructions. These yielded a lot of slag products, burnt and sintered clay, iron slag and iron fragments. These established that iron working had taken place around the banks and that it probably was a house foundation.

4.2.5.2. The lay-out

Four post-holes were found in the foundation in addition to the above mentioned banks, ditches and carbonized material. Along the mid-axis of the foundation there is also a hearth complex (Fig. 4:58). The foundation has only partially been excavated, the principle being first to establish the level at which the carbonized material begins to appear (RNII). The inside of the foundation has generally been taken as far as RNIII, i.e. down to the C-horizon, and existing features have been excavated. About 15 m² of the northern corner of the house have also been excavated more closely (Fig. 4:59).

There is as yet no proof of inner roof-supporting posts existing in pairs, but there is one pair in the SE gable end which practically equates to the existing gable posts in Houses I and II (Fig. 4:58). These are located 6.1 m apart and at the same cross-line as the SE end of both long ditches.

The post-hole C9 (Fig. 4:65) occurs 5.5 m to the NW and lies about 1.5 m from the mid-axis of the house. It is not yet known whether an equivalent post-hole exists about 1.5 m E of the mid-axis since this area has not yet been excavated down to RNIII.

A further 5.7 m to the NW along the same line, i.e. about 1.5 m from the mid-axis, there is a similar post-hole (C10, Fig. 4:65), which, however, completely lacks traces of an equivalent to the E of the centre line.

Even if it is not possible to prove the existence of a three-aisled foundation structure, it is nevertheless probable that this exists. This is borne out, among other things, by the symmetrical construction of the house. The banks are similar and contain the same features in the same amounts, and the post-holes found occur at about the same distance apart. In this case, the missing post-holes are interpreted as having existed but not having left visible traces. For example, they could have been buried shallowly or placed directly on the contemporary floor surface. This would mean that the foundation has the same basic structure as the rest of the foundations, i.e. a relatively narrow mid-aisle and wide side-aisles.

4.2.5.3. The problem of carbonized timber

Carbonized timber was found in and under the greater part of the earthen banks (Fig. 4:58—59). Individual pieces of carbonized timber have also been found between the banks. Theoretically, this material could emanate from the walls, roofs or both. Here I shall evaluate the alternatives based on current knowledge.

The northern corner of the foundation has been studied more carefully (Figs. 4:59—61). It can be seen that the timber along its length forms a right angle system which can be distinguished also in fragmentary form on the plan of RNII (Fig. 4:58). Continuous lines of timber lie 1.5 m and 3.5 m inside the longer ditches, in addition to 3.5 m inside the ditch in the NW gable end. This means that we get a frame 3.5 m inside the ditch running around the whole house, and a somewhat less obvious line 1.5 m inside the ditch. This timber has a diameter of about 0.2—0.3 m.
At right angles in relation to the length of the house, between both thicker logs running along the length, there is weaker timber 0.1–0.15 m in diameter, situated 0.6–1.2 m apart (Fig. 4:59). Between them there is even weaker timber 0.04–0.10 m in diameter which is thus parallel to the length of the house (Fig. 4:61). Above all these types of timber mentioned, fragments of partially carbonized birch-bark were found.

In the northern corner, the right angle structure goes over to become fan-shaped so that the timber at right angles to the length of the house is less close together away from the house and closer together towards it. In the gable end there is also evidence of twigs (Fig. 4:59), which has not been able to be established in the studied areas of the long side of the house.

Several alternatives have been tested in the field, and I have earlier, in shorter papers, suggested that the carbonized timber constitutes the remains of a bulwark wall (Ramqvist 1981a, 1982). The latest season in the field together with some theoretical considerations indicate, however, that this material is perhaps better explained as being a collapsed roof.

During the 1982 campaign, part of a trench was excavated which appeared directly under the SW bank. It protrudes under the SE section of the bank (Fig. 4:63). In the excavated part of the trench there was a colouration from a square post. The trench had the same colour and filling as the post-holes in the foundation.

Judging from the approximately 2 m long exposed section of the trench, it runs directly under the bank, i.e. 2–2.5 m inside the ditches. Thus it does not coincide with either of the two lines of timber, which ran 1.5 and 3.5 m inside the ditches. The trench should therefore appear in the profile (Fig. 4:62) somewhere around coordinate X = 461 (i.e. the 4th metre). No definite trench could be seen in the profile, but it is indicated by a larger stone.

A depression could be observed in the same profile (Fig. 4:62) at coordinate X = 471 (the 14th metre). This depression fits well with a trench in the gable end. These observations show that the bank is not connected with the wall.

A number of theoretical considerations can be raised. Firstly, it is difficult to explain the rather regular fan shape.
of the timber in the corner if the walls are assumed to have fallen *inwards*. Secondly, it is difficult to explain the distance between wall and surrounding ditch if the walls are assumed to have fallen *outwards*. The distance in this case would be 3.5 m, which seems inexplicable.

In my earlier papers, I assumed that the outer of the carbonized timber lines, i.e. 1.5 m inside the ditches were the reminiscences of the sill beam and that the banks constitute the remains of a collapsed sod wall situated outside the bulwork wall. The birch bark would then have been placed between the sod and the wooden wall. In order to illustrate the likelihood of this alternative, some calculations are necessary.

Each bank is 20 m long, 4 m wide and at most 0.3 m high, which means that one bank consists of about 15 m³ of earth. In order that the bank should have a final width as much as 4 m, the original height of the wall should have been at least 1.5–2 m. Reckoning that it was 2 m high, 1.5 m wide at the base and 1 m wide at the top, this means that about 50 m³ of earth would have been required for a sod wall, 20 m long. On the other hand, if the sod wall had been 1.5 m high, 1 m wide at the base and 0.5 m wide at the top, about 23 m³ would have been needed. These figures indicate that it is improbable that the banks emanate from a sod wall.

If we reckon instead with a sod roof 5.5 m wide from the ridge beam to the wall beam, and 20 m long with two layers of sod, together 0.15 m thick, the volume would be about 16.5 m³, which is in much better agreement with the existing quantity of earth.

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**Fig. 4.61.** Detail of carbonized timbers from House VI. Square X467 Y464.

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**Fig. 4.62.** Longitudinal section through House VI. From coordinate X457 Y460 to X477 Y460. Cf. Fig. 4.58.
Fig. 4.63. The southern termination of House VI from NW. The trench which continues beneath the bank can be observed underneath the two stones. The south western post-hole is seen left of the trench. Trench and post-hole is exposed in RN III while the bank in the foreground and the activity area in the background are exposed in RN II.

It remains to explain why the roofing material settled in two banks and why so little carbonized timber was found in the central section of the foundation. The fire that caused the collapse of the house probably began in the central area above the hearth complex. The timber in the central section of the roof can thus have been burnt away, while the greater part of the roofing material must have crashed down to form the existing banks. Support for this can be found in the construction itself. Because the inner roof-supporting posts are placed close to the mid-axis of the house, there is little risk that the roof could have collapsed towards the centre, it is most probable that the roof was drawn outwards in some way or other.

Thus it is reasonable to conclude at this point that the majority of the carbonized timber comes from the roof above the side-aisles, while the roof above the mid-aisle has been destroyed by fire. One alternative is that the roof above the mid-aisle was constructed differently, e.g. with a large inlet for light or outlet for smoke. The fan-shaped corner can then also be explained. In the NW gable end there was a slight extended bank, scarcely visible (cf. Fig. 4.62), which can be an indication of a hipped gable end. Nothing similar was found to the SE, where the gable end was perhaps completely open. The foundation, with its here assumed wall location is a little more than 8 m wide and about 16 m long, giving an index value of about 3.

4.2.5.4. The hearths

The largest concentration of hearth pits was found around House VI (Fig. 3:1). There is a total of about 40 of various types. The largest number is found in the group west of the foundation. Of these, only five have been excavated. This type of hearth will be discussed in more detail in Section 4.4.1.

Along the mid-axis of the foundation there is a hearth complex, consisting of two large (C2 and C8) and two smaller (C4 and C7b) situated in between. The smaller hearths are superimposed by features C1, C5, C6, and C7a (Fig. 4.65).

The large hearth C2 is oval and 1.9 x 1.4 m (NW–SE) in plane, while the other large hearth, C8, is almost round and 1.7 m in diameter. The complex stratification of C2 is illustrated in Figures 4.64–4.66, and 18 different layers could be distinguished down to a depth of 0.6 m under RNIII. The feature could not be distinguished at the floor level, but its presence was indicated by an increasing number of finds.

Although the feature yielded a number of layers, these are only of five types:

1) light, unaffected or slightly affected layer, no finds (vertical line on Fig. 4.66)
2) very sooty, brown coloured, layer containing artifacts (squares and dots on Fig. 4.66)
Fig. 4.64. Hearth C2 in House VI from NW. In the foremost quadrant symmetrically placed wood in the hearth bottom can be seen, as well as the "varved" filling with alternating dark and light layers.

Fig. 4.65. Map detail of features in House VI.

Fig. 4.66. Section through hearth C2 from SW, cf. Fig. 4.65. 1–10 = phosphate samples (P³): 1 = 164, 2 = 252, 3 = 101, 4 = 346, 5 = 106, 6 = 104, 7 = 95, 8 = 155, 9 = 44, 10 = 96.

3) as (2) but much weaker in colour (diagonal lines on Fig. 4.66)
4) carbon layer, no finds (black on Fig. 4.66)
5) red coloured, no finds, extending under and in feature edges.

The general build up is a carbon layer at the bottom, alternate layers of type 2 and 1 or 3 and 1. This is most clear in the central and north west sections of the feature. The carbon layer consisted of carbonized timber about 0.03–0.15 m thick which was placed in the bottom section of the pit which was about 1.3 x 0.9 m wide and flat. This timber formed a rectangle, on the short side of which timber was observed both at right angles and running along the length. The carbonized timber "crept up" about 0.3 m around the edges of the pit. At the bottom of the feature the carbon layer was very thin but rather strong and well-preserved, particularly in the NW and SE edges. In the E section there
Table 4.20. The finds, hearth C2 in House VI, related to excavated quadrants. Weight in grammes.

<table>
<thead>
<tr>
<th>QUADRANTS</th>
<th>N</th>
<th>S</th>
<th>E</th>
<th>W</th>
<th>INDET. TOT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slag</td>
<td>2465</td>
<td>1232</td>
<td>1880</td>
<td>2298</td>
<td>1940 9815</td>
</tr>
<tr>
<td>Burnt clay</td>
<td>517</td>
<td>385</td>
<td>640</td>
<td>78</td>
<td>51 1671</td>
</tr>
<tr>
<td>Burnt bone</td>
<td>29</td>
<td>7</td>
<td>18</td>
<td>15</td>
<td>15 84</td>
</tr>
</tbody>
</table>

Table 4.21. The finds in hearth C8 in House VI related to excavated quadrants. In brackets: the total expected find amount if the whole hearth had been excavated.

<table>
<thead>
<tr>
<th>QUADRANTS</th>
<th>W</th>
<th>S</th>
<th>TOTAL (1/2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slag</td>
<td>1298</td>
<td>85</td>
<td>1383 (2766)</td>
</tr>
<tr>
<td>Burnt clay</td>
<td>330</td>
<td>446</td>
<td>776 (1552)</td>
</tr>
<tr>
<td>Burnt bone</td>
<td>30</td>
<td>2</td>
<td>32 (64)</td>
</tr>
</tbody>
</table>

Fig. 4:67. Section through hearths C7a and C8, from SW, cf. Fig. 4:65. 1 - 5 = phosphate samples (P²): 1 = 348, 2 = 239, 3 = 73, 4 = 101, 5 = 87.

Table 4.22. Finds in the smaller hearths in House VI and in hearth C12 south of the foundation. In brackets: the total expected find amount if whole features had been excavated. A lot of uncollectable and tiny bone fragments were present in C7b, cf. >.

<table>
<thead>
<tr>
<th></th>
<th>C4 (1/4)</th>
<th>C5 (1/2)</th>
<th>C7a (1/2)</th>
<th>C7b (1/4)</th>
<th>C12 (1/2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slag</td>
<td>19 (76)</td>
<td>90 (180)</td>
<td>62 (124)</td>
<td>-</td>
<td>6570 (13140)</td>
</tr>
<tr>
<td>Burnt clay</td>
<td>5 (20)</td>
<td>- (-)</td>
<td>40 (80)</td>
<td>68 (272)</td>
<td>100 (200)</td>
</tr>
<tr>
<td>Burnt bone</td>
<td>2 (8)</td>
<td>2 (4)</td>
<td>3 (6)</td>
<td>&gt; 39 (&gt;156)</td>
<td>- (-)</td>
</tr>
</tbody>
</table>

were pieces of timber at most 1.3 m long, and in the SE short side the longest single piece of timber was 0.8 m long.

Both of the brown layers with finds varied in thickness from 0.02 - 0.15 m, but the content was of the same quality. The dark brown layer though, was much richer in content and had also a higher phosphate content (Fig. 4.66).

The finds in the feature are generally the remains of iron working, i.e. slag, sintered and burnt clay, and lumps and fragments of iron. In addition, a limited quantity of fire-cracked stones was found (c. 10 litres) together with a relatively large quantity of burnt bone. The slag is of a slightly different type to that generally found in the area, being smaller and often occurring in 1 mm to 10 mm drops.

The figures concerning slag in Table 4.20 are too low, depending on the fact that the drop- or tear-shaped slag was hard to collect at the same time as it constituted a large proportion of the filling material (a large proportion was under 4 mm which was the measure of the silt). Otherwise the table clearly illustrates the fact mentioned above, i.e. that the layers with the most finds occurred in the NW part of the feature. The N and W quadrants also yielded the greatest proportion of slag.

Hearth C8 has a far less complex construction, consisting primarily of a carbon/soot and reddish filling (Fig. 4.67). As in C2 there is a carbon layer at the bottom of the feature which, however, did not have the same well defined character, being more fragmentary. There was a further such carbon layer above the lowest one with a slightly affected layer 0.02 - 0.05 m thick in between. The carbon layer was not as wide spread as in C2 and the pit was more shallow with a slightly bowl shaped bottom. No red burnt sand was found at the edges or at the bottom.

Find occurred throughout the feature, except in the carbon layer itself (Tab. 4.21).

The northern quadrant covers a greater part of the hearth than the western quadrant, but there were nevertheless more
finds of iron working products and burnt bone in the western quadrant. Thus there is a slightly greater quantity of finds in the darker NW half of the feature (Fig. 4:67).

The finds in features C2 and C8 are partly of different character and there is considerably more iron working material in C2 (cf. Tabs. 4:20–21). C8 contains proportionally more burnt clay, with a couple of larger pieces from the lining of a forge pit. In addition, the slag material in C8 was only exceptionally found in tear shapes.

What is clear from Tables 4:20–22 is that the hearths inside House VI yield quite different contents and therefore different functions. Hearths C2 and C8, together with C12 to the south of the foundation (cf. Fig. 4:69), contain altogether about 25 kg slag. In addition, these hearths are located in the middle of the two activity areas (Figs. 4:68–69). These three hearths and these two activity areas can thus be directly associated with iron working.

The small hearths in the house contain very little slag and burnt clay, while the excavated 1/4 of C7b contained at least 39 g of calcined bone, which is a relatively large amount in this context. Calcined bone also occurred in relatively large quantities in the other hearths in the foundation. A number of pieces of slag contained fast-sintered pieces of bone, which was most common in hearth C7b, but also in e.g. C2. Hearth C12, S of the foundation totally lacked burnt bones (Tab. 4:22).

4.2.5.5. Finds in and around House VI

With only a few exceptions, the material consisted of residues from iron workings (burnt and sintered clay, slag and iron fragments). Calcined bone was almost entirely limited to the hearths.

The distribution of residues (Fig. 4:68) coincides entirely with that of the objects (Fig. 4:69). Two areas of activity can be clearly identified. Firstly, one located inside House VI around the hearth complex and secondly, another south of the foundation around hearth C12. All the evidence points to these activity areas having been functionally connected.
The majority of objects found consist of highly corroded iron nails, rivets and fragments of iron tools such as knives, awls, chisels, hammers (?) all of iron, together with a whetstone (cf. Fig. 4:70). The only object found under the heading of jewellery is an opaque glass bead. Drawing conclusions from this material is difficult, but obviously most of it is connected with iron working, e.g. scrap-iron, fragments of rods and blanks, etc.

As earlier mentioned, calcinated bone occurs in profusion in the hearths inside the house, particularly in the two large hearths C2 and C8, as well as in the smaller C7b. In these cases it was also possible to identify the bones (Tab. 4:23). The animal species represented agree with those in House II (Tab. 4:13) and the earlier trend is continued, sheep/goat and hare being the most frequent species.

Complete botanical analyses have not yet been conducted in this foundation, but several carbonized lingon-berry seeds were found during excavation (Fig. 4:71), which we have already mentioned were not represented in the seed material from other analysed features. To illuminate the function of the house just three samples have been analysed regarding carbonized seeds (see Tab. 5:5).

Table 4:23. Features in House VI containing bone. Number of fragments. Brackets: weight in grammes.

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>Ovis</th>
<th>Ovis/Capra</th>
<th>Bos</th>
<th>Sus</th>
<th>Lepus</th>
<th>INDET.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2 h</td>
<td>1 (0.1)</td>
<td>18 (6.4)</td>
<td>1 * (0.2)</td>
<td>-</td>
<td>2 (0.9)</td>
<td>381 (35.0)</td>
</tr>
<tr>
<td>C7b h</td>
<td>-</td>
<td>2 (0.4)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>252 (17.6)</td>
</tr>
<tr>
<td>C8 h</td>
<td>1 (0.7)</td>
<td>23 (7.1)</td>
<td>-</td>
<td>1 (0.1)</td>
<td>-</td>
<td>547 (39.6)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2 (0.8)</td>
<td>43 (13.9)</td>
<td>1 * (0.2)</td>
<td>1 (0.1)</td>
<td>2 (0.9)</td>
<td>1180 (92.2)</td>
</tr>
</tbody>
</table>

*=Bos or Equus.
4.2.6. HOUSE VII

4.2.6.1. The lay-out

As earlier mentioned (Sect. 4.2.4.) conditions in this area are highly complicated. The large number of features without visible context points to the fact that this area was intensively used over a long period of time. The foundation is preserved in fragments and has no certainly identifiable limits in length. On the other hand, parts of both long walls are preserved, situated partly opposite each other and consisting of post rows together with a fragmentary trench, to the east in the same line as the post row (Fig. 4:72).

Inside the house there are two certain post groups preserved (nos. 1—2, Fig. 4:72). These are symmetrically situated in relation to the two wall lines. In addition, there is an entrance marked by portal posts recessed from the wall line. In construction, they agree completely with those in Houses I and II.

A characteristic of the features belonging to the central southern part of House VII, is that they are filled with fire-cracked stones (Fig. 4:73). This indicates that the post-holes were deliberately filled in. Since the house did not burn down, we can assume that it was pulled down or that it fell down, and that the surface was cleared and levelled to make place for House IV and the activities associated with it. This
Fig. 4:72. Map of features on area A. Black shows features assumed to belong to House VII. 1–8 = post groups according to Tab. 4:24.
example is thus a parallel to the situation with Houses I and II, with the difference that House I first burnt down.

Table 4:24 and Figure 4:72 show the difference in trestle width (B_{br}) between post groups 1 and 2 as being considerable. In the long-houses, the trestle width is smaller near the gable ends and larger in the middle (cf. Tabs. 4:1, 4:9). This situation is also repeated in the smaller House IV (Tab. 4:17), although in this case the length is somewhat uncertain.

It is therefore probable that the gable end in House VII was situated just south of post group 1. There are also post-holes in this probable gable end which support this interpretation (Fig. 4:72).

The total length of the foundation can thus be considerable, bearing in mind that the length up to post group 2 is about 7 m, and from there to the northern section of the portal posts is further c. 2 m. Since the entrance is of the same type as in Houses I and II, it could either be located in about the centre of the long side, or in the south end of the long side. The former alternative would give a theoretical length to the house of about 20 m, while the latter would give a length of about 30 m. There is no lack of post-holes or similar features north of the entrance. However, these are rather disordered, although a few of them form pairs. In Figure 4:72 and Table 4:24 these imaginable pairs have been marked, which means that the house reaches up to X-coordinate 530. To the north of this line, the number of post-holes drops considerably (cf. Fig. 4:2). The length of the house would thus be about 23 m, with the entrance situated a bit south of the middle.

There are also two hearths in the northern part, one of which must be secondary to the foundation since it is located on the probable wall line. The other is situated along the mid-axis of the foundation and can thus be contemporary.

If conditions are interpreted correctly, this house can be divided into two parts, the southern with a inner roof-supporting construction in agreement with

<table>
<thead>
<tr>
<th>Post group No.</th>
<th>Dist.</th>
<th>H_{br}</th>
<th>B_{br1}</th>
<th>B_{br2}</th>
<th>H_{br}/B_{br1}</th>
<th>H_{br}/B_{br2}</th>
</tr>
</thead>
<tbody>
<tr>
<td>south gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 1</td>
<td>2.2?</td>
<td>5.4</td>
<td>1.3</td>
<td>4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 2</td>
<td>4.7</td>
<td>5.5</td>
<td>1.8</td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 3</td>
<td>3.1</td>
<td>5.0?</td>
<td>3.2</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 4</td>
<td>4.3</td>
<td>4.8?</td>
<td>3.2</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 5</td>
<td>1.8</td>
<td>4.8?</td>
<td>2.7</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 6</td>
<td>1.8</td>
<td>4.6?</td>
<td>3.0</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 7</td>
<td>1.2</td>
<td>4.4?</td>
<td>2.8</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 8</td>
<td>1.6</td>
<td>4.0?</td>
<td>1.6*</td>
<td>2.5*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>north gable</td>
<td>2.0?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

L = c. 23 m  \bar{M} = 4.9  \bar{M} = 3.0  \bar{M} = 1.6  \bar{M} = 1.6  \bar{M} = 3.6

*Excluded in calculation of mean value.
Houses I, II and IV, and the northern part with a wider mid-aisle more in agreement with the outer roof-supporting posts in Houses I and II. This part also has a hearth. No further conclusions can be made here since the interpretations must be regarded as extremely uncertain.

4.2.6.2. The roof-supporting elements

Certain roof-supporting elements in this foundation include the inner roof-supporting posts, the posts in the wall line, and the portal posts. With some reservation, it is also possible that the outer roof-supporting posts may have occurred in the probable northern half of the foundation.

A. The inner roof-supporting posts

The post-holes in groups 1 and 2 have an average diameter of 0.70 m, which well equates with the counterparts in Houses I, II and IV (cf. Tabs. 4:2, 4:10). However, no post remains have been found, indicating that the house did not burn down.

In the northern half of the foundation, the roof-supporting posts are much weaker. Here, the average diameter is about 0.35 m, i.e. about half the size of those in the south.

As has been mentioned earlier, fire-cracked stones are found in the features belonging to House VII. This is also the case in the post-holes, and in the cases studied there were about 15 and 20 litres of stones respectively found in no particular ordered fashion (Fig. 4:73).

B. The outer roof-supporting posts

These occur in the northern section of the foundation, are not obvious, and are generally irregular in plane. On the surface in some cases there were individual fire-cracked stones found. This fact, together with the position of the post-holes, means that it is possible that they belonged to House VII.

As can be seen in Table 4:24, these post groups have a completely different index value to those in the southern section of the house. This relationship most closely resembles that between the outer and inner roof-supporting posts in House I (cf. Tab. 4:1), but with the important difference that they in House VII do not occur in the same section of the house, but in separate sections. The difficulties in measuring the width of the house are considerable, since there are no traces of the walls in the northern section of the foundation.

C. Posts and trenches in wall line

Remains of the wall are found in the southern section of the foundation up to post group 2 and the entrance. As in House I, there is a combination of post-holes and trenches in the wall line. The nine post-holes in the western side occur regularly and are on average of 0.7 m apart, i.e. exactly as in House IV (Sect. 4.2.4.2.) On the eastern side there are three similar post-holes, and in the line, the remains of a trench of the same type as that in the eastern wall of House I, i.e. sharp and straight terminations. The trench contained fire-cracked stones and it had a clear termination in connection with the entrance (Fig. 4:72). On the whole, the parts and trenches in wall line are weak. No carbonized posts were found, but the size of the pits matches well the counterparts in House IV. The northern section of the foundation has no traces of wall posts or trenches.

D. Portal posts

One entrance was discovered and this is linked with post group No. 2 (Fig. 4:72). This equates to the entrances in Houses I, II and X. The portal posts are recessed c. 0.9 m from the long wall at the same time, as there is a break in trench. The distance between the central points of the portal posts was 1.2 m. This is somewhat less than the average for the entrances in House I, but does not fall outside the general picture. In the post-holes, fire-cracked stones were found, and this bears out the connection between the entrance and the other features in House VII.

E. Undetermined posts

As has already been mentioned, there were a number of posts in this category. In some cases, they occurred in the lines formed by the roof-supporting posts and by the supposed wall and gable lines. In addition, there were a couple of pits along the mid-axis of the house, of which at least one situated just north of post group No. 2 (Fig. 4:72) could be a mid-post. However, bearing in mind the degree of activity in the area in combination with the relatively weak colouration of the features, several alternative interpretations are possible regarding House VII.

4.2.6.3. Hearths

This foundation contains only one hearth, which is situated on the mid-axis of the house a little to the south of post group No. 4 (Fig. 4:72). It was almost round, c. 1.1 m in diameter and 0.22 m deep. At the bottom there was a 0.05 m thick carbon layer, damaged in its eastern section by a subsequent post-hole. The filling above the carbon layer consisted of c. 20 litres of fire-cracked stone. No other finds were made, and 0.1 m above the carbon layer—i.e. in the middle of the filling—the phosphate level was 78 P⁰, i.e. relatively low. The location of the hearth points to the possibility that it really belonged to House VII.

It is certain, however, that the hearth situated NE of the one in question (Fig. 4:72) could not have belonged to House VII, since it is situated in line with the continuation of the east wall.

4.2.6.4. Finds

It is difficult to link finds to a particular house in this case. The finds from area A were discussed in Section 4.2.4.3. in connection with House IV.
### 4.2.7. HOUSE VIII

**4.2.7.1. The lay-out**

This foundation appeared to the east of House I and was uncovered during the 1981 campaign. However, the study of this house is not complete (Figs. 4:2, 4:74). As early as in 1978, a two-metre wide trench was made over the northern section of the foundation. At this time, hearth A36 was discovered, but not the two posts included in post group No. 3 (Fig. 4:75). These post-holes are extremely faint, even more so when they are situated adjacent to a sooty, carbon-filled hearth. However, in the southern section of the foundation the post-holes and walls are clearly defined (Fig. 4:74).

One of the reference series for the phosphate profiles, No. 2 (Fig. 3:3), happened to come in the corner of the eastern post-hole in post group 1 (Fig. 4:75). This sampling pit was intended to illustrate the phosphate profile in the fine sand-area (zone B) affected by man, which it did, showing the highest phosphate values among the phosphate profile series.

The foundation is very well preserved and not noticeably affected by subsequent activities. Like Houses I, II, IV and VII, the northern wall section and the northern gable end are lost without trace. The foundation ends to the south with two trenches, one broad outer trench and one narrower inner one. The west wall overlaps the eastern long wall of House I (A37c, Fig. 4:9) which makes interpretation slightly more difficult. The trenches are, however, easily

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*Fig. 4:74. House VIII from S.*
distinguishable since they are not exactly parallel (see the "cuts" in N and S sections of trench A37c, e.g. Fig. 4:75).

An outer wall with sturdy posts sunk into a trench has formed the supporting part of the wall construction. About a metre inside the broad trench, there is a less sturdy wall which is also buried deep. There are posts in both trenches, although these are more numerous and sturdier in the outer trench. The inner wall continues in the northern section of the foundation in the form of smaller post-holes, which are most clear in the eastern wall.

<table>
<thead>
<tr>
<th>Post group No.</th>
<th>Dist.</th>
<th>H_b</th>
<th>B_b</th>
<th>H_b/H_b</th>
</tr>
</thead>
<tbody>
<tr>
<td>south gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 1</td>
<td>2.7</td>
<td>6.2</td>
<td>1.5</td>
<td>4.1</td>
</tr>
<tr>
<td>group 2</td>
<td>4.0</td>
<td>6.2</td>
<td>1.4</td>
<td>4.4</td>
</tr>
<tr>
<td>group 3</td>
<td>4.2</td>
<td>6.0?</td>
<td>1.4</td>
<td>4.3?</td>
</tr>
<tr>
<td>north gable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group 1</td>
<td>2.7?</td>
<td>6.0?</td>
<td>1.4</td>
<td>4.3?</td>
</tr>
</tbody>
</table>

L = 13.6 M = 6.1 M = 1.4 M = 4.3

Fig. 4:75. Map of features in House VIII. 1–3 = post groups according to Tab. 4:25. Down left (A60 and A25) is entrance E1, to House I. The pit in the NE edge of the E post-hole in post group 1 is the sampling pit for the phosphate-profile No. 2 in Fig. 3:3.
Three groups of roof-supporting posts occur, placed symmetrically in the foundation, and the index value exceeds 4 (Tab. 4:25). In this case, measurements have been taken from the centre of the outer of the trenches where it is presumed that the wall beam was situated. As a comparison, the same calculation from the inner trench gives an index value about 2.5.

4.2.7.2. The roof-supporting elements and the entrances

The roof-supporting elements consist of (inner) roof-supporting posts together with posts in the wall line. In addition, there are a number of indeterminate posts or pits, particularly in the western section of the foundation.

A. (Inner) roof-supporting posts

This house did not burn down, and for this reason there was no carbon from the posts. The post-holes were 0.7–0.9 m across at the surface, while the average diameter was 0.4–0.5 m. The bottom was always 0.5–0.6 m below RN and all pits were flat-bottomed. At the bottom, the pits were 0.25–0.35 m in diameter, demonstrating the maximum size of the posts.

Faint colourations in the profiles of the southern post group show that these posts were about 0.2 m in diameter, i.e. somewhat less than in House I. There were no visible traces of shaped timber or of birch-bark lining.

Fire-cracked stones were found in limited quantities in post group 2, but sometimes in such a position as would probably rule out its having been used for post support. Also found in the post-holes were a few pieces of burnt clay and a few burnt bones. From the point of view of chronology, these are important finds, and mean that House I must have burnt down before the post-holes in House VIII were dug. I interpret the burnt clay as having come from House I and ended up in the post-holes in House VIII in connection with the building of the latter.

B. Posts and trenches in wall line

The southern half of the foundation is bordered by a trench 0.3–0.8 m wide. Its sides are rather wavy (Figs. 4:74–75). Here and there over the wall section, as is the case in the foundation itself, there are often long plough marks running mainly in a NW–SE direction.

The two profiles through the outer and inner wall (Figs. 4:75–76) show that both trenches contain post-holes. From the bulges in the outer trench, it would appear that the posts were placed about 1 m apart, while the distance between the somewhat more fragile posts in the inner trench is about 2 m. These measurements refer primarily to the southern gable section up to a level with post group 1. To the north of this and up to coordinate X = 390 (Fig. 4:75) the inner wall is not dug into a trench at all (as can be seen from the C-horizon), but is distinguished by even more fragile posts placed closer together than in the gable end. To the north of X = 390 there are no traces of either inner or outer walls.

The outer trench to the east changes, becoming much weaker when it reaches a line in between post groups 1 and 2, and disappearing completely when it reaches the height of coordinate X = 390, i.e. at about the same spot that the inner wall ceases. The latter phenomenon also applies to the west wall, but no difference could be seen between the northern and the southern sections of this wall trench.

C. Entrances

No definite entrance could be found, although a couple of locations are possible. Firstly, it is uncertain how the northern gable end was constructed. The construction of the house

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Fig. 4:76. Sections through the wall in House VIII. Cf. Fig. 4:75.
alters at about the height of coordinate X = 390, and takes on a simpler construction in the northern section. It is not unusual for entrances to be placed at such locations. The large stone which is situated directly east of and on the wall line has a flat surface and may have formed part of an entrance of a wall construction.

In the SW corner, the outer trench ceases very clearly and abruptly, which reflects a change in construction. The inner wall, however, continues a little further, to some extent covering the opening that exists between the gable end and the western long walls. This, together with the location of the opening, makes it difficult to interpret it as an entrance. However, a similar opening between the gable end and long wall could also be seen in House IV (Fig. 4:40).

A suggestion is therefore that the entrance to the house probably lay slightly to the north of the centre of the house, and that a smaller opening also existed in the SW corner.

4.2.7.3. Hearths

Two hearths, A1 and A36 (Fig. 4:75), were found in the house. Hearth A1, however, cannot be contemporary with House VIII since it is located on the west wall line. It has also been radiocarbon dated to 480±75 A.D. (mean value of the tests U-4253 and 4273, Tab. 7:1).

Hearth A36 has not been C-14 dated and its position in the foundation makes it possible that it belonged to House VIII. The proximity to the western post-hole in post group 3 (Fig. 4:75), does not necessarily exclude a functional connection between the hearth and the house.

The two hearths in question are relatively rich in burnt bone: 33 g in A1 and 54 g in A36 and the only species identified are small bovids (Tab. 4:26). In the hearths there were also some pieces of burnt clay of the same type as found in House I.

4.2.7.4. Finds

Apart from burnt clay (Fig. 4:15), burnt bone and the like, no finds can be ascribed with certainty to the features in the foundation (cf. Sect. 4.2.1.5. and Fig. 4:17). Only a few carbonized seeds were found in the foundation, which is indicated by a sample (E24, Tab. 6:1) which only yielded 9 seeds of some of the species elsewhere represented.

4.2.8. HOUSE IX

4.2.8.1. Discussion concerning the lay-out

The extent of this foundation is very uncertain, and it is characterized primarily from analyses of excavation plans and from vertical photographs. The greatest uncertainty results from the fact that the area contains (at least) three foundations, each sited in the same direction, and thus partly overlapping.

The position of House IX in relation to House IV does not in principle rule out the possibility that they form parts of the same foundation. The colouration, however, differs, that in House IX being much lighter and less reddish than that in House IV. The former could only be observed under good light and humidity conditions. This appears to some extent in the vertical photograph (Fig. 4:78), in which the drying speed of different areas distinguishes features from non-features. As has already been seen, such differences do not necessarily mean that the features belong to different buildings. The variations may also stem from different parts of the foundation having been constructed differently and having a different anchoring in the ground.

The facts that have led to regarding House IX as a separate foundation are partly that in the 5 m square X510 Y465 (Fig. 4:77) for a short distance, there are three parallel wall post lines; and partly that a post-hole in the eastern wall of House IX has been C-14 dated to 225±90 A.D. (St-7196, Tab. 7:1). This dating does not fit in with that of House IV.

The suggested length of the house is 16 m, and the width 4.8–5.1 m (Fig. 4:77). The northern half of the foundation is somewhat wider than the southern half (5.1 and 4.8 m respectively).
In about the middle of the foundation there is a possible dividing wall (Fig. 4:78). It consists of a trench (D23) at right angles to the straight long wall to the west, sunk to a depth of 0.5 m beneath the present surface. Indications of flimsy posts, max. 0.15 m in diameter, could be observed in this depression.

The roof-supporting post groups were also found in the southern section of the foundation. These were placed symmetrically in relation to the mid-axis of the house. The index for these is about 4.2 and 3.6 respectively. One or some more post-hole groups may exist in conjunction with the large features south of dividing wall D23 (cf. Fig. 4:77). An opening in the trench (entrance?) at about the height of the second post-hole pair supports the assumption that these elements are linked from the point of view of construction.

Because of the complicated nature of the conditions, and because much remains to be studied, no further analysis will be made at this point. Instead, the extent and construction of this foundation (Fig. 4:77), and its demarcation regarding House IV, will serve as a working hypothesis.

4.2.8.2 Finds

No features in this preliminary house foundation contained any finds. The finds on this area (Figs. 4:43–45) have been treated in Section 4.2.4.3.

4.2.9. HOUSE X

This three-aisled foundation was revealed as late as during the autumn 1983 and it has therefore not been possible to put it on the excavation plan (Fig. 4:2). However, the SW part of it could be seen on that plan. Despite the fact that only a few features have been excavated, the general lay-out is clearly visible (Fig. 4:79).

The foundation is, like most of the others, situated in an almost N–S direction. It is characterized by the surrounding trench, which partly is very light in colour, and therefore hard to observe. Particularly in the N and S parts of the foundation there are irregularly placed post-holes inside the trench. However, there is a tendency in the E wall that these post-holes occur along the whole length of the house. This could also be the case along the W wall, but there the Medieval activities (House III) have probably disturbed the wall.

Obviously also House X had a double wall construction. If one assumes that the wall beam was placed on the post row, a little less than 0.5 m inside the outer trench, it means that the house was c. 17 m in length and 6.8 m in width in the middle and 6.2 m in the gable ends.

Unlike the other foundations it has visible traces of the N gable end. The S gable end is clearly marked by three posts placed in a row. A similar construction is also visible in the northern gable end.
The foundation has a very symmetrical lay-out and the roof has been supported by three trestles, evenly spread along the foundation (nos. 1–3, Fig. 4:79). Trestle No. 2 is placed exactly in the middle of the house and the other two 5 m on each side of the central trestle and 3.5 m respectively inside the gable ends.

The index value of this foundation is on average 4.1 if the house width is measured between the post rows 0.5 m inside the trench. This value fits very well with the other foundations.

One entrance with recessed portal posts in combination with a broken postrow and wall trench has been encountered (Fig. 4:79). The entrance is 1.4 m wide and the recession from the post row is c. 0.9 m. The entrance is constructionally linked with trestle No. 2, i.e. close to the middle of the house. Between the southern of the portal posts and the eastern post in trestle No. 2 there is a feature that could be the reminiscences of a dividing wall (cf. Fig. 4:79), which in that case divides the house into two halves.

There are no hearths associated to this foundation and the finds are not yet analysed. Its function is therefore not possible to judge at this moment, but there is a concentration of iron working residues outside and inside the northern part of the foundation. The amount of residues is not as large as in House VI, but it is possible that House X is something of a predecessor to House VI.

4.3. THE GRAVES

4.3.1. THE BURIAL GROUND AND THE THREE INDIVIDUAL GRAVES

The burial ground (Fig. 4:1) is the only one hitherto known in the parish of Själevad, and constitutes, together with the burial ground at Arnäsbacken in the parish of Arnäs, the most northern burial ground in Sweden containing mounds. Earlier research has considered that the burial ground was established during the Late Iron Age (Baudou 1968:139, Selinge 1977: 358).

The burial ground contains a total of 9 mounds or mound-like stone settings. Of these, No. 3 is situated only 20 m from House IV (Fig. 4:1). The sizes of the graves vary between 5 and 12 m in diameter and 0.3–1.0 m in height. Two of them are nearly oval in shape. The principal material used is the same as that surrounding the graves, i.e. sand, but some of them contain large stones, visible in the robber's pits on top of the mounds, indicating that stones were desirable in some cases. It should be mentioned here that the closest moraine can be found just over 500 m from the burial ground (cf. Fig. 3:25).

The largest mound, No. 2, differs in form from the others. Firstly, it has a foot trench c. 1 m wide and 0.1 m deep, and secondly, it has a brim-like step and a flat, slightly inset top section. This last fact suggests that we are dealing with a sunken burial chamber, or something similar. The brim, which is two metres wide and 0.3 m high, is an unusual construction in Norrland.

No certain horizontal stratigraphy can be made of the location of the mounds within the burial ground, although the circle formation with decreasing grave size, which the seven southernmost graves demonstrate, could be interpreted in this direction. Analyses of superpositions etc. has not yet been part of the investigation.

In the northern edge of mound No. 1, a search with a metal detector turned up seven large nails in the B-horizon, which lay close together but in no obvious order. These were placed in the edge of the mantle of the mound at the time of construction or subsequently. The find is in the nature of a deposit.

The three small moundlike stone settings, No. 21, are situated 70 m south of the burial ground, and about 90 m from the central building area. House VI is closest, being about 50 m away. The graves are located on the edge of one of the larger beach ridges about 18 m above sea-level, i.e. 2–3 m lower than the burial ground. Despite the modest nature of these
graves, 5—7 m in diameter and 0.3—0.5 m high, they were known long before the burial ground (cf. Sect. 3.4.2.). This may depend on their more exposed position, seen from the west, out at the edge of the beach ridge. The burial ground is also close to beach ridges, but in this part of Genesmon they are not as steep.

The three graves, No. 21, have suffered much damage by attempts at plundering, etc., and all three contain large amounts of stone, even though the main building material was sand.

Four of the nine mounds on the burial ground have been investigated. Numbers 3, 8 and 9 were investigated by Evert Baudou in 1962, and No. 6 was investigated in 1981 by Anna-Karin Lindqvist and the author (Fig. 4:1).

4.3.2. BAUDOÙ'S INVESTIGATIONS IN 1962

Unfortunately, there is no report available from Baudou's excavations in 1962. However, the graves are mentioned in Baudou 1968:139, where they are dated to the Viking Period by a couple of comb fragments from grave 22:8.

This dating must, however, be seen as very doubtful, since the comb fragments in question probably belong to a composite comb with an edge on the tooth-plate, which in Central and Southern Sweden dates from the Migration Period (cf. Ambrosiani et al. 1981:180). The comb fragment, which lay in a cremation layer (?), would also fit well in one of the combs illustrated by Schetelig from the Migration Period (1912:99, Fig. 226).

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![Map of mound 22:6 with the position of the coffin shown.](image)

**Fig. 4:80.** (a) Map of mound 22:6 with the position of the coffin shown. (b) Map of coffin and grave finds.
The largest of the graves excavated by Baudou was 22:3 (Fig. 4:1), which was an inhumation very much like 22:6 (see below). On the inside of the coffin wall there was at least one resin ring, which are most common in the graves from the Early Iron Age (cf. Ambrosiani 1964:65ff). The third of the graves investigated by Baudou, 22:9 (Fig. 4:1), had a cremation pit (?) with some burnt bones. There were no other finds. Contrary to what has been earlier assumed, these graves fit well in with Early Iron Age.

4.3.3. GRAVE 22:6

In order to get further data regarding the dating of the burial ground, grave No. 6 was chosen for study (Fig. 4:80). The choice was made primarily for two reasons: the undamaged nature of the mound, and its "reasonable" size.

The mound was nearly oval, 9.5 × 7 m in size (N–S) and 0.5 m high. It was built entirely of sand and was free of stones. No construction details could be distinguished. On the surface of the mound, about a metre north-east of the centre, there was a long depression caused by a path. At the beginning of the investigation, this was not linked with the location of the burial because of its peripheral position, but it turned out that it coincided with the position of the coffin (Fig. 4:80a). The original surface having been exposed, a rectangular hole measuring 2.8 × 1.0 m (NW–SE) was found. On the old surface, near the southern corner of the coffin, there lay an iron knife with a triangular bronze button (Fig. 4:81) which must have been dropped or placed there when the grave was built.

The rectangular hole contained a wooden coffin, the length and width of which were somewhat smaller than the hole, and which was 0.5 m deep. Remains of wood in the form of orange-coloured humic sand were all that was left. The width of this material was about one inch, which must equate to the thickness
of the planks which the coffin was built with. No construction details could be observed.

There were no skeleton remains. The grave goods (Fig. 4:80b) included three intact resin-caulking rings, placed along the south-west side of the coffin, two iron handles with the ends bent back, iron fastenings and a couple of small rivets, an iron dagger (?), and various fragments of iron, wood and resin (Fig. 4:81).

None of the finds could be dated with certainty, but in the context of central Sweden, resin-caulkings are related to the Bronze Age and the Early Iron Age (Ambrosiani 1964:65f). This fits in with the C-14 dating that was conducted on a resin fragment from the grave. The dating was 395±90 (St 8544, Tab. 7:1).

Iron handles (Fig. 4:81) also occur in Migration Period (e.g. Schetelig 1912:153, Fig 362; Nerman 1935:Taf. 20, Fig. 249), but the type is common also during Merovingian (e.g. Schetelig 1912:166, Fig. 403) and the Viking Periods (e.g. Arbman 1940:Taf. 265). Obviously, the iron handles served as handles for a small coffin or a casket (cf. Schetelig 1912:153 and Arbman 1940:Taf. 263).

In summary, we can say that the graves studied tie in well with the building period, and that there are spatial, chronological and functional connections between the buildings and the graves. Further investigation will hopefully throw light on why the three graves (No. 21) on the edge of the beach ridge are located in such a relatively isolated position (however some proposals are made in Section 7.2.3.).

4.4. HEARTHS OUTSIDE THE HOUSES

4.4.1. HEARTH PITS

This term has been given those hearths that are visible on the surface prior to investigation. The term is somewhat irrelevant since, for example, a hearth of this sort which has been ploughed over could not leave visible traces.

Hearths, both visible from the surface and otherwise, are scattered over the entire area of about 3 hectares, but there is a concentration to the south-west of House VI, where there are about 20 of them (Fig. 4:1). Altogether, about 40 hearth pits have been registered, and almost all are situated 18–22 m above sea-level and quite close to the buildings. Of these, the ones closest to House VI have been measured, together with one or two others. Phosphate samples have been taken with an anauger on two levels, in the carbon/soot layer at the bottom, and in the layer above. This was done in order to illuminate the function of the hearth pits.

Figure 4.82 shows a summary of the diameters, depths and phosphate contents of the hearths, and there is no direct link between the four variables. Diameters varied between 1 and 2.5 m, and depths between 0.3 and 0.7 m.

The phosphate content of the hearths was generally low, with 165 P° at most (H27, Fig. 4:82). This value can be compared with some of the hearths in the foundations, where values of 600 P° occur. With only a few exceptions, the phosphate content at the lower levels was higher than in the layer above (Fig. 4:82). The low phosphate content and the mostly undisturbed profile in the hearth pits indicate that each hearth pit was used only once, or a few times. Thus they do not represent, seen individually, a permanent utilization.

Some of the hearth pits were packed with stones, which made sampling more difficult, although the anauger allowed stones to be recognized.

That there are great differences between the hearth pits can be seen in four of the excavated cases. In one of these, H5 (1.4 m in diameter), there was a
carbon layer at the bottom made up of wood placed in a couple of layers in a radial pattern. Above this, there were about 100 litres of fire-cracked stones, on average of about fist size. Finally, on top, there was a sooty humus-rich podzol layer. The feature contained no finds.

The appearance of H5 contrast with, for example, hearth pit H1 (1.5 m in diameter). This was also without finds, but had at the bottom a very thin carbon/soot layer. Above this there was a sooty layer with a few bits of carbon and fire-cracked stones (about 15 litres). Right next to the hearth pit, there was a large stone.

A third hearth pit that was studied, H2 (0.95 m in diameter), contained about 40 litres of fire-cracked stones in, but primarily on, an irregular bottom layer of carbon and soot. On top in the filling, there were scattered iron working residues in the form of burnt clay and iron slag, together with some burnt bones. Scattered around the hearth there were some iron working residues and iron finds (Figs. 4:68–69).

The investigation so far shows that the functions of the hearth pits have been diverse. Three of the four that have been investigated have probably had different functions, and one was certainly used in connection with iron working (H2). The others yielded no finds and may have been charcoal pits, tar pits, cooking pits, etc.

**4.4.2. OTHER HEARTH S**

About thirty hearths which were not visible prior to investigation have also been found outside the foundations (cf. Fig. 4:2).

Conclusions concerning these would be premature, since few have yet been analysed. However, the largest are c. 2 m and the smallest c. 0.5 m in diameter, but they are generally about 1 m in diameter and consist of a bowl-shaped carbon layer, above which there is a slightly sooty filling, often containing scattered burnt stones (occasionally a proper stone packing), together with some burnt bone. They often occur in pairs or groups which suggests a functional connection. Some of the hearths have been analysed for phosphate content, which showed values that indicate a long period of use and/or presence of bone.

Hearth that we have already mentioned—H2 (iron working hearth with scattered bones) and C12 (iron working pit without bones)—had values of 156 and 84 P° respectively, while the most bone-rich features in the dwelling area—J1—had 492 P°, and one of the hearths in the middle of House II, and which had very few bone fragments—G20—had 627 P°, although this latter probably had a long period of use.

There is an interesting tendency to be seen in Table 4.26: only two, mutually exclusive, species occur. Where bones of small bovids occur, there is no hare (*Lepus*) and *vice versa*. If this tendency is correct, it means that some pits were used, once or more for cooking small bovids, while others were only used for hare, etc.

**Table 4.26. Table of bone fragments in hearths outside houses.**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Coord.</th>
<th><em>Ovis/ Capra</em></th>
<th><em>Lepus</em></th>
<th>Indet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1b</td>
<td>395 445</td>
<td>30 (12.3)</td>
<td>–</td>
<td>200 (20.3)</td>
</tr>
<tr>
<td>A2a</td>
<td>395 445</td>
<td>–</td>
<td>35 (5.0)</td>
<td>95 (3.1)</td>
</tr>
<tr>
<td>A19</td>
<td>395 425</td>
<td>3 (1.5)</td>
<td>–</td>
<td>80 (6.2)</td>
</tr>
<tr>
<td>A26</td>
<td>395 425</td>
<td>1 (1.1)</td>
<td>–</td>
<td>25 (1.5)</td>
</tr>
<tr>
<td>A36</td>
<td>395 450</td>
<td>19 (18.7)</td>
<td>–</td>
<td>253 (35.4)</td>
</tr>
<tr>
<td>A38</td>
<td>390 420</td>
<td>2 (0.3)</td>
<td>–</td>
<td>10 (1.1)</td>
</tr>
<tr>
<td>H1</td>
<td>420 430</td>
<td>–</td>
<td>–</td>
<td>3 (0.1)</td>
</tr>
<tr>
<td>G238</td>
<td>395 425</td>
<td>22 (6.7)</td>
<td>–</td>
<td>403 (32.0)</td>
</tr>
</tbody>
</table>

**TOTAL** | 77 (40.6) | 35 (5.0) | 1069 (99.7) |

**4.5. OTHER FEATURES**

Several features have been found within the settlement area which cannot be linked to any particular house or to any particular activity. Some 70 searching squares (3 X 3 m) were drawn up all around the known settlement (cf. Fig. 4:1). In more than half the c. 70 squares features were found in the form of hearths, post-holes, and other pits. The squares were drawn up more or less regularly in a coordinate system.

Today, the squares extend from coordinate X410 in S up to X580 and from Y410 to the west out to Y510 (cf. Fig. 4:1). Most of the squares have hitherto been placed around the central building area, but almost all of the squares nearby and east of the graves, Själevad No. 21 contain features and clearly affected material. It has not been possible to establish whether we are dealing here with building remains or other activities. However, the area is poor in finds and the conclusion has been reached that there are at least no remains of dwelling-houses in this area. However, surprises may come to light.
The squares located farthest to the north at coordinate X570 Y430 (Fig. 4:1) have yielded both features and finds. The features are of another character in that they are sooty brown and more greasy than usual. One of these squares contained a small wrist-clasp in bronze, together with a bronze button (Fig. 4.83), and in another square, a sherd of red-burnt, thin and highly tempered asbestos pottery was found. The fragment was not ornamented. One of the bone-rich features nearby (J1) has also been C-14 dated to 595±85 A.D. (St 8542, Tab. 7:1), which is the most recent dating on Genesmon, apart from House III. It is obvious that also during the youngest phase of the farm seal-hunting and perhaps fishing played a great role (Tab. 4:27).

We can also mention here a hearth that was found during phosphate sampling in 1978 in area K to the south (cf. Fig. 3:10) which has been C-14 dated to 400±85 A.D. (St 8543, Tab. 7:1). This means that within 3 hectares, with one exception, there are datings only from the Early Iron Age.

In a square only 10 m north of Houses I and II, a couple of hearths were found with high phosphate levels. A few metres to the east of these, there lay a not finished iron hammer or a small axe, with a clearly visible welding joint and with a small opening for a shaft (Fig. 4.83). This find was the largest individual iron object found at the settlement, weighing 192 g.

### Table 4.27. Identified bone fragments in the youngest of the prehistoric features, J1, on Genesmon.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>NO. OF FRAGMENTS</th>
<th>WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phocidae</td>
<td>120</td>
<td>42.1</td>
</tr>
<tr>
<td>Pisces</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Aves</td>
<td>12</td>
<td>2.2</td>
</tr>
<tr>
<td>Indet.</td>
<td>1879</td>
<td>247.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2012</strong></td>
<td><strong>291.7</strong></td>
</tr>
</tbody>
</table>

#### 4.5.1. PIT T1

##### 4.5.1.1. Form and function

This feature has been fully investigated and is situated between House IV and the burial ground (Fig. 4:1). The pit was clearly visible before investigation and was nearly oval, 12 x 6 m wide and 0.7 m deep at its deepest point (Fig. 4:84). The eastern third of the pit had a clearly raised bottom, which was caused by modern refuse situated on an old surface with a clear podzol layer. There was thus no connection between the modern material and the prehistoric material underneath (Fig. 4:85).

The pit, which had no surrounding bank, consisted of a uniformly light sooty carbon-bearing layer 0.2–0.5 m thick which was deepest in the eastern central part of the pit. To the east, this layer was from the bottom and covering an area of 3 x 2.5 m (N–S) and a depth of 0.25 m, very greasy and much sootier than otherwise. There were also more finds in this area.

In the western half of the pit, there were about 10 small post-holes, which could not be interpreted as having been placed in a symmetrical pattern. However, it is probable that this part of the pit was provided with some kind of simple shelter or roof.

In the pit's culture layer, apart from fire-cracked stones, burnt clay and bone, about 50 other finds were made. These were almost entirely found in the eastern half of the pit, and especially to the above-mentioned greasy layer. The finds were of various types and taken as a whole would indicate an activity area for very diverse activities. The make-up could lead to the interpretation that it was a rubbish pit, but bearing in mind the existence of post-holes and the fact that the finds are not especially worn out or fragmentary, it seems more likely that this pit was an activity area.

The fact that there was no bank around the pit shows that the material was taken away, and this leads us to refer to the adjacent grave mounds. A similar, although somewhat smaller pit is situated about 20 m directly to the west of the burial ground. This has a marked podzol layer at the bottom, has no surrounding bank, and has no culture layer and therefore be interpreted as a place where sand was taken for the grave mounds.
4.5.1.2. Finds

About 50 finds were discovered in the pit's culture layer (Fig. 4:86). One of the finds was an undamaged crucible (cf. Sect. 4.2.4.3.), which gives a good idea of how most of the crucibles in and around House IV looked (Fig. 4:86). The lack of fragments of crucibles and moulds (there was only one uncertain mould fragment in the pit) at the same time as there was an undamaged crucible would argue against the pit's having been a rubbish pit.

Altogether 14 of the finds were tools in the form of knives, arrowheads, awl(s?) of iron, whetstones, crucible, spindle whorl, and an uncertain loom weight. In addition, there were 16 whole or parts of iron rivets or nails. Two ornamented bone fragments (Fig. 4:86) and a number of ingot-like iron fragments were also found.

Table 4:28. Identified bone fragments in pit T1.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>NO. OF FRAGMENTS</th>
<th>WEIGHT (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ovis/Capra</td>
<td>29</td>
<td>6.4</td>
</tr>
<tr>
<td>Equus</td>
<td>39</td>
<td>2.5</td>
</tr>
<tr>
<td>Sus</td>
<td>30</td>
<td>7.4</td>
</tr>
<tr>
<td>Canis</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Phocidae</td>
<td>10</td>
<td>8.9</td>
</tr>
<tr>
<td>Aves</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Indet.</td>
<td>728</td>
<td>103.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>839</td>
<td>129.7</td>
</tr>
</tbody>
</table>
The burnt bones, like most of the finds, were found only in the eastern third of the pit. About 13% of the 839 bone fragments could be identified as to species (Tab. 4:28). Horse is well-represented, which was not so in other features (only in the wall of House II).

On the other hand, there is once again no trace of cattle, and also no trace of hare—somewhat surprisingly, since hare is otherwise well-represented. No more exact dating of the pit than Early Iron Age is possible, but it was in use at the same time as casting took place, i.e. during the Migration Period. But probably, to judge from the greasy, thick culture layer and the relatively large number of finds, the pit probably had a long period of use. For this reason the bones in the pit give only a general picture of animal remains from the Early Iron Age.

The thick culture layer obviously contained a lot of carbonized seeds from cultivated plants (Tab. 6:1). However, only a few litres of earth have been analysed, yielding 12 seeds of barley and two of oats. Since oats did not occur in House I, these probably stem from the Migration Period. As regards arable weeds, fat hen was found together with the as yet unrepresented arable weed of field penny-cress (*Thlaspi arvense*). No grassland plants, shore plants or berry-bearing plants were found in the material analysed.
5. HOUSE CONSTRUCTION, ROOM DIVISION AND FUNCTION

5.1. CONSTRUCTION

5.1.1. CONCEPTS, DEFINITIONS AND PREVIOUS RESEARCH

House construction can be said to consist of supporting, dividing and insulating elements. These constructional details can leave traces in the ground but not necessarily so. Supporting elements refer to features which support the roof and other high-placed construction, i.e. the house skeleton. Dividing elements consist of different types of walls and the like inside houses. Insulating elements pertain to extra walls, wall fillings and roofing materials, etc.

Of these constructional elements in the house foundations in Gene, there are only direct traces of supporting and insulating elements. Dividing elements can be reflected partly in finds dispersals between the walls and partly through the types of finds. To a degree, the supporting elements are a reflection of roof construction and the placement of the posts reflects house function. For these reasons, the supporting elements play a part in the analysis of room divisions, i.e. they indicate dividing elements.

If the placement of the roof-supporting posts reflects the upper structures, which earlier research in general indicates (Stenberger 1955, Beskow-Sjöberg 1977, Myhre 1980), this further implies that the ridge beam was situated directly above the mid-posts, the purlins (lateral beams) were directly above the paired posts, and the wall beams directly above the supporting parts of the wall. But this is not necessarily the case with the lateral beams. They can diverge from the posts when, for example, the tie beams are longer than the distance between the posts and the beam is placed on the outermost part of the tie beam (cf. Fig. 5:8 alt. 2c). There are also great difficulties in determining where the wall beams were placed in for example kampagravshusen, the so-called giants’ graves (i.e. house foundations) on Gotland and in the stone foundation houses (stenmurshusen) in Norway (e.g. Stenberger 1955, Myhre 1980). As these houses had such sturdy walls, the placement of the wall beams on their broad foundations was not so important, whereas the problem is considerably more so in solid wooden houses (see below). Double walls are common in Iron Age houses, one supporting and one insulating. In such cases it is important to determine which of the walls actually had the supporting function, i.e. where the wall beams were placed, as house width and length are suitably defined as the distance between wall beams.

The relation of house width (H_{br}) to the size of the middle aisle (B_{br}) is a useful descriptive measurement of a three-aisled house (cf. Myhre 1980:171ff, Hvass 1982:142). The quotient H_{br}/B_{br} can be expressed as an index which quite simply indicates the weight distributions between the beams in the house, providing of course that the beams rest directly above their supports (Fig. 5:1a). An index of 2 means that each post is placed equidistant from the house's longitudinal axis and its walls. This implies that roof weight rests primarily on the lateral roof beams, and that the roof is balanced on these beams. With an index of 4, the distance from the central axis to a post equals 1/4, and from the post to the wall, 3/4. Fulfilling the above-mentioned conditions, this index means that roof weight is distributed along the wall line and lateral beams.

The relationship between the lateral beams and the roof-supporting posts is an old architectural problem. Have the lateral beams been supported directly by posts, or have they been placed on a tie beam in a so-called trestle or gate construction? This discussion (e.g. Beskow 1969: 58f) was lively in the 1930s (cf. Stenberger 1933: 192f). The starting point in the discussion was the opinion of Boëthius (1931) that Iron Age houses had one system of trestles or gates which supported the lateral beams. This was personified in the reconstruction of Lojestahallen on Gotland (Boëthius and Nihlén 1932:349). The justification for this view was that post-hole rows were often observed as swelling outward, or were irregular, but more regular in the pairwise configuration. Against this, and arguing that the beams were borne directly by the posts is Stenberger (1933) who also raised the question of the role of raw materials. He argues that the timber in the Öland houses consisted exclusively of deciduous type (oak) and because of this they were unable (technically) to make straight beams. In other words, the crooked beams were the reason for the irregularity of the post rows (Stenberger 1933: 193).
Stenberger's interpretation was followed as late as 1969 by Beskow and no revision was made in Skedemosse IV published in 1977, in spite of much evidence of advanced building technique (cf. Myhre 1979:184). In this context a circumstance, also pointed out by Trier (1969:123) can be brought up. This refers to the placement of mid-posts with respect to their nearest post pair. As an example, the two mid-posts in House I at Gene were placed 0.7 m respectively 1.1 m from the nearest post pair. They do not thereby form transverse alignment (Fig. 4:3). If the mid-post had stood in transverse alignment, a trestle construction would be out of the question. The mid-post is placed in the same manner in the house found under grave 4 at Högom (Fig. 5:2). The mid-posts in for instance Band ceramic houses are regularly placed in straight alignment with lateral post-holes (e.g. Kuper 1973, 1977; Lüning 1980). This implies however that the trestle construction is out of the question and that there were separate post rows which directly supported the lateral and ridge beams. These rows are not in any way curved, and therefore contradict Stenberger's assumption. One can thus say, on the basis of mid-post position, that if a mid-post is displaced with respect to the alignment of post pairs, a trestle construction is probable, and in the opposite case, not possible.

It is very probable that the Early Iron Age house had a basic structure built upon a gate or trestle construction which formed the support for the lateral roof beams. Although within the same house construction, a combination of trestles and directly supporting posts can occur (cf. below).

With regard to the supporting sections of the wall, a number of possibilities existed for constructions during the Early Iron Age (Fig. 5:1b). Since there are no instances of timbered houses in Scandinavia from the Early Iron Age, there only remain various types of post walls with or without sill beams and walls built of stone, earth or sod. In archaeological contexts the former type appears as ditches with or without sunken posts. Where there are no further signs of posts in the ditches or trenches it is possible that sills were employed. The sill may have been completely or partially sunken or resting on level foundation stones.

The posts in the wall can be joined together either with wattle work (horizontal or vertical) or with axehewn timbers (horizontal = bulwork, or vertical = stave
work). All these alternatives must from a technological point of view be regarded as possible during the Early Iron Age.

5.1.2. SOME PERSPECTIVES

Myhre's (1980) summary of Norwegian material and his analysis of the chronological and spatial context of the long-house, has demonstrated the considerable similarities which existed throughout the North European area. Since World War II numerous villages and farms from the Early Iron Age have been excavated in Denmark and on the Continent. The most important sites are the well-preserved houses from the Wurtsiedlungen in the German and Netherland North Sea region. Here were found sites such as Tofting and Elisenhof (Bantelmann 1955, 1975) and Feddersen Wierde near Bremerhaven (Haarmagel 1977, 1979). These "village mounds" are located in the lowland marsh area which is subject to almost cyclically recurring floods. In response, it has been necessary to periodically build small hills and place structures on top of them. Over time, these mounds have grown to considerable dimensions. The largest of these Wurten can measure several hundred metres in diameter and up to 10 metres in height.

Parallel with these settlements along the North Sea were inland sites, in the Geest area. Here there were completely different conditions for settlement, with sand and moraine soils. These areas also supported early settlement. For instance, the Roman Age settlement at Flögel near Bremerhaven (Zimmermann 1976) can be mentioned. It was contemporary with, and only 17 km from the above mentioned Feddersen Wierde.

Numerous larger settlement complexes have also recently been found on Jutland, which geographically belongs to the North Sea region. The settlement sites of Grøntoft (Becker 1971) and Hodde (Hvass 1975), both Pre-Roman, and Vorbasse (Hvass 1979), Roman to Viking Period, can be mentioned.

Within the Danish area there are house remains from practically the whole Iron Age. The only period that is weakly represented is the Merovingian Period (Hvass 1982:143). Using knowledge of above all Jutlandish conditions one can, according to Myhre (1980:416f) and Hvass (1982:143f), describe the development of the long-house:

1. Pre-Roman Iron Age and Early Roman Iron Age: small three-aisled long-houses with weak walls of wattle or plank construction. Outside of these were earth/sod walls or an outer post-row which supported the roof.

2. Late Roman Iron Age and Migration Period: very long three-aisled houses with sturdy walls, without traces of outer earth/sod walls. Divided into several rooms.

3. Merovingian Period and Viking Age: large open halls lacking interior roof-supporting posts. The roof is supported by sturdy walls and exterior supporting posts.

In recent times there has appeared an extensive Norwegian material with which Bjørn Myhre in particular has worked (Myhre 1972, 1980, 1982). Among other things, it has been shown that inside the stone walls in the three-aisled stenmurshus there has been an inner wooden wall or panel (Myhre 1982:98ff). Myhre (1982:108) believes that its main function was insulating and that stenmurshusen appear in areas with a severe climate, typically the Norwegian coastal zone. This hypothesis is supported by the fact that only a few foundations have been recorded in the forest areas, which may indicate that pure wooden houses occurred here in particular.

Myhre (1979:185) also considers that at least some of the so-called kämpagravshusen on Öland and Gotland had wooden walls inside the stone walls. He does not want to generalize, but holds open the possibility that in this case, for example, social or economic differences may have played a role. He emphasizes that all Norwegian foundations investigated after 1965 have had traces of inner wooden walls (1982:108), which suggests that expectations and improved excavation techniques favourably contributed to their discovery.

The discovering of post-holes in the foundations occurred in exactly the same manner. In the pre-1950 Norwegian investigations the post-holes are not all encountered, so that a reconstruction of the foundations' supporting structure was impossible (Myhre 1982:108). To a certain degree the same conditions apply today and it can be very difficult to find the post-holes; for example where unfavourable weather conditions prevail (sunny and dry), where features from different times and dark occupation layers occur and also where the underlying material is moraine, where the work is urgent (as with ordinary rescue excavations) and, last but not least, one rarely finds for instance light-coloured features if one is not expecting to find them.

From a survey of the Swedish and Norwegian areas known at present, it is clear that during the Early Iron Age there were two types of three-aisled long-houses existing side by side. In terms of construction they are closely related, but in one case stone formed
an important part of the wall material whereas the other type was purely of wood (flatmarkshus). Within the group of houses using stone I also include here the terrace houses from Norrland and Central Sweden, which did not have stone walls but in which stone and earth formed the foundation for the whole building.

Houses with some form of stone constructions have totally dominated the discussions of the Early Iron Age house in Swedish and Norwegian areas. Flatmarkshus contemporary with the former, have only come to light during the last few decades, for example in Norway (Farbregd 1980:64, Fig. 28; Myhre 1982: 104ff; Loken 1982) on Öland (Beskow-Sjöberg 1977) and in Central Sweden (e.g. Fernholm 1982) and Norrland by the examples of Högom and Gene. The reason that the discussion has been dominated by houses with stone constructions is simply that they are better known. They are for instance visible in the ground before any excavation which is not the case with flatmarkshus. On the other hand it is not certain that houses with stone constructions characterized settlement during the Early Iron Age. Myhre (1972: 186) suggests, for example, that many of the Migration Period stenmurshus represent in some measure marginal settlement, which was the last to be established in an internal colonization and the first to be abandoned in retreat. Similar circumstances may be seen also in northern Hälsingland, where the largest Iron Age settlements (according to the frequencies in graves is Hög and Hälsingtuna parishes) have relatively few foundations of the terrace type (cf. Isaksson et al. 1977:34, Fig. 4; Liedgren 1981:40, Fig. 1). Here, however, we come into untested questions about whether different areas have socio-economic variations, which is reflected in the form and location of settlement.

5.1.3. NORRLAND

The foundation that most resembles House I in Gene is one from Högom (Sect. 2.2.1.). The first characteristic in common is that the Högom house under grave 4 has differently constructed longitudinal walls (Fig. 5:2). The northern wall has a subsurface sill beam while the south wall has sunken posts. The latter are, nevertheless, considerably fewer and more dispersed than at Gene. In the house, 3 inner roof-supporting post pairs were found which rendered index values of 3.9, 4.0, and 4.6. This placement coincides well with Gene (cf. last column in Tab. 4:1). Birch-bark was found in many of the post-holes. It had been wrapped around the post bases which is also consistently the case in the Gene houses.

In the same manner, the only entranceway found coincides completely with the Gene houses. The break in the trench measures 2.0 m and both of the portal posts were recessed 1.2 m from the wall line and 1.4 m apart.

There are also things which separate the Högom house from Gene. It can be mentioned that no doubling of the inner roof supports was observed, in spite of the fact that the only preserved area was probably the dwelling area which had two central hearths.

The entrance is furthermore not aligned with any of the trestles. There are four mid-posts placed on each side of the two central hearths. The longitudinal displacement of the two west posts with respect to the nearest respective trestle shows that they were
not part of the trestle construction. The distance between the two eastern trestles is as large as 13.8 m. The Gene house has at most a trestle distance of 6.9 m (i.e. half the distance compared with the Högom house), which just happens to be on either side of the long hearth, A10 (Fig. 4.3).

The house section found beneath grave 3 at Högom is in some ways better preserved and displays, besides portions of the long walls, an eastern gable (Fig. 5.3). The long walls were also in this case constructed differently, the northern with a sill beam and the southern with posts. About 24 m of the buried walls are preserved, and that should comprise 60–70% of the original house length. According to my interpretations of the excavation plans, house width at its centre was c. 7 m and at the east gable end, c. 5.5 m. The northern most-detailed wall can be subdivided into three parts. From the east gable and c. 13.5 m towards the west are the carbonized remains of the sill log. This log was fragmentary but at least 0.15 m in diameter. Outside of this was partially carbonized birch-bark. The sill and bark were overlain by a belt of burnt clay which had fallen off the wall. Some flat stones were found at both ends of the sill. In this wall section there is an entrance, c. 2 m long, followed by a c. 3 m long wattle wall (Fig. 5.4). This wall consists of carbonized sticks (with c. 0.5 m spread) which were shallowly poked into the sand, as well as thinner interwoven twigs (of spruce?). According to the excavator (Petré 1963), the westernmost part of the wall, c. 5.5 m long, consisted of the same construction as the east part, i.e. a sill with birch-bark. On the plans it nevertheless appears to be of wattle and bark.

These observations illustrate that a wall was not necessarily constructed in the same manner for its whole length. Different forms could be combined depending perhaps on the functions of different rooms or successive repairs to the wall. In this instance the northern wall construction shifts in connection with the entrance. It furthermore appears here that the preserved eastern gable had a sill which lay on flat stones, and lacking an outer shield of bark. With respect to the wattle and daub wall and sill log, the bark probably served as protection. It seems clear that the gable was not daubed and therefore did not need any protecting birch bark.

The relatively small amount of post-holes identified in the foundation do not occur either in rows or pairs. The only clear interior constructions are two closely-placed dividing walls which lay c. 18 m from the east gable. They appear on the plans as two post rows which cut transversely through the house. These rows stand c. 1 m apart and probably mark the original centre of the house.

The excavator interprets the sill log along with burnt clay having triangular cross-sections (see Sect. 5.1.5.4.) from the ends of the house, as witnessing a timber construction.

As an argument for a timber construction the excavator could also have added the lack of system in, and the scarcity of roof-supporting posts. This applies to the north long wall and the east gable. On
the south wall there are indications of a trench along the inside of a row of post-holes which run regularly along the whole preserved length of the house. It is obvious that the post row supported the wall beam and the interior trench, if it at all belongs to this house, is the remnant of an inner insulating panel. We thus, even in this instance, have a house with its two long walls constructed differently. Whether the burnt clay belonged to the wall or some inner arrangement is difficult to determine without further analysis. My interpretation hence contradicts the excavator’s by suggesting walls with upright posts rather than a timber construction.

Identifying the position of the supporting parts of walls (wall beams) is difficult in the case of terrace houses. A largely intact stone frame runs around the terraces at Onbacken and Trogsta, House A (Boëthius 1931:26, Fig. 22; Liedgren 1981:Fig.12,1983:Fig.10). This is, in the first named instance, well made and consists of 0.2–0.4 m large stones. At Trogsta it is made up of occasional boulders with stones of varying sizes in between. If this stone framework served as a foundation or support for an outer wall, the average house width at Onbacken was 7.5 m and House A at Trogsta, c. 7.6 m. According to Liedgren’s excavation plan the outer wall at Trogsta was evidently c. 1 m inside of this stone frame. With this placement the house averages 5.5 m in width and the posts in the first and last post pairs comprise corner posts. These more widely placed post pairs at the ends of the house have their exact parallels at Onbacken and in the Gene houses (I, II, and VI). At Gene we know that these posts were placed 1–1.5 m inside of the longwalls and up to 1.5 m within the gable end. This was also the case with terrace houses, if the wall was placed just inside of the stone framework.

The only entrance set with posts in the Trogsta house aligns with the wall in the narrower alternative, but is recessed c. 1 m in the wider one. At Gene the portals were recessed c. 1 m from the walls. The third detail is their index values. They average 4.0 for the wide alternative and 2.9 for the smaller alternative.

In my opinion, these data imply that the wall beam was aligned with the stone foundations which were exposed by excavation at Onbacken and Trogsta. This does not exclude the possibility of a weaker wall panel, for example of wattle and daub, within the supporting wall.

There is much in common between the lay-out of the terrace houses and the Gene house. The doubled, interior post settings were observed at both Onbacken and Trogsta. In the latter case, this strengthening was adjacent to the two long hearths. In this central area a concentration of burnt clay with triangular sections was found (Liedgren 1981:64).

5.1.4. CONSTRUCTION OF THE GENE HOUSES

5.1.4.1. House I

The house was 39 metres long and 7.7–9.1 metres wide (Fig. 4:3 and Tab. 4:1). The long walls were slightly curved and terminated toward the south in slightly rounded corners. There are no traces of the northern gable end. The 8 pairs of posts functioned primarily as supporting elements (pair nos. 2–9 according to Fig. 4:3). The two posts in each pair were placed at an internal distance of, on the average, 25 % of house width. This implies that the index \( H_{br}/B_{br} = 4 \). When the index approaches this value, a greater part of the roof weight rests on the walls, providing that the posts reflect the position of the purlins and that no supporting balks (Swed. strävar) occur.
In the central part of the house, this construction has nevertheless been complemented with additional posts. Outside of post pair nos. 3–6, and between pairs 5 and 6, there are even more posts. These are situated approximately equidistant from the central axis and the wall lines, i.e. at an internal distance of c. 50% of house width. The outer posts constitute rather two rows than five post pairs. A third group of post pairs encompasses the two mid-posts which were found in the southern and middle part of the house. These mid-posts are displaced with respect to the posts. Outside of post pairs encompasses the two mid-posts which were found in the southern and middle part of the house. These mid-posts are displaced with respect to the wall lines, i.e. at an internal distance of

The fourth supporting element is the wall itself. Wall remains could be observed in plan on three sides of the house. The picture is complicated somewhat by the overlapping of the western wall by the eastern ditch of adjacent house II, and the overlapping of the southern part of the eastern wall by House VIII's west wall. Only the S gable end and the SE and N part of the E wall are intact in plan. Cross-sections support the probability that subsurface sill beams served as wall supports in the SE and N parts of the house. At several places on the NE wall, sooty spots corresponding to posts which had been fitted into the sill were observed in plan (Fig. 4:7). Nineteen definite post-holes placed at intervals of c. 0.8 m were observed along the west wall. These lay in the trench belonging to House II. They terminate towards the north at approximately where the eastern sill begins (cf. Fig. 4:3). This means that the east and west walls along the house's south and middle sections were constructed differently.

The first question which presents itself is why there are outer posts along only part of the house. The explanation can be discussed along two lines: the first explanation is that if a lower roof angle was desired in this part of the house, this could be achieved by increasing trestle width. To the same extent, wall height would have been increased, if house width and height remained constant. The inner posts would thereby only serve as a support for the outer trestle's tie beams (cf. Fig. 5:8 alt. 1a and 1c). The second explanation is that they simply strengthened the inner supporting-elements and that the double post arrangement reflects an especially heavy roof. Generally speaking it is unlikely that water-retaining and water-draining roofing materials were combined in the same roof. Figure 5:5 illustrates some examples of combined heavy and light roofing solutions. Some non-empirical comments can be made regarding these solutions. The difference between alternatives (a) and (b) is that in order for the heavier (sod) roof to have a lower angle, the wall height must be increased if the roof height remains the same. If wall height remains constant, the roof must be lowered. Lowered roofs are known from historical times in connection with joined, individual timber structures (e.g. Lundberg 1942:35).

In order for the house to retain a constant roof and wall height plus roof angle, also the heavier roof should be built using the principle of run-off. This is the case with different sorts of wooden roofs (Lundberg 1942:21). A wooden roof (Swed. vedtak) combined with some kind of light draining-roof can render a house with a homogeneous outer profile and constant roof and wall heights (Fig. 5:5c). It should be mentioned that in practice there are no definite rules governing the roof angle. Tradition, climate and other factors probably play a great role in the construction of roofs.

The archaeological investigations did not reveal anything which can be interpreted as a collapsed roof, i.e. accumulations of debris or thick humus profiles etc. Specific questions concerning the nature of roof materials were not posed during the initial excavations. (One as yet untested possibility for addressing this problem would be to measure ash weights for every metre within the house. Different raw materials ought to be distinguishable with this method.)
On the House I site, and some others, cultivation had been carried out during historical and/or prehistoric times. This is perhaps indicated by phosphate analysis (Chap. 3.2.) and by the few but still clear ard or plow marks which have been identified on the NW part of House II and on the middle part of the east wall of House I. It is not impossible that eventual traces of a sod roof have been obliterated, even though the agricultural activities were of limited extent. To forward a hypothesis concerning roofing materials we must turn to other more indirect means.

It was noted during excavation that carbonized parts of posts occur at different levels in the post-holes. The degree of carbonization of, for instance a post, mostly depends on oxygen conditions. The less oxygen involved the better chance of carbonization. In an open and fully developed fire, all wooden material turns to ashes and charcoal fragments and does not leave any substantial traces of wooden constructions. When a post is placed in a pit which will be filled up with earth, the lower part of the post stands in a highly reduced micro-environment. The normal result of a fully developed fire could very well be that the floor level part of the post more or less turns into ash, while the earthen part turns in varying degrees into charcoal.

To my knowledge these processes have not been archaeologically tested and I thus must speculate a little more about the problem. We have, in fact, two main types of remains at Gene: the first in which the charcoal is found deep in a pit, and the second, where charcoal occurs closer to the original floor level. Probably many factors determine the depths and degrees of carbonization, for example fire intensity, local wind conditions, building materials, how a building collapses, etc. These factors vary throughout a site and even within a single house.

But when there seems to be systematic differences within a single house foundation, such as in House I at Gene, it must be discussed. The post-holes of the northern part of House I were quite different from those in the south. In Figure 5.6 the innermost roof supporting posts and the depths of the charcoal have been listed. The figure accurately shows the differences between the two parts of the house. The shaded posts in the figure (i.e. groups nos. 4–6) have been disturbed and are not quite relevant to this case. The other posts show an interesting difference in which a carbonization depth of 0.25 m below the excavation floor is a dividing point. In the northern part of the house charcoal is found below and in the south above that depth.

How can this condition be explained? My proposal is that it is a reflection of different roofing materials. The southern part of the building had a sod roof which fell down and covered the post-holes at a relatively early stage of the house fire and thus created a reduced micro-environment. We therefore get carbonization just below the floor level. The northern part of the house, according to this logic, had on the other hand a light and flammable roof, for instance birch bark or some kind of thatch. In this case we get greater fire intensity and a greater carbonization depth.
As will later be shown by the analysis of room divisions, the additional roof-supporting posts occur in the central part of the house, which was the dwelling area. This area therefore had the heaviest roof section. With respect to heating it was advantageous to have as small an interior area as possible, which in this instance corresponds to Figure 5:5b. This volume can also be reduced by constructing a false ceiling supported by the outer lateral beams. Heat maintenance ought to have been important in the sometimes bitter winter climate of Norrland.

Further indications of roof angle may be obtained indirectly through the study of door post placement. Their placement, in relation to the wall, can have served in increasing the height of the entrances. If this is the case, a roof angle of 27° will allow an increase for a doorway of 0.5 m for every metre it is moved toward the house mid-line. At 45° the increase in height is equivalent to the recession from wall line.

There are three entrances on the long east wall of House I (Fig. 4:3, Tab. 4:4), one approximately in the middle and the others closer to the ends of the house. The middle entrance (E3) led to the dwelling section with its heavy roof while the northern (E4) and southern (E1) led to rooms with lighter constructed roofs.

The recession of entrance E4 is somewhat uncertain as traces of the wall are missing in the northern part of the house.

If a uniform portal height was desired, and the wall was the same height along the whole house, then the central entrance was situated under a flatter roof. This can be illustrated by an example: If a 2.35 m portal height was desired and the wall was 1.5 m high, the roof angle above the E1 entrance was 40°, above the E3 entrance 33° and above the E4 entrance 45° (Fig. 5:7).

The hypothesis for the placement of the portal posts and their connection with entrance height is untested but if correct gives good support to the likelihood of a flatter roof angle in the mid-section of House I. Alone, this is a weak argument, since it could also indicate different heights for the entrances.

If we turn next to the relationship between the supporting elements, a whole series of possibilities arise (Fig. 5:8). There are different ways of reconstructing the lateral beam support quite independently of the roofing types. The starting point is, because of the pairwise arrangement of the posts, a trestle or gate construction. The trestle consists of a tie-beam supported by the posts closest to the house midline and there are 8 of them (cf. Fig. 4:3). The lateral beams supported by these trestles can be placed in at least two ways, in accordance with alternative 2a and 2c in Figure 5:8. The difference is that the latter put much of the roof weight on the walls (index = 4). The importance of placing the lateral beams as directly as possible above their supporting posts was stressed in the reconstruction of the Eketorp houses on Öland (Edgren & Herschend 1979:16). This is not the case in alternative 2c and the structure has therefore been complemented with supporting balks. Such a solution is quite suitable for the raising of relatively light roofs.

Regarding the doubling of posts in the house mid-section, this also implies a doubling of the lateral beams. That we have two lateral beams on each side and not a single trestle is suggested by the place-

![Fig. 5:7. Examples of the relationship between roof pitch, doorway height and recession of portal posts in House I at Genesmon. (a) height of doorways if the roof pitch is 45° in southern and northern part (E1 and E4) and 30° in the central part (E3) of the house, (b) differences in roof pitch if a uniform doorway height throughout the length of the house was desired.](image-url)
ment of the outer roof-supporting posts. These stood in some cases totally out of line with respect to the corresponding trestle which makes it unlikely that the inner post pairs and the outside posts were part of the same trestle construction (as in Fig. 5:8 alt. 1a, 1c, and 3a). Because of this there is reason to believe that the outer lateral beams were borne directly by the posts. Their tendency toward longitudinal alignment does not speak against this. On this basis the likely reconstructions are alternatives 1b, 1d, and 3b (Fig. 5:8). The other alternatives do not find as much support in the archaeological material.

To summarize the discussion about the construction of House I, several factors favour an interpretation saying that the mid-section had a heavier roof (probably of sod) while the other parts had a lighter roof. Since there are few natural straw materials available, birch-bark in combination with rafters could be an alternative. A combination of a sod roof and a light roof based on birch-bark and rafters ought not to raise any problems regarding the different roof angles on different parts of the house. In order to diminish the volume of the dwelling room, different alternatives are available, of which a false

Fig. 5.8. Some alternative types of supporting constructions for varying roofing materials.
ceiling perhaps is the most probable. In the northern part of the house the relatively weak walls, together with the narrow mid-aisle, suggest that the lateral beams are placed according to Figure 5:8 alternative 2c. In that way the outer lateral beam over the dwelling section and the lateral beam in the northern part of the house lie along the same line.

5.1.4.2. House II

As pointed out in Section 4.2.2., this foundation was significantly more messy than House I and its supporting structure is more difficult to reconstruct in detail. Generally, however, its construction is similar to that of House I (Fig. 4:23). The index value \((H_{W}/B_{W})\) lies around 3.5 on average and the outer roof-supporting posts, admittedly weakly represented, appear in the central part of the foundation. No definite mid-post has been encountered.

As in House I, the greatest distance between two trestles occurs over the section containing the central hearths (cf. Figs. 4:3, 4:23), which suggests that this surface deliberately was freed from "disturbing" constructions.

With regard to the entrances facing each other in the S part of the foundation there is total accordance with House I. No definite entrances however have been observed in the middle of the house's long walls, but much suggests that such have existed (Sect. 4.2.2.2.).

From a constructional point of view, one phenomenon that differs in the two foundations is the walls. In House I, which in this respect was disturbed by House II and VIII, it was nevertheless observed that the middle section of the E long wall probably consisted of a sill-log into which vertical posts were inserted. The corresponding section of the W wall was on the other hand made of sunken posts, placed at average intervals of 0.8 metres.

This difference between the constructions of the two long-sides did not appear in House II where, with the exception of the northern and southern gable sections the structure is the same all around the house. Seen from the long axis of the house both sides are symmetrically constructed, which thus was not the case in House I. The supporting part of the wall has been made by sunken posts at average intervals of 0.8 m, i.e. precisely as in the SW wall in House I.

One striking difference in comparison with House I consists of the trench running outside the wall-line posts. In terms of construction the trench is connected with the sunken posts in the wall-line, with breaks in the same places and both features ending in the north. The trench partly changes form in the south gable section, immediately south of the opposing entrances E1 and E2 (Fig. 4:23). In the bottom of the trench occasional smaller and deeper post-holes have been observed (Figs. 4:26—29), sometimes positioned in pairs at right angles to the house's long axis. This difference between trench and post row exists as well to a certain extent in the S gable section, where there are also a few larger post-holes of the same type as in the wall line.

The interpretation of the trench is that it represents the remains of a weaker and non-supporting wall or panel, the prime function of which was insulating. The foot of this panel has been sunk in its entirety and certain of the thinner posts have in addition been sunken further so as to give stability. The trench was deepest in the middle section of the house, i.e. from N of the opposing southern entrances up to and level with post group No. 5 (Fig. 4:23). In this section the trench has an average depth of 0.3 metres below the present ground-level, while the sunken posts in the trench attain a maximal depth of c. 0.6 metres.

Thus it is probable that it is a question of a double wall, where the inner was both supporting and insulating while the outer was solely insulating.

5.1.4.3. The other houses

The construction of House IV coincides most with House II. The walls are identical in construction apart from the fact that the smaller House IV has somewhat weaker timber and an average interval of 0.7 metres between the posts in the wall-line.

Even in this case it is characteristic that the index value lies around 4, which signifies a narrow mid-aisle and wide side-aisles (cf. Tab. 4:17). As the house had burnt down and no later activity of any note has taken place over the central part of the foundation, even here the carbonization depth for the posts can be studied. In the excavated cases the carbonized parts of the posts are found at the top of the post-holes. If the earlier assumptions are correct then the house had a sod roof.

One of the investigated roof-supporting posts was a cloven log (Swed. halvklyving) and there is, together with the observations in the contemporary House II, a distinct tendency in the material: in the later stages of the settlement, worked timber was
used to a greater extent than initially.

With regard to other foundations, House VI, VII, and VIII will be mentioned. House IX (Fig. 4:77) is still to a large extent impossible to analyse. It can however be stated that the index value for its S part approaches 4 and that it therefore coincides with the other foundations.

House VI (Fig. 4:58) is built in the same way as the others with regard to its supporting construction. The main difference however is that there is much carbonized material preserved. Much evidence suggests that this material is the remains of the collapsed wooden bottom-layer of the sod roof. The construction then in question is the same as that employed in the reconstruction of house 1 at Ullandhaug (Skjelstad 1980:7), i.e. heavier rafters in the roof at slightly more than 1 metre intervals in the Gene case, upon which was placed a tight layer of horizontal rafters. Above this was a protective layer of birch-bark on which, as a suggestion, a double layer of forest sod formed the outermost roof.

The wall of the house, only a very small part of which has yet been investigated, has comprised in part at least of sunken posts in a trench (cf. Fig. 4:63).

In the case of House VII (Fig. 4:72) it can be said that the S part of the foundation has a construction similar to House I, regarding both the index value and the wall construction. The latter is a single-walled construction comprising both sunken posts and a sill-type trench in the same line. Remains of this only occur along a short stretch in the S part of the eastern long wall.

According to the suggested interpretation, the foundation's character changes N of the only definite entrance. In this part the index value becomes around 2 and there is no trace at all of the walls. Here the construction is lighter and the inner supporting elements obviously balance the roof so that the wall does not need to be part of the supporting structure.

House VIII (Figs. 4:74—75) has an index value which even exceeds 4 (Tab. 4:25). The house has a double wall, but contrary to other double-walled houses, (II, IV and X), this has a stronger outer and weaker inner wall. As shown by the profile (Fig. 4:76), both walls are well sunk as are the respective posts. The outer trench is however significantly wider and contains approximately twice as many posts as the inner one. The details of the wall construction are still hard to interpret but the posts have probably been linked by planks and/or wattle. In the general lay-out, with three evenly placed trestles and a high index value, this foundation is almost identical with House X.

A little north of the mid-point, and unlike House X, the wall and probably the roof, changes construction and no traces at all were recovered by the excavation. In this respect, however, there were similarities with House VII and both houses had a hearth in their "lighter built" N parts. These hearths may be secondary in relation to the respective houses but their positions along the mid-lines make it possible that they really belong to the original buildings.

5.1.5. CHARACTERISTICS OF THE LONG-HOUSES IN GENE

In basic structure, the Gene houses are completely comparable to other contemporary North European house types. The common unit throughout the whole North European region is the long-house with pair-wise roof-supporting posts, and room divisions. This material will not be gone through here, instead reference can be made to Myhre (1980) who has done this in connection with the Norwegian Ullandhaug investigation.

In this connection attention can be drawn to some specific aspects of the Gene houses:

1. the lack of traces of gable ends (often the north), and the placement of gable posts,
2. the index for the roof-supporting posts and the house width,
3. the recessing of portal posts c. 1 m from the long walls,
4. the presence of burnt clay with triangular sections,
5. the different construction of parts of the walls.

All of these aspects are seen in House I which can serve as a standard. One or more of these characteristics are seen in each of the other houses. We can now examine the question of whether or not these details are found elsewhere.

5.1.5.1. The lack of traces of gable ends and the placement of gable posts

As the sill as an element of wall construction goes back at least to the Roman Iron Age, an additional explanation arises which could explain the "missing" gable. A sill log can be placed in a number of different ways (Fig. 5:1): set in a trench (leaves traces); placed directly on the ground (no traces), or placed on flat stones (normally leaves traces but the stones can later be removed). At Vorbas in central Jutland in some of the Migration Period houses, there are no traces of the east gable (e.g. Hvass 1979:68, Fig. 3). At Vorbas the missing traces have been interpreted
as a missing wall. This is not necessarily the case at Gene as traces of the northern parts of both walls are also lacking (Fig. 4:2). The long walls must have existed in any case, as there is a NE entrance (E4) in the same position, with respect to the likely wall line, as the other portal posts. It can be concluded that the whole north room had a uniform wall construction, for example consisting of a sill log placed directly on the ground with inserted posts. In spite of this, the gable could have been completely open. But the alternative of a gable sill must still be taken into account.

Regarding the first and last post pairs which occurred in Houses I, II, and VI at Gene, these are not observed in houses in the North Sea region or Denmark. They are seen in the terrace houses in Halsingland, if one accepts a wide variant of this house type (Sect. 5.1.2.2.). They were also present in the terrace-like houses at Täby (Modin 1973:63, Fig. 15). Two house foundations displaying widely placed posts at one end were observed (house A29 and A96). But the same problem as with the terrace houses arises in this case if they are placed on naturally uneven ground which was levelled during construction. There is also a well-built stone wall around some of these houses which makes house A96 c. 7 m wide. If the gable posts were corner posts the house would only have been 5 m wide; compare the situation with the aforementioned Trogsta house A. The foundations at Täby thus coincide very well with corresponding houses in Halsingland. This is true of both the gable posts as indices and the placement of the portal posts with respect to the long wall. The Täby houses date between the Roman and Migration Periods (Modin 1973:71). The majority of the known and excavated Norwegian house foundations have an outer stone wall of more or less well-laid stones. The stone foundation of house 1 at Ullandhaug was c. 1.5 m high (Myhre 1980:168). According to Myhre there was a wooden wall inside of this stone wall (Myhre 1980:166). He believes that the wall beam rested on this wooden wall and that the stone wall functioned primarily for insulation and protection (Myhre 1980:141). He has similarly interpreted the kämpagrovshusen on Gotland (Myhre 1980:400ff). Concerning the gable posts, the foundations at Forsandmøen, SW Norway, show similarities to the long-houses at Gene (Loken 1982: 78, Fig. 3). In the case of Forsandmøen, the widely placed gable posts are situated c. 1 m inside the long-walls but in line with the gable itself.

Occasionally, the outermost post pairs are placed near the gable in the stone-wall foundation house type. This is also true of the Norwegian boat houses (Herschend 1980:17). Herschend states that this placement is only found in the West Norwegian boat houses. One can, nevertheless, observe posts placed just inside of house corners on several plans of house foundation from Rogaland (Petersen 1933:Pl. L11, Petersen 1936:Pl. LX and Pl. LXI). In these houses, the roof-supporting posts are commonly placed very close to the inside edge of the stone wall, which implies that the outermost gable posts are only a continuation of the other post pairs and they are therefore unlike those in the Gene houses.

According to convincing analyses of gable end constructions from foundations on Öland (Herschend 1980), it has been demonstrated that a hipped gable end is reflected in the parallel location of the last post pair and the gable end. This also shows that a trestle-construction has been used. In the Gene case this relationship is most clear in House I (Figs. 4:3, 5:12) where the gable end is parallel to post group (pair) No. 2, but not with the gable posts (No.1 in Fig. 4:3). It can therefore be suggested that the gable posts have nothing to do with the trestle-construction.

5.1.5.2. The index values

As previously pointed out, the ratio of house width to trestle width can be used for describing the general construction of a house. Numerous other researchers have used this method, but in varying ways. Myhre (1980:171f) has alternately used house width/trestle width and trestle width/house width. The resulting figures are directly comparable. Hvass (1982:142) uses percentages, in which the mid-aisle width is expressed as a percentage of house width.

Most interesting in the analysis of house construction is perhaps above all the placement of the roof beams and wall beams. Their respective placement can only be estimated using conclusions drawn from post placements and wall trenches. The different indices calculated in Figure 5:1 do not, however, necessarily mean that they are directly translatable into the distribution of roof weight, as generally assumed by for example Beskow-Sjöberg (1977:81) and Myhre (1982:109). As seen in figure 5:8 alternative 2c, an index of 4 can be changed to an index of 2 without this been mirrored by post placement. That there are different index values at all, must primarily be ascribed to other causes, for instance function or local tradition. Different sections in the same house
can display different indices, as for example in House I in Gene, where this has been interpreted as a general strengthening of the supports, since the trestles with an index of 4 extend for the whole length of the house.

The widths of the Gene-houses are considerably greater than in contemporary houses in other regions (cf. Stenberger 1955, Trier 1969, Myhre 1980, Hvass 1982). Some exceptions of course exist. For example, house II at Forsandmoen (Løken 1982:78), which has many similarities with the Gene-houses, also has a width around 9 m. Normally the Norwegian and South Scandinavian houses are 5–7 meters in width, while the figures for the long-houses in Gene are 9.1 and 8.2 respectively. The actual widths of the mid-aisles, on the other hand, correspond better throughout the area (cf. Myhre 1980:171ff, Hvass 1982:139ff, Løken 1982:78).

A wide mid-aisle and narrow side aisles are typical of the three-aisled Iron Age house in the southern North Sea region (Trier 1969:46). By wide is meant an index of 3 or less. It is normal for these houses to have an index of 2 or less. The same is true of Danish Iron Age houses where, according to Hvass (1982:142), a change took place during the Late Iron Age and the mid-aisle became narrower, equalling 36–46 % of house width (Hvass 1982:139). He has drawn the conclusion that there was a change in the distribution of roof weight with the wall now supporting more weight than previously. It was in this connection that the sturdy post-wall appears in the Danish material, which according to Hvass (1982:139) was a new element of house construction.

The Norwegian stenmurshus seem to group around an index of 2 (cf. Myhre 1980:173, 1982:109). But knowledge of the flatmarkshus is limited, and the only known example, Forsandmoen (Løken 1982), could perhaps indicate that there are considerable differences within SW Norway. House II at Forsandmoen has an index value close to 4, and is thereby quite comparable with the Gene houses. According to Tesch (1980:84f) a house type with a relatively narrow mid-aisle was constructed in the Stora Köpinge area during the Early Roman Period. The houses are c. 6 m wide and 18 m long, with a mid-aisle width of just under 2 m. The index would in this case be about 3.

An index of 4 thus seems to be shared by the Norrland houses. The Vallhagar seems to house together with the Norwegian, Danish and Scanian examples group along an index between 2 and 3. The known Norrland houses markedly seem to cluster around the index 4. Darsgårde house A22 in Uppland (Ambrosiani 1964:13) has an index of about 2.5.

5.1.5.3. The placement of portal posts

The starting point for this discussion is the fact that the portal posts are recessed c. 1 m from the long walls of Gene Houses I, II, and VII, i.e. during both the older and younger phases. This has been interpreted as witnessing a desire to achieve greater door height, as the wall height did not in itself allow for this.

The 8 documented entrances with portal posts at Gene have an average width of 1.3 m and the posts are likewise recessed 1.0 m from the long walls. The doorway in the house found beneath grave 4 at Högom was c. 1.4 m wide and its posts were recessed 1.2 m, i.e. in close agreement with the Gene houses. Recession of the portal posts is also found in the houses at Forsandmoen (Løken 1982:78), but there are some variations between the houses. In house II, which most resembles the Gene houses, the recession is c. 1.0 and 1.3 m respectively and the width is c. 1.5 and 1.0 m respectively for the only two entrances of this construction.

If one prefers the wide alternative for the terrace houses, the measurements for Trogsta and Täby are approximately the same as Högom and Gene. In the narrower alternative the portal posts align more closely with the wall line (Liedgren 1981:63, Fig. 12).

In the case of Vorbasse the portal posts are always a bit recessed (Hvass 1979:67) and the entrances are 1.2–1.5 m wide. The published plans indicate that the recessed door-posts are often connected to the wall by a short, partly sunken, dividing wall.

As a rule, the Gotland kämpagravshusen have a pair of posts outside as well as inside of the doorway in the wall (cf. Vallhagar). One difference, however, is that the doorways were in one or both gable ends of the house.

There are several examples of portal posts in the Norwegian stenmurshusen (Petersen 1933, Pl. LI and Petersen 1936, Pl. LXI). In these instances the portal posts are placed directly adjacent to the insides of the stone wall, i.e. in the same manner as the Gotland houses.

If the hypothesis that the portal posts were recessed to raise door height is correct, and that the kämpagravshusen and stenmurshusen had wooden panels on the insides of these walls, then the wall beam ought to have lain on the outer edge of the walls, and was not supported by the inner wooden wall or panel as Myhre proposes (1980:141). By these means the portal posts would lie c. 1 m within the wall beam (the stone walls are normally this wide). This in turn would imply that house index increases
as width (= distance between wall beams) increases. This question has not been previously discussed in any detail and in this respect the Norrland material can add to our knowledge of South Scandinavian forms as well.

5.1.5.4. Burnt clay

This very inadequately treated find-group has yet to be assigned much archaeological importance. As shown below, there are some exceptions. At best, in older investigations of house foundations, only a selection of burnt clay was made, and then only the most typical pieces were saved. The following quotation can serve as an example:

Only the largest fragments and those with clear impressions were saved, the others were buried near the house. (Kivikoski 1946:21.)

This procedure, sometimes with a total disregard, is typical of the older attitudes about this find category.

In the Vallhagar investigation (Stenberger 1955) burnt clay was found in several houses and in four of them a large number of pieces with triangular cross-sections appeared. These triangular-sectioned pieces have two adjacent log, pole or plank impressions and a third outer surface which had been smoothed by hand or with an instrument of some kind. Such clay impressions are of interest as they predominate in House I at Gene (Fig. 5:9).

**Fig. 5:9.** Main types of impressions on daub in and around House I. Each type is shown in cross-section and with respect to probable application. Drawing: P.H. Ramqvist.
The clay material from House I at Gene (cf. Fig. 4:15) is under analysis and will be published later. It can be mentioned here that it embodies a considerable amount of information.

As shown in Fig. 5.9 there are 14 types of impressions. In order to maximize the potentials of burnt clay as a source of information, each piece can be studied from some 30 different aspects. These can in many cases be somewhat irrelevant and in the forthcoming analysis only five variables will be taken into account: position, weight, type of impression, degree of firing and the diameter of the impression(s). The different types of impressions have been reconstructed and numbered — in all 14 different categories (Fig. 5.9). The description "burnt clay with a triangular section" is most often encountered in the literature. Probably other types of impressions can be found in the older investigations. For simplicity however this term will be retained but it nevertheless encompasses a number of variations, with the exception of twigs.

One problem in this connection is from which part of the house structure the clay emanates. In the Darsgårde investigation, this type of daub, which was abundant around the hearths, was ascribed to a timber house (Ambrosiani 1958:164f). Klein (1927:218ff) proposed quite early that chimneys existed in prehistoric houses. This idea was inspired by his ethnographic studies in which such structures were demonstrated (Klein 1924:119ff). Stenberger (1933:159f) followed this interpretation in his discussion of four post-holes which were observed around a hearth. Stenberger considered them as possibly supporting a chimney but clay fragments with triangular sections are not mentioned in this context. Similar interpretations, but based on the appearances and distributions of burnt clay, were put forward in the Vallhagar publication (Stenberger 1955).

The Vallhagar investigators assigned similar daub to roof constructions and/or shielding above the central hearths (Andersson 1955:1022, Hällström 1955:104, Gejvall 1955:220ff). Myhre (1979:185) considers, however, that the Vallhagar interpretation is "curious" and prefers to see the clay as evidence of a daubed inner wall panel.

Two important indications can be used to determine where the clay has come from, namely the degree of firing and its find location. Clay from the roof level should be relatively hard-burnt and if it comes from a chimney or the like it ought to lie near a hearth. If it had been on a wall, it should likewise be concentrated nearby and be less hard-burnt. The degree of firing is obviously related to the degree of proximity to a fire, but also to a large extent how high or low in the house it was placed. The upper parts of a burning house are generally subjected to higher temperatures than say, the wall or floor levels. This is also reflected by the burnt clay.

Burnt triangular-sectioned clay was also found in Trogsta House A and in the foundation under mound No. 3 in Högom. At Trogsta it is suggested that the daub originated from some roof or other highly situated structure (Liedgren 1981:64). In Högom it was interpreted by the excavator as indicating a timber wall (Petré 1963).

In Vallhagar house 1 triangular-sectioned clay (and also some with twig impressions) was found in an 8 m² area around the central hearth. The excavator (Hällström 1955:104) has drawn the conclusion that there was a chimney above the hearth and that a large area around it had been clay daubed. The fragments were generally so fragile that they fell apart when touched. Hällström's conclusion that they originated from a central construction was based on their distribution in the house. The degree of firing is described as low and this can mean two things: (a) limited burning, (b) total burning but low-placed daubing. In this instance, the first alternative seems most likely.

A number of triangular-sectioned clay fragments were also found in house 14 in Vallhagar (Selling 1955:194). These were found in its SE corner. The house had been mostly overlain by house 15 making interpretation difficult. Nothing was mentioned about the degree of firing.

House 18 contained c. 3500 burnt clay fragments of varying sizes and shapes. The clay was found in the northern 4/5ths of the house foundation, which coincides with house length during the first settlement phase. Burnt clay was also found outside of the stonework. A larger concentration of triangular-sectioned clay occurred around the northernmost of the central hearths. The approximately oval concentration measured c. 3 × 2.7 m. The excavator (Gejvall 1955:220) believes that the clay came from the roof, around the smoke-hole above the hearth, and that it collapsed when the house was destroyed by fire. Gejvall also notes that the triangular-shaped clay, which was found outside of the house, was brick red and very hard-burnt. The pieces measured up to 15 cm. In the interior of the house they were generally smaller and more fragile. They furthermore displayed a layer of soot on their outsides, which was quite common around the hearths. This supports the interpretation that they emanate from the roof and near the smoke-hole (Gejvall 1955:221). Log diameters varied from 5 to 15 cm and the impressions on the same pieces of clay varied considerably. This can be
explained, according to Gejvall, by the fact that the rafters between the ridge and wall beams were placed close together with their thick ends alternated. We can turn here to some ethnographic material from Runö, a Swedish-speaking enclave on the Gulf of Riga in Estonia. There are several studies of the ways of life and settlements on this island (Hemmendorff 1909:197, Klein 1924). One characteristic of this settlement is that it retained many antiquated elements. What is most interesting in this instance is that which in the Runö dialect is called "wäldflaka" (Hemmendorff 1909:211, Klein 1924:119ff). This construction is a type of spark and smoke hood which was placed above the open hearth. It consists of a square log frame. A scaffolding of spruce was drilled into this frame, forming a kind of dome which was then coated with a relatively thick layer of clay. It was suspended from the wall beams and the rather low ceiling.

Similar spark domes (hoods) are known from other places including Latvia, the eastern alps and Lower Saxony (Klein 1924:119). These ethnographic parallels shed some light on the kinds of clay constructions which were possible in prehistoric times. One important difference, however, is that these analogies are from timbered houses in which the ceilings were quite low, giving greater opportunities to suspend spark domes. Such features were no doubt especially important in houses with low ceilings and open hearths. But what happens if the house does not have a low ceiling? Is such protection not required, or is it enough to coat parts of the ceiling with clay? There are many questions involved but from this presentation it should be clear that at least the larger houses had some form of protection, either a hood of some kind or a simple daub on the ceiling.

With the establishment of some form of ceiling protection in Early Iron Age houses, one must also allow for a degree of variation. This variation would relate to such things as house function, local climate, etc.

5.1.5.5. The different construction of parts of the walls

I can think of two main reasons for walls of the same house being constructed in different ways: (a) The wall construction is related to the function of different rooms in the house. In such a case there should be identical constructions on both sides of the house’s mid-axis (here called symmetrical wall lay-out), as for instance in Gene Houses II and VIII. (b) The different wall constructions can also be a result of haphazard repairs where, for instance, an old wall section constructed with sunken posts is replaced by a wall with a sill-beam construction. In this case there could be different wall constructions on both sides of the mid-axis of the house (here called asymmetrical wall lay-out), as for instance in the southern part of House I and in House VII in Gene. Of course this asymmetrical lay-out could also be due to deliberate and functional causes, but in most cases it is probably a result of repairs to the house.

It is therefore reason to believe that different wall constructions in a house are due to both functional and nonfunctional causes. Both symmetrical and asymmetrical wall lay-outs can be observed at Vorbasse (Hvass 1979) and perhaps also at Forsandmoen (Løken 1982:78). As mentioned before, there are asymmetrical wall constructions in both of the houses found at Högom (Figs. 5.2–3).

In the case of the kämpgravshusen on Öland and Gotland and the Norwegian stenmurshusen it is difficult to detect differences in the wall constructions. However, there are some examples of the symmetrical lay-out of inner wooden walls in Norwegian foundations (cf. Myhre 1980:156).

5.2. ROOM DIVISION AND FUNCTION

5.2.1. SOME PERSPECTIVES

It has long been demonstrated that numerous activities could take place under the same roof. In a number of instances remains have been found of, for example, stalls in houses in the Wurten areas (i.e. marshlands) in northern Germany and the Netherlands. Good preservation conditions have benefitted the interpretations of house function. In the Geest areas (sand and moraine areas) corresponding arrangements have been observed in the form of colourations marking subsurface stall and wall boards. Through such means it has been possible to obtain a picture of the traditional Early Iron Age house, containing both dwelling and livestock sections.

The picture becomes immediately less clear as one leaves the continental and south Scandinavian regions. No obvious remains of eventual room divisions or stalls are generally found. Such interpretations must be founded on other grounds, primarily supporting elements, hearth placement in rooms and the distribution of artifacts, etc. Occasionally, flooring materials and the character and distribution of the cultural deposits have contributed to the interpretation of room delimitation and function.
Using roof-post placement in the long-houses at Flögeln, which contain both stables and dwellings, four types have been defined (Zimmermann 1976: 24ff):

**Type I:** combined dwelling and stable with living, working and stall sections. This is the commonest type at Flögeln with an average length of 22.2 m. The living quarters were longer than the stable section in 66 % of the houses. In 24 %, the stable is longer and in 10 % they are equal. The greatest trestle distance was c. 5 m.

**Type II:** combined dwelling and stable houses with a central stable section. Average length is 26.75 m and the greatest trestle distance is 6.75 m, which is the greatest of any house at Flögeln.

**Type III:** houses with equidistant trestles. No clear room divisions. Average length is 22.3 m. They were probably divided as in Type I or were meeting halls.

**Type IV:** houses with pairwise trestles. The trestles were placed in groups of two along the length of the house. Average length is 19.1 m.

These houses have parallels elsewhere and for our study the most interesting is type II, with a central stable section. The Gene Houses I and II have been of this type and it is typical at Vorbasse (Hvass 1979: 84ff). Van Es (1967:66f) also shows that this type was occasionally present at Wijster in North Holland.

In Myhre’s (1980:261ff) analysis of room division and function in 43 Norwegian houses, Type II only occurred in uncertain cases. Regarding the SW Norwegian houses they seem most often to have been divided into three rooms: two dwelling rooms or the like, and a stable in one end of the house (Myhre 1982a:195). But some long-houses have also been divided into more than three rooms, for instance the Ullandhaug house No. 3 (Myhre 1980:58ff). Even though there are no analyses of room division at the Forsandmoen-houses (Løken 1982:78, Fig. 3) the lay-out suggests that they have been divided into at least four rooms.

Room divisions are also clearly observed in the Danish material. The house most similar to the Gene-houses is house XXVI at Vorbasse (Hvass 1979: 68). This house is of Type II, as described above, and measured 38 m in length and 5 m in width (an important difference is house width, in Gene up to 4 m wider). Because of subsurface features, observable as dark colourations, both the stable and a couple of dividing walls in the dwelling area could be distinguished. It had been divided into five rooms (Hvass 1979a:106f). Of these, rooms 1–3 are for dwelling, room 4 is a stable and room 5 has been interpreted as a barn or the like. With this division, the Vorbasse structure has the following lay-out (cf. Gene in Table 5:3):

<table>
<thead>
<tr>
<th>Room</th>
<th>Function</th>
<th>Width (m)</th>
<th>Length (m)</th>
<th>Area (m²)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room 1</td>
<td>Dwelling room</td>
<td>5.0</td>
<td>10.0</td>
<td>50.0</td>
<td>26</td>
</tr>
<tr>
<td>Room 2</td>
<td>Dwelling room</td>
<td>5.0</td>
<td>3.5</td>
<td>17.5</td>
<td>9</td>
</tr>
<tr>
<td>Room 3</td>
<td>Entrance</td>
<td>5.0</td>
<td>4.5</td>
<td>22.5</td>
<td>12</td>
</tr>
<tr>
<td>Room 4</td>
<td>Stable</td>
<td>5.0</td>
<td>10.5</td>
<td>52.5</td>
<td>28</td>
</tr>
<tr>
<td>Room 5</td>
<td>Barn (?)</td>
<td>5.0</td>
<td>9.5</td>
<td>47.5</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>38.0</td>
<td>190.0</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

It is interesting to note that the stable in the Vorbasse house is clearly demonstrated by preserved traces of the stalls. Twenty-two stalls were found in the 52.5 m² area, eleven on each wall. They are situated at right angles to house length and this automatically set a limit on their number.

Further details of the Vorbasse house are the dividing walls which were identified in connection with the two trestles in the living area. These show that the living area was divided into three smaller rooms.

As with the development of house construction, Hvass (1982:143f) has also observed changes in the disposition of the long-house. During the Pre-Roman and Early Roman Iron Ages the long-house is only divided into two, with dwelling in the western part and stable in the east. During the Late Roman Iron Age and Migration Period the average long-house becomes larger and the house is subdivided into considerably more rooms than before. Moreover the mid-aisle becomes narrower. Throughout the Early Iron Age a connection can be seen between construction and function. This is particularly clear in the house’s stable section, where the roof-supporting posts are placed so as to form the framework for the boxes, i.e. they are as a rule placed more close together than in the living quarters (Hvass 1982:141) where larger open areas were obviously desirable.

5.2.2. **Norrland**

As yet there are no complete room analysis for the other foundations thus far excavated in Norrland. This, however, will be carried out for Trogsta in Lars Liedgren’s forthcoming thesis. Without anticipating that analysis a few comments can be made. The macro-fossil analysis that has been partially carried
out there and worked upon with reference to house A, indicates that the distributions of the different plant groups do not cluster as clearly as in House I in Gene (Wennberg 1980). Certain tendencies exist, however: for example carbonized cerealia occur mainly in the eastern half of the house and they are particularly concentrated around one of the two long hearths. As two foundations have probably stood on this terrace, the use of the carbonized seeds as indicators of room division is therefore rather limited. The intermingling of two different time horizons is an obvious risk and contamination by, for example, older seeds in younger post-holes is possible.

The general lay-out of the Trogsta house in question shows, however, that there was similar room-division to that in Gene. For example, burnt clay occurs in large concentrations round the long hearths and the majority of the other finds were found in the eastern half of the house (Liedgren 1981:62ff). Parts of the western half of the house have probably therefore been a stable while the eastern middle section was for dwelling.

With regard to the Onbacken house foundation its similarities with the afore-mentioned foundations, especially the Trogsta houses, can be borne in mind here and it probably also has a similar disposition.

In this context one observation must be made concerning the house foundation under mound No. 4 in Högom (Figs. 2.4, 5:2). Despite many similarities to Gene House I, this foundation differs in that the portal posts are not linked with any roof-supporting construction within the house. This was on the other hand a rule in the Gene houses and is also suggested in the Trogsta houses. For Gene’s part this condition has been related to the room division.

5.2.3. ROOM DIVISION AND FUNCTION OF THE GENE-HOUSES

5.2.3.1. House I

In House I at Gene, function and room division have been analysed using the following six factors:

1. the placement of construction details
2. hearth placement
3. the distribution of burnt clay
4. find distribution
5. the distribution of carbonized seeds
6. phosphate distribution

These factors convey information, each in their own way, regarding activity areas and divisions within the houses.

The starting point is that not one trace of dividing walls has been encountered in the archaeological investigation. If they existed then they must have rested directly on the former floor surface.

If we examine the six factors by number, the following can be said:

1. With respect to the placement of construction details it was mentioned earlier that a strengthening occurs in the southern, middle part of the house. This extends somewhat north of the entrance in the middle of the eastern long wall (E3). The entrances are placed so that one of the portal posts is aligned with one of the inner trestles (cf. Fig. 4:3). Such an alignment has probably served as the framework for a dividing wall. This is marked in the middle entrance by an extra pair of posts, pair 5a in Figure 4:3. According to this analysis, four possible dividing walls could have existed, namely: in line with the southern entrances’ (E1 and E2) northern portal post, in line with the middle entrance’s (E3) northern portal post, and in line with post pair 5a and, finally, in line with the northern entrance’s (E4) southern portal post and in line with post pair 8. By this four areas are received (cf. Fig. 5:12).

2. Such a division means that area I (in the south) lacked a hearth while area II contained five hearths, area III had three, and area IV possibly one. In area II lies the long-hearth (A10) which differs from the others in being covered by a burnt clay layer suggesting some form of food preparation or the like. Hearth A4a is, by contrast, a larger hearth which was situated in the central axis and containing, among other things, burnt stones. This is interpreted as the primary heating source. There are, furthermore, three smaller hearths of which two are placed near the west wall. There are 2 hearths on the middle axis of area III and a larger one in the west side-aisle. The southern hearth was abandoned and overlaid by the northern one, which can be interpreted as evidence of direct continuity. In area IV a hearth lies very close to the proposed gable end and it can be secondary with respect to House I, although it does align with its central axis. Probably, there is also one hearth among the unexcavated features in the central part of this room (cf. Fig. 4:2). It can be said, on the basis of the hearths, that area II was a dwelling apartment, which is also in rhyme with the earlier mentioned strengthening of the roof-supporting elements in this section of the house.

3. As shown in Figure 4:15 the distribution of burnt clay indicates delimitations, primarily in a N–S direction. In the north this border is in line with post pair 5a and in the south between post pairs 3 and 4.
Fig. 5.10. Distribution of certain types of carbonized seeds from House I. Each bar equals 100% of the seed types found in each feature. Each bar has been placed beside the feature represented. Cf. Tab. 5:2.
This distribution suggests that the dwelling area was provided with daub and that this, because of its hard-burnt state, was placed relatively high up in the room. The distribution coincides with the conclusions drawn in No. 1, above (see also Sect. 5.1.5.4.).

4. Figure 4:17 shows the find distribution in the house. These show, in spite of their scarcity, that the primary dwelling and activity area was in the southern part of the house. The find types are unfortunately rather uninformative regarding types of activities. Only a few iron fragments were found in the northern areas, III and IV.

5. Carbonized seeds from almost all features in House I have been collected using both field and laboratory flotation. A preliminary interpretation of the distributions of the seeds has previously been published by Engelmark (1981). The spatial distribution of the seeds inside the house forms a basis for the interpretation of the house functions (Fig. 5:12).

Cultural plants (CP) occurred only in the southern part of the house and mainly in and around the long clay-covered hearth, i.e. in area II. In Figure 5:12 the seed groups of arable weeds (AW), grassland plants (GP), ruderals (R), and shore plants (SP) have been chosen to illuminate house function. Some very obvious patterns can be observed: (a) In the southern part of the house, up to the clay-covered hearth (10), the AW-group dominates completely. (b) On the other hand the SP-group dominates in the features around hearth A49. (c) In the section between these hearths (i.e. A10 and A49) the AW-, GP-, and R-groups are rather evenly distributed. The hearth A4 seems to be something of a transitional zone with its greater amount of SP. (d) In the northern part of the house the AW- and SP-groups dominate.

The limited occurrence of SP in the southern half of the house and the presence of CP clearly indicates that this part of the house was occupied by man. In the same way the SP-group indicates that the northern half was mainly used for livestock. The shore meadows, and thereby the importance of shore plants for fodder, are well-documented in historical—ethnographical sources (e.g. Frödin 1954:24).

Among the arable weeds, fat hen (Chenopodium album) is the most frequent. It appears mainly and in proportionally greater quantities in the southern half of the house. One explanation for its appearance could very well be that it was used as food. In this case the leaves are the most valuable part of the plant and the seeds would have been spread around the living quarters. The same thing could also be true for the ruderal plant, the stinging nettle (Urtica dioica), which is distributed in a similar manner to the SP-group. It also appears however in the northernmost part of the house area IV, which indicates that this section too was primarily occupied by man.

The palaeo-botanical indications thus show a clear partitioning of the house, in which the southern and northernmost parts were used for dwelling or the like, whereas the northern mid-section was a stable. It has also been assumed that the distribution of fat hen and stinging nettle was connected with human activities.

6. In addition to the coarser phosphate mapping, some finer-scaled analyses were undertaken. These were concentrated primarily in Houses I and II. Samples were collected in and around House I in 1980 and 1982. One difficulty with flatmarkshus is that of determining the house limits before samples are collected. It is only after excavation to a certain depth that this can be done, and only then can an efficient sampling be carried out. One disadvantage of this method is that if the excavation is drawn out over a longer period of time, as was the case at Gene, samples will sometimes have to be collected on surfaces which have been exposed, or covered by plastic, for some length of time.

Phosphate samples were collected at 1 m intervals within and partly outside of the house floor. As seen in Figure 5:11 there are several interesting patterns in the phosphate distribution. In line with the E middle entrance, E3, and post group No. 5a at about coordinate X = 400, the phosphate enrichment increases over the whole house floor and remains high up to coordinate X = 410, where it then becomes somewhat lower for the whole floor. This tendency toward lower enrichment continues up to the NE entrance.

<table>
<thead>
<tr>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Pair 5a</th>
<th>Pair 6</th>
<th>Pair 7</th>
<th>Pair 8</th>
<th>Pair 9</th>
<th>M</th>
<th>H</th>
<th>P</th>
<th>H</th>
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<tbody>
<tr>
<td>A106</td>
<td>A109</td>
<td>A24</td>
<td>A21</td>
<td>A16</td>
<td>A17</td>
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<td>S7</td>
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<td>3.1</td>
<td>1.1</td>
<td>24.2</td>
<td>6.4</td>
<td>58.8</td>
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<tr>
<td>AW</td>
<td>GP</td>
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<td>GP</td>
<td>GP</td>
<td>GP</td>
<td>GP</td>
<td>GP</td>
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<td>14.3</td>
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<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
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<td>R</td>
</tr>
<tr>
<td>4.1</td>
<td>10.7</td>
<td>5.1</td>
<td>2.3</td>
<td>5.4</td>
<td>14.1</td>
<td>25.3</td>
<td>36.1</td>
<td>3.5</td>
<td>1.1</td>
<td>7.3</td>
<td>5.1</td>
<td>11.8</td>
</tr>
<tr>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
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<td>SP</td>
<td>SP</td>
<td>SP</td>
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<td>SP</td>
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<td>SP</td>
<td>SP</td>
<td>SP</td>
<td>SP</td>
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</tr>
<tr>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 5.2. Percentage distribution of carbonized seeds found in features (post-pairs, mid-post and hearths) in House I. Only seeds of arable weeds (AW), grassland plants (GP), ruderals (R) and shore plants (SP) are considered, which together equal 100 % in each feature. Cf. Fig. 5:10.
Fig. 5:11. Phosphate distribution in House I. Samples taken at every metre in the coordinate system.
E4. To the north of and adjacent to the entrance, the values vary from low to high, occasionally very high.

Another phenomenon is that the phosphate values are high, both within and outside the middle section of the E wall. This concentration ceases abruptly c. 3 m N of the SE entrance, E1. An almost opposite situation occurs along the W wall where the phosphate is low in line with area II, i.e. the middle section of the house, while phosphate content is high to the N and S of this section. A small N–S concentration also occurs directly in the middle of the S gable and a bit into the house.

If we look at the phosphate averages for the above-described areas we obtain:

\[
\begin{align*}
\text{Area I} & = 122.8 \, \text{P}^o \\
\text{Area II} & = 166.7 \, \text{P}^o \\
\text{Area III} & = 217.8 \, \text{P}^o \\
\text{Area IV} & = 173.2 \, \text{P}^o
\end{align*}
\]

These values give support to the proposal that area III roomed a stable. There are also two indications pointing at a further subdivision of area III. The first of these is the varying phosphate content in different parts of area III (Fig. 5:11). The second indication appears if one compares Houses I and II (Fig. 5:12). House II (Sect. 5.2.3.2.) has traces of a dividing wall at the same place (X = 410), where, in House I, the border between higher and lower phosphate concentrations occur (Fig. 5:11). Despite the source critical view points (Sect. 3.2.2.1.) and the fact that House I is surrounded by later houses and activities, it seems probable that the phosphate content reflects different functions in area III. Such a subdivision is suggested in Figure 5:12. Also an entrance room has been suggested, in the same way it has been suggested for some of the Vorbasse houses (e.g. Hvass 1982:137). However a similar room could not have been present in House II.

The features found in the northernmost room must be taken into account when evaluating its function. They have not been excavated but their appearance and placement makes it likely that they truly belong to the house. There is a notable parallel with House II and in the same position there is a pit-house-like feature with a hearth (Figs. 4.31–33). The relatively high average phosphate value and the only, slightly informative find from the northern half of the house, do indicate that some kind of human activity took place there. Some functions, such as a barn, ought to be out of the question.

**Conclusions:** This survey has firstly shown that House I at Gene most likely was divided into different rooms. A room refers to an enclosure and pre-supposes dividing walls. None have, however, been identified. They can nevertheless have been placed directly on the floor, steadied by the roof-supporting posts and therefore leaving no traces. Secondly the results of the analyses suggest that the house was divided into several rooms, where living quarters and stables were placed in the middle of the house. The rooms in the northern and southern gable sections were designated for human activities. The functions of the different rooms are of course uncertain, but some suggestions are made on Figure 5:12. In Table 5:3 the interpretation of the room division and function has been listed together with the average phosphate content for each room.

If rooms for working, storage and cooking are combined under the designation of economic areas the ratio dwelling–stable–economic areas becomes: 33–25–42 %.

**5.2.3.2. House II**

House II has not been subjected to such thorough analysis as House I, as a number of important conditions were missing. In particular there was a lack of burnt material (seeds, clay) and sometimes also the fragmentary details of the construction. There are, however, certain phenomena in this house which are not present in House I.

The two foundations have much in common regarding the general lay-out. As in House I the dwelling area is indicated by a hearth complex in which there is a clay hearth. By analogy with the previous example, the living quarters extend from the cross

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**Table 5:3. Spatial disposition in House I at Gene (cf. Fig. 5:12).**

<table>
<thead>
<tr>
<th>Suggested function</th>
<th>Average width (m)</th>
<th>Length (m)</th>
<th>Area (m²)</th>
<th>Area %</th>
<th>Average P°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working room?</td>
<td>8.0</td>
<td>5.9</td>
<td>47</td>
<td>14.7</td>
<td>122.8</td>
</tr>
<tr>
<td>Dwelling + entrance room</td>
<td>8.5</td>
<td>12.3</td>
<td>105</td>
<td>32.7</td>
<td>166.7</td>
</tr>
<tr>
<td>Stable</td>
<td>9.0</td>
<td>3.2</td>
<td>29</td>
<td>9.0</td>
<td>238.7</td>
</tr>
<tr>
<td>Stable?</td>
<td>8.5</td>
<td>6.0</td>
<td>51</td>
<td>15.9</td>
<td>247.8</td>
</tr>
<tr>
<td>Storage?</td>
<td>8.0</td>
<td>4.4</td>
<td>35</td>
<td>10.9</td>
<td>169.7</td>
</tr>
<tr>
<td>Cooking room?</td>
<td>7.5</td>
<td>7.2</td>
<td>54</td>
<td>16.8</td>
<td>173.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39.0</strong></td>
<td><strong>321</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fig. 5.12. Proposed room division and function in House I and II.
line E1, post-group No. 3 and E2 in the south up to post-group No. 4, where a completely different type of feature takes over (cf. Figs. 4:21–23). In line with post group No. 4 there are also the probable entrance mentioned in Section 4.2.2.2.

The features G29 and G138 in the side-aisles begin precisely in line with post group No. 4. They enclose the larger hearth G28a which is placed in the mid-axis but which lacks symmetry in relation to the foundation. Two things however can be noted: nowhere do the features over- or underlay definite parts of the foundation and the complex of features of this type ends abruptly with a probable dividing wall just S of the coordinate X = 410. I therefore make the interpretation that they belong to the foundation and that their clear delimitations indicate that they formed a separate room.

The c. 5-metre-long features G29 and G138 probably represent the only remaining relics of the stable. Several post-holes were found in G29. Five of them formed a row parallel to the axis of the house and the distance between them was c. 1 metre, which ought to correspond well with the size of the individual stalls. If this interpretation is correct then there should have been at least 4 boxes on each side of the hearth G28a, and the dark-coloured area would quite simply have been a result of the wear and tear of the floor by the stabled animals.

The space around the feature G36 may, for example, have been reserved for livestock other than cattle. Here too, as in House I, there is a hearth placed in the western side-aisle of the house (hearth G36d).

As mentioned in Section 4.2.2.4., in the N part of the foundation there is a large feature (G186) which outwardly resembles a pit-house (Figs. 4:31–33). But its construction and location in time and space suggest that it belongs to House II. Entrance E5, which has its exact equivalent in House I (E4), leads straight in to this feature. Moreover there are striking similarities between these two houses' northern sections. In both cases there are large features, the entrances are identically placed, traces of the ends of the long walls and of the gable ends are missing and the few finds that appear in the northern half of the houses are in connection with these large features. It is obvious that these parts of the houses had the same function. Unfortunately there is no direct evidence for what took place there, but one suggestion is that it may be a question of a cook-house where, for example and among other things, animal fodder was prepared during the winter period.

In the case of House II there may have been a dividing wall, level with coordinate X = 410, i.e. where the major features in the stable end abruptly. Amusingly enough, this line coincides precisely with the division between the higher and the lower phosphate values in the stable section of House I (cf. Fig. 5:11).

A detailed phosphate map has been produced also for House II (Fig. 5:13). However, it exhibits much lower and less varied values than the map for House I. The mean value in House II is 137 P°, whereas the corresponding figure for House I was 186 P°. The small variation in House II is illustrated by the fact that 70.7% of the samples lie in the interval 100–149 P°. The detailed mapping of the foundations shows that the tendencies indicated by the coarse mapping (Fig. 3:12) were correct.

The pattern that also emerges, in House I, is that phosphate accumulated along the walls of the house. This is clearest along the E wall where both Houses I and II have common wall lines. A few separate concentrations occur, e.g. in association with the large feature G186 in the north. The high value (627 P°) in hearth G20 in the middle of the house (Fig. 5:13) must be blamed on the fact that the sample was taken directly from the hearth. The phosphate mapping in this case is not usable for distinguishing room divisions or activity areas.

With relatively meagre support from the empirical material and where constructions and the placing of features in comparison with House I have been significant, the room divisions in House II can have been as shown in Figure 5:12 and the spatial disposition as in Table 5.4.

**Table 5.4. Spatial disposition in House II at Gene (cf. Fig. 5:12).**

<table>
<thead>
<tr>
<th>Room</th>
<th>Suggested function</th>
<th>Average width (m)</th>
<th>Average Length (m)</th>
<th>Area (m²)</th>
<th>Average %</th>
<th>Average P°</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Working room?</td>
<td>7.5</td>
<td>6.4</td>
<td>48</td>
<td>16.5</td>
<td>138.2</td>
</tr>
<tr>
<td>II</td>
<td>Dwelling</td>
<td>8.2</td>
<td>9.2</td>
<td>75</td>
<td>25.7</td>
<td>137.2</td>
</tr>
<tr>
<td>III</td>
<td>Stable</td>
<td>8.2</td>
<td>5.2</td>
<td>43</td>
<td>14.7</td>
<td>126.7</td>
</tr>
<tr>
<td>IV</td>
<td>Stable?</td>
<td>8.0</td>
<td>4.4</td>
<td>43</td>
<td>14.7</td>
<td>132.9</td>
</tr>
<tr>
<td>V</td>
<td>Storage?</td>
<td>7.6</td>
<td>3.4</td>
<td>33</td>
<td>11.3</td>
<td>127.1</td>
</tr>
<tr>
<td>VI</td>
<td>Cooking room?</td>
<td>6.8</td>
<td>7.4</td>
<td>50</td>
<td>17.1</td>
<td>125.9*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>38.0</strong></td>
<td><strong>292</strong></td>
<td><strong>100</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Not the whole room.*
It was suggested earlier that room III housed livestock in boxes, i.e. cattle. In such a stable there would be room for 8–10 cows. The division between rooms II and III has been set where these boxes begin and where post group No. 4 stood (Fig. 4:23). It is thus probable that one or even two opposing entrances to the house’s living-quarters (room II) existed just there.

As stated in connection with the room analysis of House I, there was a sharp phosphate boundary associated with post group No. 7 (cf. Figs. 4:3, 5:11). This boundary coincides exactly with the termination of the large features in House II, i.e. where the division between rooms IV and V has been drawn (Fig. 5:12). This can be regarded as a remarkable coincidence but, just S of this division, there are hearths in

Fig. 5:13. Phosphate distribution in House II. Samples taken at every metre in the coordinate system.
the western side-aisles of both houses. Hence it is highly probable that these sections had the same function. Furthermore the phosphate values in House I suggest that also these parts of the house were used for animals. It is therefore probable that the stable in both Houses I and II may have been divided into two different sections.

The same striking similarities between these houses are evident in the almost desolate room V in House II and northern part of area III in House I (Fig. 5:12) and in the northernmost room (area IV in House I and room VI in House II). Both houses have exactly similar entrances to these northern rooms, placed in the same position in relation to the features within.

According to the proposed room division for House II the size-ratio between dwelling, stable and economic areas is 26–29–45%. The proportions differ slightly from those of House I in that, in particular, the dwelling area has decreased and the economic area increased. If this analysis of the long-houses had been made out of context then it would have been perhaps inexplicable. The situation is, however, that there are at least three other houses contemporaneous with House II, while (as far as we know today) House I only had one or two contemporary houses.

5.2.3.3. The other houses

With regard to the function and room-division of the other houses the same general conditions apply as in House I, namely that definite traces of partition walls are few or totally missing. There are exceptions in House II and possibly in House IX. Regarding the other houses, functions cannot be analysed by means of such comprehensive material as in House I and here attention is only drawn to a few obvious aspects.

House VI has a rather special position as a result of its function as a smithy. The house lies apart from the others (Fig. 3:1); it has a NW–SE alignment while the others lie approximately N–S; it has completely different find material which clearly points to forge activity; and furthermore the foundation lies near the large concentration of hearth-pits. The kinds of carbonized seeds (Tab. 5:5) present in hearths and post-holes do not contradict the hypothesis that the house has functioned primarily as a smithy. No convincing indications connected with food consumption or preparation could be inferred from the analysed samplings.

Further arguments are presented in Section 6.5.1., which also support the notion that the house has mainly functioned as a smithy. No room division has been discerned in House VI. The smithies from more recent periods have, according to traditions, been built at least 25 metres away from other buildings on a farm (Matsson 1982:138, cf. also Myhre 1982a:200). This fits very well in the Gene case, where the distance from House VI to the contemporary long-house (II) is c. 30 metres and to House IV c. 40 metres.

The houses on area A, i.e. Houses IV, VII, and IX, are characterized by comparatively rich find material in which, for example, the bronze casting waste occurs. The surface so far excavated contains, however, surprisingly few hearths considering the length of time this area was used and the degree of usage (cf. Fig. 4:40). Of the three foundations, House IV seems to be connected with the casting for two reasons: (a) chronologically the moulds correspond only with this house, (b) in one feature belonging to House IV and in one overlaying House VII have any crucible or mould fragments been found. If, on the basis of this conclusion, one looks at the distribution of relics from casting (Figs. 4:43–44) it appears improbable that casting took place inside the house. Neither can this find material be linked with any particular hearth. The house has not therefore been used for casting per se, but much suggests that one or more forms of other handicraft have been carried out there. In addition, dwelling, store and out-house functions are seen as possible alternatives.

The phosphate concentrations over parts of area A (Fig. 5:14) confirm what was said previously, namely that this area was subjected to heavy human activity. In the mapped area the mean value was 210 P0 and values of over 300 P0 are common. In the concentration in and S of House VII, values of over 400 P0 even occur. As in the case of the crucible and mould material (Fig. 4:44), this shows that intensive activity took place SW of House IV and S of House VII.

Also evident from the phosphate mapping is some-

Table 5.5. Samples from some features in House VI with respect to carbonized seeds.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>C2</th>
<th>C9</th>
<th>C10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chenopodium album</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Galium aparine</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Galeopsis tetrahitifoda</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ranunculus cf. repens</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Rumex acetosa</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Rynchospora alba</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Indet.</td>
<td>–</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
thing that is reminiscent of the phosphate relationship between Houses I and II, namely that the earlier houses (i.e. I and VII) have a significantly higher phosphate content than the later ones. The mapping of area A fails to shed any light on room division in the houses.

As suggested earlier, Houses VII and VIII exhibit some marked similarities despite the fact that there are obvious differences in their construction. For example both N halves of the houses have weaker connection with post group No. 2, according to the VIII there have probably been a dividing wall in connection with post-group No. 2, according to the elongated form of one of the posts (Fig. 4:75). Traces of walls in the N section are missing in both of the houses and the only hearth is situated in this part.

One would have expected that, as in the long-houses, living-quarters would have been furnished with hearths and more strongly built. However this is not so in Houses VII and VIII, where the hearths appear in the weakly-built sections while the strongly-constructed parts lack hearths. There may be several explanations. For example, the weaker parts could have been used as stables where, as we saw earlier, hearths occur, while the well-built part without hearths could have functioned as well-insulated cold-storage or summer dwelling, etc. If this was the case it is easy to imagine these stable sections being used for small livestock such as sheep, goats and pigs, etc.

House X has probably been divided into two equal-sized parts but here no constructional differences between the two halves could be noticed.
5.3. SUMMARY

In this chapter the construction, room division and function of the houses have been analysed. The oldest long-house, House I, has been subjected to the most careful analysis, primarily on the grounds that it has the most abundant and varied finds. As there were no signs of interior dividing walls, the following six factors were analysed to discern a possible room division: (1) the placement of construction details, (2) hearth placement, (3) the distribution of burnt clay, (4) find distribution, (5) the distribution of carbonized seeds, (6) phosphate distribution. In this analysis construction details such as entrances and trestles together with comparisons with House II formed the basis. Among the other factors, the distribution of carbonized seeds proved to be particularly decisive and, despite the fact that limited ploughing had taken place across the foundation, the burnt clay showed clear boundaries which delimited the living-quarters.

The above-mentioned factors partly agreed with and partly complemented one another and showed that House I probably had been divided into at least six rooms (Fig. 5:12). The rooms in the central part of the house have been dwelling room and a subdivided stable, respectively. The two rooms at each end of the building had uncertain functions, but were intended for human use. According to the interpretation House I exhibits an almost identical lay-out to the nearby and later House II. In the case of the latter it was not possible to employ so many factors of analysis, so that constructions and hearths have played the most important roles. The stable in House II has probably been subdivided into two sections and the part which most likely housed the cattle was c. 5 metres long and thus could accommodate c. 10 cows. This number is also assumed to have applied for the older House I.

The find material, the location of the house and its construction show that House VI was a smithy. House IV is, among other things, connected with casting activities, but a closer analysis has not been possible. Houses VII, VIII, and X have each been divided into two halves, Houses VII and VIII with a more simply built northern half containing a hearth and a significantly more solid southern half.

Concerning the basic structure of the houses they are all three-aisled, with a narrow mid-aisle and wide side-aisles. This lay-out differentiates the Gene houses from most of those in southern Scandinavia but it has similarities with the few known ones in Norrland, in particular the house beneath burial 4 in Högom. They also resemble the flatmarkshus at Forsandmoen, SW Norway. The three-aisled construction in the living quarters of House I was strengthened with:

1) one extra post outside each of the posts included in the trestle structure and they have been placed in a "south Scandinavian fashion", i.e. exactly between the wall line and the central axis of the house,
2) mid-posts, and
3) a stronger western long-wall, marked by sunken posts.

These three indications, together with a tendency towards superficially charred posts, lead to the conclusion that the dwelling section of House I had a sod roof. The simpler construction and the deeper carbonized posts in the northern half of the house are interpreted as indications of a lighter and easily burnt roof.

Several variations of wall construction appear in one and the same house. This is most evident in House I, where at least three different ways of anchoring the wall in the ground can be observed: (1) sunken posts, (2) buried sill-log with mortised posts, and (3) sill-beam posts on the surface or superficially buried sill beam or posts. These constructions are to a certain extent tied to different sections but, in the dwelling area of the house, one wall is constructed using sunken posts and the other using a sunken sill-log. This difference on both sides of the house's mid-axis is probably due to repairs to the wall.

The walls in House II do not exhibit same variations as House I, but rather have a more uniform construction in the form of sunken posts placed at an average interval of 0.8 metres, which is the same as for the wall posts in House I. Characteristic for House II is that the inner wall is surrounded by an outer ditch, interpreted here as a weaker, insulating wall. Such double walls exist in the younger houses (II, IV, and VIII) but could not be seen in the older ones (I, VII, and IX, House X is of uncertain date). It has also been observed that the younger houses make considerably more use of worked timber such as planks, clowen logs, etc.

Also in House II, a certain strengthening of the roof-supporting capacity could be observed over the living-quarters. The indications are not so many or as clear as in House I, but they do imply the existence of a heavier roof there. On the basis of the superficial carbonization of the posts in House IV, this too has probably had a sod roof.

In comparison with contemporary, south Scandinavian long-houses, there are many similarities in the
general lay-out, e.g. house length, the division into many rooms, sturdy constructions, the positions of entrances, etc. These are characteristic features of, for example, Danish houses of the Late Roman Iron Age, which is also normally the date given for the oldest Norwegian stenmarshusen. The dating of House I in Gene (Chap. 7) suggests that it may be contemporary, but it might well have been established in Early Roman Iron Age.

Although the similarities to the south Scandinavian houses are surprising, there are differences too. One such example concerns the house width which greatly exceeds that of, for example, the Danish houses. Connected with house width, the index value ($H_{wb}/B_{wb}$) for both the large and the small houses in Gene lies around 4. In south Scandinavian houses the index is c. 2. This figure increases somewhat in the Danish houses during the Late Roman Iron Age/Migration Period, but it never reaches as high as 4. It is interesting however that the Högom house has an index around 4, and the same value applies to the excavated terrace houses if the position of the wall beam is interpreted in a particular way. It is also interesting that the only reported Norwegian site with flatmarkshus, Forsandmoen, has many similarities to the Gene-houses.

Some other features which are not commonly found in south Scandinavian houses concern the widely spaced post-pair nearest the gable (the functions of which is unknown), reinforced roof-supports in certain parts of the house, pronounced recession of the portal posts (on average 1 metre from the long wall).

The conclusion regarding the construction and function of Gene houses is that they could not have come into existence without any connections with south Scandinavian conditions, for the similarities are far too strong. The differences, however, indicate local and perhaps also regional features. The closest parallels to House I in Gene are found at Högom in Medelpad and Forsandmoen in SW Norway, but even here there are differences.
6. THE LOCAL ECONOMY

6.1. AGRICULTURE

6.1.1. BOTANICAL INDICATIONS

Throughout the whole excavation period macro-fossil samples have been taken with the aim of obtaining seed material. Some results of the analyses, which are not fully completed yet, have been published by Roger Engelmark (1981). No total analysis has been made, therefore, and attention has primarily been concentrated on the oldest long-house, House I. Most of the features in this foundation have been analysed (Tab. 4:8).

At present we know most about the oldest settlement phase, in which the only type of seed encountered is hulled barley (*Hordeum vulgare*). The lack of other species is either real or related to the fact that, for example, different harvesting and processing methods were used for other eventual types of seed (Engelmark 1981:42). As the latter explanation is rather improbable in this case, we reckon on the use of barley alone in the earliest phase.

Also in the foundation a large number of arable weeds were encountered, types which do not appear on Norrland’s podzols under normal circumstances. These weeds mainly grow in association with well-tilled and well-manured fields, cultivated over many years (Engelmark 1981:43).

From Engelmark’s discussion it appears that the arable weeds found in Gene House I include mainly fat hen (*Chenopodium album*) but also, for example, chickweed (*Stellaria medium*), knot-grass (*Polygonum aviculare*) corn spurrey (*Spergula arvensis*) and persicaria (*Polygonum persicaria*). This composition may well indicate the occurrence of manuring (Engelmark 1981:42f), for this combination of arable weeds does not arise through different types of fallow system, where the fields are left to rest for a number of years. Slash and burn cultivation also creates its own special combination of weeds (cf. Dennell 1978:36).

The presence of arable weeds in the foundation is probably due to their having been harvested together with the barley and, by degrees, ending up in hearths and post-holes. Another explanation is that they were actually used as food. For example, fat hen and stinging nettle (*Urtica dioica*), which occur in House I, can be used as greens during the short summer season.

Up until 1980, only one single linseed (*Linum usitatissimum*) had been encountered, which cannot be taken as indicating the cultivation and processing of flax. A single seed can have reached the site in many different ways.

The analyses for the Migration Period are not yet fully completed, but there are already a couple of important indications. Besides the fact that the arable weeds are roughly the same, oats (*Avena sativa*) occurs as well as barley. This has been found in House IV and Pit T1 and probably indicates that several crops were used during this period (Tab. 6:1).

<table>
<thead>
<tr>
<th>Type of feature</th>
<th>HOUSE II ph</th>
<th>IV h</th>
<th>VIII p</th>
<th>PIT ph</th>
<th>PIT p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivated plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Hordeum vulgare</em></td>
<td>–</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td><em>Avena sativa</em></td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>Arable weeds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chenopodium album</em></td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td><em>Stellaria medium</em></td>
<td>–</td>
<td>–</td>
<td>2</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td><em>Spergula arvensis</em></td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>4</td>
<td>–</td>
</tr>
<tr>
<td><em>Polygonum persicaria</em></td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><em>Polygonum aviculare</em></td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><em>Thlaspi arvens</em></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Grassland plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Trifolium repens</em></td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td><em>Rumex acetosa</em></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Ruderals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Urtica dioica</em></td>
<td>–</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><em>Eleocharis palustris</em></td>
<td>–</td>
<td>–</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Berry-bearing plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Emetrum nigrum</em></td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><em>Rubus idaeus</em></td>
<td>–</td>
<td>–</td>
<td>29</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><em>Sorbus aucuparia</em></td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Other plants</td>
<td>–</td>
<td>–</td>
<td>9</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>
In the Medieval foundation, House III, further species appear (Tab. 4:16); among others, the three cereals of barley, oats and rye together with some 30 examples of pea (*Pisum sativum*) occur in the foundation’s sole hearth. In this context this is very important, as the pea indicates that a change-over to crop rotation may have taken place between the 7th and 13th centuries. Crop rotation is based on the introduction of a sequence of crops which includes the nitrogen-fixing pea. In this way the nitrogen deficiency in the soil is continually replenished, which makes other crop yields more stable. Undoubtedly this furthered the total production and the system of the cultivation itself implies that agriculture underwent an intensification. It is also likely that during the 13th century agriculture accounted for a higher proportion of the total sustenance than previously.

No indications of conditions during the Late Iron Age are available. If the tendency is correct, then a successive utilization of new types of cereal takes place during the first millennium A.D. The reasons for this are not known and only a few possible courses of events can be suggested here.

Crop rotation can be given a rational explanation if it is a question of intensifying agriculture and of stabilizing yields. But almost immediately the question arises as to why the intensification was necessary. The most usual explanation for this is tied to population pressure, i.e. an increasing number of individuals per unit-area that challenges prevailing resource utilization. It has probably been a question of population *increase* even here in the relatively sparsely-populated Ångermanland, but it is a long step from this to population *pressure*. In order to really penetrate the problem one must introduce additional variables, e.g. the technological level, the social and political conditions, and the structure of the local and regional economy.

### 6.1.2. ARCHAEOLOGICAL INDICATIONS

The most weighty indications that agriculture was practised in Gene during the Early Iron Age are the finds of carbonized seeds from barley and arable weeds. Unfortunately, there is little evidence to be derived from the purely archaeological material. Altogether, three fragments have been encountered which could be from sickles (Fig. 6:1). They are too fragmentary to allow reliable conclusions to be drawn, although it is fairly certain that F 45 could have formed the tip of a sickle or a scythe (Fig. 6:1). There is a Migration Period scythe find from Medelpad, which shows that scythes were in use at that time.

According to current understanding the scythe was used up to the 16th century as a tool for hay-making, while the sickle was the main implement for harvesting (Bringéus 1979:105, cf. also Hagen 1953:306).

Viewed in general, harvest and tillage implements are uncommon in Iron Age contexts. This is not true for Norway where, on the whole, tools seem to be more common in graves than in eastern Sweden during the Late Iron Age (Seling 1977:350). Attention is also called to this by Hyenstrand (1974:32) who interprets it, in conjunction with the lack of agricultural land, as indicating that livestock-raising was the dominant activity in the Mälar Valley during the Late Iron Age (1974:38).

With regard to sickles, only 3 finds from Medelpad and Ångermanland date from the Iron Age and these have all come from graves (Seling 1977:35ff). If the interpretation of the finds from Gene is correct, i.e. if they really are parts of sickles (or scythes), then the total number of such finds would be doubled in one stroke. It would also show that sickles may be expected mainly on dwelling sites, in-so-far as they have been preserved at all.

As the composition of arable weeds suggested, the same crops, initially barley, were grown year after year in the same fields (Swed. *ensäde*). How large were the fields then and how was the cultivation carried out? In this landscape there are none of the form elements such as embankments, stone walls or cultivation terraces, that have been observed in other parts of Northern Europe. During the Pre-Roman Iron Age there are, for example on Gotland, so-called Celtic fields with well-defined banks round the arable land (Lindquist 1974). During the Roman Iron Age and the Migration Period in Östergötland, as on Öland and Gotland, there are stone walls, cattle paths and

![Fig. 6:1. Iron finds which can be fragments of sickles or scythes. Drawing: P.H. Ramqvist.](image-url)
property boundaries (e.g. Stenberger 1933, 1935; Lindquist 1968, 1974; Widgren 1983). Similar phenomena are also common in SW Norway (Myhre 1972:14f) and occur on occasional farms in northern Norway (Johansen 1979:106f). Small cleared areas and arable terraces are the only indications that have been observed in this context on farms in Hälsingland (Liedgren 1981:52, 1983) and in Medelpad (Selinge 1977:352ff). None of the above-mentioned phenomena have been observed in connection with the Gene farmstead. Obviously no clearing of the arable land was necessary when the farm was completely surrounded by sorted soils. Boundaries and barriers (cf. Lindquist 1968:12) in the form of the stone walls have consequently not existed in Gene. If there were any fences, they were built of wood and would therefore have been impossible to discover by means of an inventory. As the fence was primarily to exclude livestock from arable land and meadows, this function could also have been carried out by shepherd boys or girls. In such cases the fences would be superfluous.

As was shown in Chapter 3.6., there are c. 11 ha of fine-grained soils situated over 20 m above sea level and within a 500 m radius from the settlement. In fact the present 20 m contour is not absolutely adequate for the initial stage of the settlement and the most probable level is 18 m above sea level. The nearest major beach ridge lies at this height, W of the settlement, and on its edge lie the graves No. 21 (Fig. 6.2).

To obtain some idea of the extent of the cultivated land during the initial stage some assumptions must be made:

a) the arable land was situated above the 18 m level
b) the arable land was situated on fine grained soils
c) the arable land was situated as near as possible to the settlement
d) the arable land is indicated by increased phosphate values in the B-horizon.

As is clear from Figure 3.9, high phosphate values appear just E of the dwelling site in the fine-grained area between the c. 18 and 22 m contours. These

Fig. 6.2. Features at Genesmon and their relationship to the border between coarse and fine-grained sediments, phosphate content in the fine-grained area, and elevation below the 18 m contour. The E limit of phosphate mapping is the present ditches and meadows. A circle with a radius of 300 m has been drawn to illustrate the increase of soil types with landrise. Above: the relative amount of soil types above 18, 16 and 14.5 m a.s.l. Cf. Tab. 6.2. Equidistance = 0.5 metres.
values are also dotted in on Figure 6.2. Throughout, the phosphate percentage lies above or around the mean value of the A-samples for the whole of Genesemon (M = 122 P0\textsuperscript{3}), sometimes in fact considerably above (Chap. 3.2.). These increased values are probably connected with the manured fields. The “fossil” ditch, west of the present-day extension of the meadowland, shows that during historic time the arable land lay nearer to the dwelling site than it does today (Fig. 6:2). There is no connection between the phosphate concentrations and this “fossil” ditch. However, as shown earlier (Chap. 3.2.), the area W of the fossil ditch has probably been utilized during historic time too.

Furthermore, it should be pointed out that the high phosphate contents here could have been brought about by later ploughing-in of the phosphorous evident in the B-horizon or that they could have been the result of, for example, cultivation during the 13th century.

If, despite other indications, it is assumed that the above-mentioned phosphate concentrations were brought about by manuring in the Early Iron Age, certain observations can be made. To the south the fine-grained area is bounded by the 18 m contour, which coincides with a decrease in the phosphate content (cf. Fig. 3.9). This boundary lies c. 150 metres from the foundations (Fig. 6:2). At about the same distance to the north of the settlement, below-average phosphate values become common and this can be interpreted as a boundary beyond which regular manuring did not take place. The present meadowland in the east is not phosphate mapped, but high phosphate values may well continue into this area. The distance between the foundations and the 18 m contour in the east corresponds closely with the distance between the S and N boundaries, i.e. 150 m. The reasonable conclusion may be drawn that the arable land probably formed a semi-circle of 150 m radius, with the foundations at the centre.

The total surface within this delimited area is thus 3.48 ha. The whole of this area cannot have been arable fields and one ought to take away an estimated 20 m wide strip along the shoreline which cannot be used for cultivation. Thus, there remain c. 3 ha which could have been cultivated annually (enside) during the initial stage of the farm’s existence. It is not certain however that these 3 ha were all cultivated simultaneously.

It is difficult to establish how much of the arable land was sown each year. Even though it is possible to delimit an arable area it may not have all been sown annually. Myhre (1973:15) is of the opinion that the land used for cultivation at the investigated farm of Ullandhaug was c. 4—6 ha in extent. The arable land belonging to the Søstelid farm was estimated by Hagen (1953:100, 362) to be barely 1 ha. Kaland (1979) estimates the arable field area on a Viking/Medieval Period unit to be c. 1 ha. In the stone-wall districts of Gotland, Carlsson (1979:154) assesses the average infield area, i.e. arable and meadow, to be c. 18 ha and the arable area alone as 1.5 ha. Hannerberg (1971:63ff) estimates the arable area for a 6th century farm to be slightly more than 3 ha on average and similar figures have been applied by Widgren (1983:78). There are thus many suggestions regarding the size of arable areas and obviously one cannot presume that all the farms within such a wide area as mentioned here have had arable fields of the same size. The local resource utilization and opportunities for other economic activities play an important role in this context. From calculations made by Widgren (1983:78ff) it seems probable that a farm with c. 3 ha of arable fields could be c. 93% self-sufficient from agriculture and stock-raising. Such a model is possibly applicable in pronounced agricultural districts but probably has little validity for areas with a large supply of, for example, marine resources.

6.2. STOCK-RAISING

6.2.1. OSTEOLOGICAL INDICATIONS

It is more or less impossible to draw any comprehensive conclusions about the combination of species and numbers of animals from the extremely fragmentary bone material. As the osteologist Rita Larje pointed out, the bones of the larger animals are probably highly under-represented. Of the bones that definitely belong to a foundation, cattle (Bos) were only represented. Of the bones that definitely belong to a foundation, cattle (Bos) were only represented. Of the bones that definitely belong to a foundation, cattle (Bos) were only represented. Of the bones that definitely belong to a foundation, cattle (Bos) were only represented. Of the bones that definitely belong to a foundation, cattle (Bos) were only represented.
approximately the same size, the conclusion must be drawn that Ovis/Capra are far more common throughout the whole settlement period. In a similar way one can say that the pig is more common than the dog, at least in butchered form.

The simple conclusion is therefore that Ovis/Capra has been the most butchered, both as a species and numerically, but also cattle, pig and possibly horse (Equus) have been present throughout the period of settlement.

6.2.2. ARCHAEOLOGICAL INDICATIONS

According to the analyses of Houses I and II (Chap. 5.2., Fig. 5:12) they appear to have almost identical room divisions. Much suggests that the stable in House I, as in House II, was sub-divided into at least two sections — one for cattle (southern section) and one for other animals (northern section). If the dimensions of the area intended for cattle were the same as in House II (c. 5 m long), then it must have been designed for a maximum of 10 cows.

Only very rough estimates can be made regarding the rest of the livestock. Instead of immediately discussing individual species, the concept of cattle units (Ne) can be introduced, in which 1 head of cattle = 1 Ne, 1 horse = 1.5 Ne, 1 sheep = 0.1 Ne, 1 goat = 0.08 Ne and 1 pig = 0.25 Ne (Hannerberg 1971:97f). On the basis of the farm having 10 head of cattle, i.e. 10 Ne, as well as a larger number of sheep/goats, some pigs and possibly a horse, the total probably approaches 15 Ne. Converted to animal units this figure could for example correspond to 10 cows, 20 sheep/goats, 4 pigs and 1 horse, together with calves, lambs and piglets. Are there sufficient possibilities within a reasonable area for supporting these animals. Unfortunately Odner does not indicate how much of the bone material has been identified, but it is probably a question of a very fragmented material in which the small animals are over-represented. By estimating the yield of domestic cattle in the form of meat and milk, Odner shows that this can be supported during eight months of stabling by means of the forage that could be collected during 60 days (according to present-day comparisons). This relation between cattle and sheep/goats is the same as that shown between the identified bone fragments. By estimating the yield of domestic cattle in the form of calves, meat and milk, Odner shows that this can support a nuclear family consisting of a woman, a man and three children (1969:67). That being so, one person might collect two-thirds of the fodder during c. 50 summer/autumn days, while the remaining third could be gathered in the form of twigs, branches and the like during the winter half of the year (1969:94f).

Through calculations of calory and time consumption, he finds it probable that 6 cows and 34 sheep/goats were kept. These animals could quite well be supported during eight months of stabling by means of the forage that could be collected during 60 days (according to present-day comparisons). The total quantity of preserved bones, Odner suggests that reindeer, grous, hare and sheep/goats were mostly utilized. The four finds of cattle bones are believed to show the importance also of these animals. The bone material shows that cattle and sheep/goats were kept as domestic livestock and that reindeer, bear, beaver, hare, etc. were hunted, together with at least nine species of bird (Odner 1969:67). From the total quantity of preserved bones, Odner suggests that reindeer, grous, hare and sheep/goats were mostly utilized. The four finds of cattle bones are believed to show the importance also of these animals. Unfortunately Odner does not indicate how much of the bone material has been identified, but it is probably a question of a very fragmented material in which the small animals are over-represented. But Odner simply equates the relation between the bones and the original proportion of species. Accordingly, the most frequent species at the dwelling site were, in order of frequency, grous, reindeer, hare and sheep/goats (1969:67).

Through calculations of calory and time consumption, he finds it probable that 6 cows and 34 sheep/goats were kept. These animals could quite well be supported during eight months of stabling by means of the forage that could be collected during 60 days (according to present-day comparisons). This relation between cattle and sheep/goats is the same as that shown between the identified bone fragments. By estimating the yield of domestic cattle in the form of calves, meat and milk, Odner shows that this can support a nuclear family consisting of a woman, a man and three children (1969:67). That being so, one person might collect two-thirds of the fodder during c. 50 summer/autumn days, while the remaining third could be gathered in the form of twigs, branches and the like during the winter half of the year (1969:94f).

Similar calculations of yields even for wild animals show among other things that small game, despite abundant utilization, could only form a small part of the family’s yearly consumption. For example, the 550 grous which are assumed to have been caught utilization. Ullshelleren lies in the eastern edge of Hardangervidda, in an ecologically rich environment with for example a still-existing strain of wild reindeer.
during the winter only comprise c. 4% of the nuclear family's total energy requirements and the 100 hares insignificantly more (1969:85ff). On the other hand, wild reindeer hunting probably played a considerably greater role than is indicated by the few bone fragments found. Odner imagines in principle two models of the settlement at Ullshelleren, where in both cases domestic livestock and wild reindeer formed the basic pillars, but where they are accentuated somewhat differently (1969:89).

Kaland (1979) has attempted to calculate the agrarian production and resource utilization during the Viking/Medieval Periods at Lurekalven, Hordaland, Norway. Lurekalven comprises a total of c. 88 ha, of which c. 1 ha is arable, 7–12 ha meadowland and c. 58 ha pasture in the form of heather moor. Her calculations are based on Norwegian historical material and no reference is made to Hannenberg (1971) for example.

One notices here a fair-sized meadow production and she allows for a yield of 3–4 tons of dried hay per ha (Kaland 1979:79). She ultimately puts the realistic figure at 2.5 ton/ha, which means that Lurekalven’s total hay production would be at least 17.5 tons. She supposes that it was a lightly-manured, natural meadow.

In contrast to Kaland’s estimates regarding meadow production, Widgren (1979:27, 1983:79) has produced calculations for the conditions in central Sweden. He reckons that a natural meadow only produces 0.5 tons of hay per ha.

In between are the figures that are used for calculating hay production on Öland’s Alvar (Enckel et al. 1979:340), where the value has been set at c. 1 ton per ha per year.

For comparison with these figures it may be mentioned here that, for the coastal area of the county of Västernorrland during the years 1953–1957, Hagsand & Thörn (1960:133, Tab. 40) assess the annual yield of the grazing-land (i.e. fertilized and cultivated meadow) at c. 3–3.5 tons per ha. Corresponding figures for Trondelag are c. 5.7 tons and for North Norway c. 4.8 tons per ha.

These figures cannot be applied to prehistoric circumstances as it is uncertain whether meadowland was manured at all during the Early Iron Age. Theoretically one can imagine that a smaller part of the meadowland was manured, but generally speaking it was probably not fertilized other than by, for example, burn-beating or sparse manuring by livestock, grazing after the hay-making. Furthermore the figures indicate that meadows in Norway were more productive than in Norrland. This is partly related to the amount of labour put into the cultivation of the meadows and partly, due to natural conditions, e.g. the damp Norwegian climate is more favourable for meadow productivity (Hagsand & Thörn 1960:134).

Further information is provided by Elofsson (1924:25), who states that harvests from cultivated meadows at the beginning of this century were only c. 1.2 tons per ha, i.e. only about half of what could be produced through the application of fertilizer and better care. It is not improbable therefore that this figure is nearer to Norrland conditions, where the meadows are not cultivated to any degree worth mentioning. In the following computations the meadow production is thus estimated at 1 ton/ha. The clay-impoverished soils of Norrland are regarded as more favourable for meadowland than, for example, those of south Sweden (Hagsand & Thörn 1960:134), but obviously conditions are even better along the Norwegian coast. Hence the ecological conditions for stock-raising should be quite different, particularly between central Sweden and the Norwegian coast.

The figures for hay production brought forward by Kaland and Widgren mean in plain language that in central Sweden 25 ha of meadowland are needed, and in Norway 5 ha, in order to maintain 15 Ne for 7 months. It was estimated that one Iron Age cow consumed 4 kg of hay per day, i.e. about half the intake of a modern cow.

In the case of Gne, where meadow production is estimated at c. 1 ton/ha, the necessary meadow area for 15 Ne during 7 months would thus be 13 ha. Above the 20 m contour and within 500 m of the settlement, there are 11 ha of fine-grained soils (Tab. 3:3). However, the actual arable area must be deducted from this. Within the primary area of activity, i.e. within 1 km of the settlement, there are 35 ha of fine-grained soils and if one deducts those on the E side of the channel (Fig. 3:25) there still remain 23 ha on the settlement side. Further areas should be added to these in order to correctly reflect the actual shoreline during the initial stage of settlement, which should have been c. 18 m above the present sea level.

The calculations show that it was probably possible to maintain livestock corresponding to 15 Ne from an area within little more than 500 m from the settlement. In bad years there were great reserves to be utilized within 1 km radius. In this context no allowance has been made for methods of increasing production often used in historic times, such as burn-beating, forest clearance and damming (e.g. Frödin 1952). A number of such methods may have been in use to a greater or lesser degree during the Early Iron Age. These calculations also omit the gathering of
Table 6.2. The gain in land between 18 and 14.5 m a.s.l. within 300 m of the settlement. Below the 14.5 m contour there is no increase of the fine-grained soils, only in the coarse-grained west of the settlement. A minor lake was formed in the valley bottom at the 14.5 m curve (cf. Fig. 6.2).

<table>
<thead>
<tr>
<th>m a.s.l.</th>
<th>fine-grained</th>
<th>coarse-grained</th>
<th>sea</th>
<th>lake</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>over 18.0</td>
<td>6.56</td>
<td>23.6</td>
<td>7.16</td>
<td>25.7</td>
<td>14.09</td>
</tr>
<tr>
<td>over 17.5</td>
<td>7.04</td>
<td>25.3</td>
<td>7.48</td>
<td>26.9</td>
<td>13.29</td>
</tr>
<tr>
<td>over 17.0</td>
<td>7.65</td>
<td>27.5</td>
<td>7.77</td>
<td>27.9</td>
<td>12.39</td>
</tr>
<tr>
<td>over 16.5</td>
<td>8.53</td>
<td>30.7</td>
<td>8.18</td>
<td>29.4</td>
<td>11.10</td>
</tr>
<tr>
<td>over 16.0</td>
<td>9.42</td>
<td>33.9</td>
<td>8.98</td>
<td>32.3</td>
<td>9.41</td>
</tr>
<tr>
<td>over 15.5</td>
<td>10.48</td>
<td>37.7</td>
<td>9.35</td>
<td>33.6</td>
<td>7.98</td>
</tr>
<tr>
<td>over 15.0</td>
<td>11.44</td>
<td>41.1</td>
<td>9.45</td>
<td>34.0</td>
<td>6.92</td>
</tr>
<tr>
<td>over 14.5</td>
<td>11.44</td>
<td>41.1</td>
<td>9.77</td>
<td>35.1</td>
<td>6.15</td>
</tr>
</tbody>
</table>

Straw after the harvest. This, however, provided an important addition and the weight of straw is reckoned to be 1.5 x the weight of the grain, i.e. if one harvests 1 ton of grain one obtains 1.5 tons of straw.

Pasture land is more difficult to determine but, at the same time, it probably posed fewer problems in relation to the type of settlement structure that prevailed in the investigation area during the Early Iron Age. In this case the distance factor also played a minor role which is clearly evident from the very extensive fäbod system of our days.

During the 500-year period covered by this investigation, great changes obviously took place regarding the addition of new land. Using a relief map at a scale of 1:2000 (Örnsköldsvik’s local authority), with a contour interval of 0.5 m, the increase of new land within 300 m of the settlement could be calculated in detail.

Broadly speaking, this change can be said to reflect the development during the greater part of the Early Iron Age (cf. Fig. 3:22). Most noticeable is the almost doubling of the area of fine-grained soils between 18 and 14.5 m a.s.l. (Figs. 6.2–3 and Tab. 6.2), after which there are no further increases in this type of land. The percentage of coarse-grained soils does not increase so rapidly but together these sorted fine and coarse sediments comprise 75 % of the area within 300 m of the settlement.

This increase in fine-grained soils means that even the potential for meadowland and fodder collection increases considerably. By the middle of the millennium (c. 15 m a.s.l.), if the same conditions apply as suggested above, one could gather sufficient winter fodder from within 300 m for c. 9–14 Ne. Within

Fig. 6:3. Graphic representation of extents of soil types, within 300 m from the dwelling site from the beginning (18 m a.s.l.) to the middle (14 m a.s.l.) of the first millennium A.D. Based on Tab. 6:2.
500 m from the settlement (cf. Fig. 3:25) at this time there were c. 24 ha of fine-grained soils, which suffice for c. 25–28 Ne for 7 months.

We can thus establish that significantly more favourable conditions exist around the 6th century regarding the distribution of soils suitable for meadowland. Expressed in terms of distance, one can theoretically say that during the Roman Iron Age collection had to take place within 1 km of the settlement and during the Migration Period within 500 m, in both cases in order to supply a livestock population of 40 Ne with winter fodder for 7 months. This is providing, of course, that the principal utilized resources can be reproduced and that similar forms of utilization were employed.

According to these calculations there ought not to have been any difficulties in maintaining the 15 Ne in question, least of all during the later stage of the farm. The cause of the migration of the settlement ought not therefore to be sought in the development of stock-raising.

6.3. HUNTING AND FISHING

6.3.1. OSTEOLOGICAL INDICATIONS

In the classified material the following species of wild animals are represented: hare (*Lepus*), seal (*Phocidae*), fowl (*Aves*), and fish (*Pisces*). Closer determinations of species have not been possible. Regarding, for example, the seal there are a number of possibilities when the Sea and the Bay of Bothnia contained populations of mainly ringed seal, but also of grey seal and harp seal (Chap. 3.6.). Most probably the ringed seal was the principal prey, which was also shown to be the case during the pre-sedentary phase (Baudou 1977:44, Broadbent 1979:185).

No chronological differentiation of the material can be made, so that here one can only assume that hunting and fishing have been roughly the same throughout the whole period of settlement. The solitary fish bones that have been found consist of vertebrae from middle-sized or smaller fish. These should be regarded as greatly under-represented in the material, on the grounds that the bones are easily decomposed and that the method of collection was unsuitable in this respect.

As in the case of the larger domestic animals, big game is also poorly or not-at-all represented in the material and it is questionable as to whether such a common and economically important species as the elk (*Alces alces*) was hunted. It appears, for example, at the Högom settlement which resembles Gene in many respects (Sect. 2.2.1.). In parenthesis it can be mentioned that the hare is completely absent in the Högom material, whereas it is the commonest wild species in Gene. This difference can be illusory, but may also illustrate the different specializations of the two settlements. Otherwise they show an almost identical composition of species.

6.3.2. ARCHAEOLOGICAL INDICATIONS

The find indications related to hunting and fishing are partly arrow-heads (Fig. 6:4) and partly an iron fish hook (Fig. 4:56). Two of the arrow-heads come from pit T1, one was found under House III and one just south of Houses I and II. They thus occurred spread out over the habitation area and cannot be tied to any particular period. One of the arrow-heads differs from the others in its weight and size (Fig. 6:4, No. 42), which indicates that it had another function.

Fig. 6.4. Arrowheads of iron found on Genesmon. Drawing: P.H. Ramqvist.
Small game such as hare and wildfowl are better caught using traps. Hunting these species must be regarded as far too time-consuming in relation to the expected returns. Odner (1969:72ff) has also shown that even rather intensive small-game hunting is not particularly rewarding from a calory point of view. There are thus clear advantages in concentrating the hunt on larger animals such as elk, reindeer, seal, etc. Hence in Gene's case one can conclude that the seal was far more important from an economical viewpoint than, for example, the hare.

The few fish bones suggest that fishing was certainly pursued, which is obvious with regard to the settlement's location. Probably fishing was carried out using nets, hooks (Fig. 4:56) and fixed traps.

6.4. RESOURCE UTILIZATION: ATTEMPTED QUANTIFICATION

The following section goes through the resource quantities point by point. Obviously this means that estimates and calculations are largely based on the number of cattle units, which at all events has not been below 15 Ne. In turn, this results in that the annually-utilized part of the arable need be no larger than 1.5 ha, which is connected with the assumption that one cow fertilized one mål (0.1 ha) of arable per year (cf. Hagen 1953:149, Kaland 1979:80).

6.4.1. ARABLE AND MEADOW PRODUCTION

1. Annually cultivated arable (ensäde) = 1.5 ha.
2. Net arable production = (seed sown x grain index) – seed sown. A grain index of 3.5 and a sown quantity of 200 kg/ha (Hannerberg 1971:87) gives a net production on 1.5 ha arable of (1.5 x 200 x 3.5) – 300 = 750 kg.
3. Energy value of the arable production: 1 kg grain corresponds approximately to 3200 kilocalories (Hannerberg 1971:86) which gives 750 x 3200 = 2.4 million kal per year (kal = kcal).
4. Number of cattle units (Ne) = 15, which is suggested to represent 10 head of cattle, 20 sheep/goats, 4 pigs and 1 horse, plus some calves, lambs and piglets.
5. Fodder requirements for 7 months of stabling: 1 Ne is assumed to consume c. 4 kg per day, which for a total of 15 Ne corresponds to 12.6 tons of hay per stabling season.
6. Meadow production: 1 ton/ha.
7. Area of meadowland: to produce the fodder requirement of 12.6 tons, accordingly 12.6 ha of meadow are needed.

6.4.2. ANIMAL PRODUCTION

8. Cattle: 10 cows are assumed to have 5 calves annually. 2 cows and 3 calves are slaughtered each year. The carcase weight of an Iron Age cow is c. 100 kg (Hannerberg 1971:107), each kg is taken to correspond to 1790 kal (Odner 1969:71). The corresponding figures for a calf are 25 kg and 1469 kal respectively. A cow is presumed to have given 500 kg of milk annually, with an energy value of 500 kal/kg (cf. Odner 1969:70f; Hannerberg 1971:108). The total energy value of products from cattle is thus: 2 x 100 x 1790 + 3 x 25 x 1460 + 8 x 500 x 500 = 2.4675 million kal.
9. Sheep/goats: 20 sheep are presumed to produce 20 lambs per year. 5 sheep and 15 lambs are slaughtered each year. The carcase weight for a sheep is c. 10 kg and each kg represents 3660 kal (Odner 1969:71). The corresponding figures for a lamb can be taken as 5 kg and 1400 kal respectively. One sheep can be presumed to have given 100 kg of milk per year at 500 kal/kg (Odner 1969:70f). The total energy value of sheep products is thus: 5 x 10 x 3660 + 15 x 15 x 1400 + 20 x 100 x 500 = 1.288 million kal.
10. Pigs: 4 pigs, comprising 1 boar and 3 sows. The 3 sows can be presumed to produce 15 piglets per year. One sow is slaughtered every other year and 14 piglets each year. A pig gives c. 30 kg of meat (cf. Hannerberg 1971:107) and a piglet c. 10 kg. The energy value is set at 2000 kal/kg, so that the total energy value of pig products is thus: 0.5 x 30 x 2000 + 14 x 20 x 2000 = 0.310 million kal.

6.4.3. POPULATION

11. Labour input: During hay-making, 1 individual is assumed to cut 0.1 ha per day (Odner 1969:68) and if the meadow was c. 13 ha some 130 work-days are necessary. If hay-making can only be carried out during the month of high summer then 4 individuals are therefore required. If Hagen's figures are used (1953:154) then a corresponding collection of hay would take 150—240 work-days. As the gathering of fodder takes place at a hectic time, there are good reasons to suspect that the farm was populated by a so-called extended family, corresponding to 10 adults (cf. Hagen 1953:156). Other activities connected with agriculture are difficult to calculate without specific experiments in different environments.

12. Consumption: From the values put forward by Dennell (1979:125) regarding the energy requirements for individuals of different ages, sex and labour intensity, the mean value is 3000 kal per day per individual. A population corresponding to 10 adults would thus require annually: 10 x 365 x 3000 = 10.95 million kal.

If the energy values calculated for agricultural and animal production are added together they give 6.4655 million kal per year, i.e. c. 60% of the popu-
lation’s total requirements. This means that the remaining 40% or 4.295 million kal must be obtained from other sources. Obviously those in question are hunting, trapping, fishing, and gathering. Known resources in the material are seal, hare, fowl, and fish. As already mentioned, seal was probably the most important of these and it is suggested that seal hunting, trapping, fishing, and gathering may have accounted for 2/3rds of the remaining requirement, i.e. c. 2.9 million kal. The final 1/3rd, i.e. c. 1.4 million kal, supposedly came from fishing and small-game hunting.

6.4.4. GAME

13. Seal: An average seal weighs 100 kg, half of which consists of blubber (Helle 1979:212ff). At least half of the blubber is assumed to have been utilized as food so that the carcase weight is c. 25 kg of meat and 25 kg of blubber. The energy content is thus high and is reckoned to be at least 3000 kal/kg. To attain the suggested energy quantity c. 20 seals would be required each year.

14. Small game: In the case of hare, 0.7 million kal could be obtained from 100 hares with a carcase weight of 1.75 kg (Odner 1969:86) and an energy quantity of 1500 kal/kg (Becker 1979). In the case of game birds and wildfowl, with an average meat weight of 0.5 kg and an energy value of 1500 kal/kg (Becker 1979), about 470 birds would be required annually.

15. Fish: If the remaining 0.7 million kal are divided up between for instance Baltic herring and salmon, common in this region, the following is suggested: 1 kg of herring corresponds to c. 1000 kal and salmon c. 2100 kal (Becker 1979) which means that c. 350 kg of herring and 170 kg of salmon are required annually.

Comments: As is evident from Tables 4:8, 4:16 and 6:1, there are seeds from several species of berry represented in the carbonized material. These indicate that gathering took place and that berries have certainly been a useful source of vitamins and minerals. These types of resources, of which we only have a sporadic picture, have probably been extensively utilized but, on the whole, have never formed an important element in the economy. Berries are, nevertheless, storable in the form of jam, for example, which can be made without sugar.

With regard to the domestic animals’ progeny, the figures used in the calculations have been estimated by reducing modern figures by half or more. The same applies to the collection of milk and it is difficult to estimate the yield of milk from sheep/goats in particular.

6.5. HANDICRAFTS

Handicrafts are not necessarily practised on a professional basis and here we are only concerned with the manufacture of objects, the making of which requires special experiences and knowledge. Handicrafts can thus be carried out with varying intensity, from full-time occupation to sporadic but recurring activity.

A number of crafts are indicated, more or less clearly, in the Gene material. Apart from the general knowledge of handicraft (e.g. shown in the techniques of house construction) this chapter will focus attention on some more distinctive crafts, namely iron-working and bronze casting. Firstly, however, a few words will be said regarding organic materials.

The organic materials are greatly under-represented in most archaeological contexts. Probably only “the tip of the iceberg” concerning handicraft products ever reaches the notice of the archaeologist. Of all the conceivable organic material (hides, leather, furs, bone, horn, hair, wood, birch-bark, bark, roots, wool, flax, hemp, etc.) only textile crafts and, to a certain degree, birch-bark and bone work are indicated. Finds pointing to textile production are spindle whorls and loom weight fragments for wool, flax or hemp. Further, there are three weak suggestions in the form of fragments of sheep shears (wool), carbonized lin-seeds (flax) and textile impressions on clay (wool, flax or hemp). None of the last-mentioned indications actually proves the existence of this craft as such, but they do exemplify phenomena that are indirectly related.

The finds of decorated and worked bone consist of a couple of fragments (e.g. Fig. 4:86), one of which is a tiny piece from a comb of unknown type. Furthermore, in grave 22.8 there are some fragments of a bone comb and in graves 22.3 and 22.6 resin caulking rings with birch-bark impressions, which show that birch-bark was utilized in handicrafts. Apart from possibly some lumps of resin in pit T1 (Sect. 4.5.1.), there is nothing to show that these bone and birch-bark artifacts were produced on this site, although it is nevertheless highly probable. There are no clear-out remains from any other handicrafts using organic materials.

6.5.1. IRONWORKING

Outside and within House VI a large quantity of iron-working remains were encountered, i.e. iron slag, sintered and burnt clay (for example in the form of bottom pieces from clay-lined pits), a pair of forge-
pits and a large number of hearths and hearth-pits. Solitary and scattered pieces of slag occur around the other houses.

So far, no metallurgical analysis of the slag has been made, but the material originates from one or more stages of the forging process. Of the c. 150 kg of residue products that have been found (cf. Fig. 4:68), c. 19 % were classified in the field as burnt clay and 81 % as slag. These figures are not entirely relevant, however, as without closer analysis there are no clear criteria for differentiating between for instance forging slag, sintered clay containing a certain proportion of slag, and highly sintered clay. In general, both activity areas (Figs. 4:68–69) contain the same distribution of the two groups that were distinguished in the field. Around the hearths in House VI what was termed slag in the field comprised 83 % and the burnt clay 17 %, while the corresponding figures for the activity areas south of the house were 81.5 and 18.5 % respectively.

In the field a random sample was also made on some of the material from the activity surface in the house with regard to the magnetism of the slag. The random sample was tested using a compass, and the relative strength of the compass needle’s deflection determined the grouping (Tab. 6:3).

Table 6.3. Magnetism of the residue products. Samples from activity area in House VI.

<table>
<thead>
<tr>
<th>Very small or no deviation</th>
<th>Medium-sized deviation</th>
<th>Very large deviation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1320 g</td>
<td>5917 g</td>
<td>419 g</td>
<td>7567 g</td>
</tr>
<tr>
<td>17.2 %</td>
<td>77.3 %</td>
<td>5.5 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Generally speaking these results show that small or no deviations signify material without an abnormal agglomeration of iron, medium-sized deviations signify a certain agglomeration and large deviations suggest more-or-less pure iron. In the last case the specific weight and general character (rust) usually indicate that it is a question of material with a high iron content.

Two pieces of burnt clay from the forging area in and near House VI have also been analysed by Hulthén (Excursus 1). One piece came from hearth C8 in House VI (sample No. 7, Tab. 1; cf. also Fig. 4:58) and the other from outside the house, namely from co-ordinate 449 465 (sample No. 4, Tab. 1; cf. also Fig. 4:68). Two interesting results can be mentioned. Firstly, grains of iron slag were observed on the piece from outside the house. At 800–900°C the clay had the highest degree of burning of all the samples analysed. Secondly, the piece from hearth C8 had a similar composition to crucibles or, as it proved to be tempered with 10% of quartz, chamotte and charcoal/ash.

The tempering may signify that a special forging technique was employed in the house, whereas another method was used outside. Experimentally, Thomsen (1964:74ff) showed that it could be advantageous to employ crucible or crucible-formed forges for the smelting together (welding) of for instance small pieces of iron. The tests also show that the crucibles must be tempered, and Thomsen successfully used chamotte for tempering (1964:78).

A number of bottom pieces which could well belong to crucible-formed forges have been found in Gene. They have concave-convex forms, where the convex side (outside) always has a thin layer of sand and the concave side (inside) is strongly sintered and contains iron slag. This situation shows two things; partly that a pit dug in the ground was lined with clay and partly that the air was blown into the forge from above. A forge variant such as this would correspond well with what Thomsen calls the crucible-formed forge (1964:80).

A larger quantity of slag and clay material must be subjected to technological investigations before any conclusions can be drawn regarding these forging techniques and their eventual differences in spatial distribution. The material does imply however that different stages in the forging process took place both outside and inside the house. In order to go a step further in this analysis, a few more results from the forging experiments will be applied.

In a lecture in 1983 Thomas Jacobsson (Stockholm University) presented experimental attempts and suggested that the refining process of iron follows four stages (Tab. 6:4).

Table 6.4. Suggested stages of refining of iron and slag residues during the forging of iron objects (after lecture held by Thomas Jacobsson).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Residue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reduction (bloom)</td>
<td>X kg iron bloom</td>
</tr>
<tr>
<td>2. Resmelting (purification of the bloom)</td>
<td>X−30 % = Y kg resmelted iron</td>
</tr>
<tr>
<td>3. Fusion and working (blanks)</td>
<td>Y−14 % = Z kg blanks</td>
</tr>
<tr>
<td>4. Forging of artifact</td>
<td>Z−2 % = completed artifact</td>
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</table>
These four stages of refining leave different waste products but in this respect experiments are incomplete. In this case it is reasonable to assume that stages 2–4 are carried out at the settlement site (the place of consumption) while the reduction takes place where the raw material, ore, occurs (the place of production).

By means of the four stages of refining a successive purification of the iron takes place and in stages 2–4 some 41% of the initial weight is lost in the form of slag products. The greatest weight loss, 30%, takes place during the resmelting which, according to Jacobsson, also requires high temperatures. Thereafter the loss is successively smaller.

Two examples will be given to illustrate the level of production. If the settlement site produces 100 kg of slag from the refining stages 2–4, it means that a total of 244 kg of iron blooms were originally taken to the site. If, on the other hand, the slag came from stages 3–4 then c. 900 kg of iron blooms must have been brought in. These two calculations serve to illustrate the great variations that arise from small differences in the interpretation of the activity surface.

In order to apply Jacobsson's calculations for the suggested refining stages, we will test the hypothesis that the activity area south of the house is a place for resmelting and the area inside the house is for fusion and forging. The test implications are as follows: 1. the quantities of slag between the two separate areas should agree with Jacobsson's calculations, 2. the types of slag should differ in some way.

The point of departure is the quantity of slag found on the activity area south of the house. There, 87 kg of slag were encountered which according to Table 6.4 corresponds to the waste products (30%) of 290 kg of resmelted iron. The remaining resmelted iron is thus 290 – 87 = 203 kg. According to the hypothesis these 203 kg are further worked inside House VI, primarily to produce blanks (stage 3), which means that a further 14% of slag is deducted (i.e. 0.14 × 203 = 28.5 kg of slag) thus leaving 203 – 8.5 = 174.5 kg of iron for the final forging of artifacts. In this finishing stage (4) a final 2% of slag is deducted, i.e. 0.02 × 174.5 = 3.5 kg of slag. The total quantity of slag from the blank production and forging which, according to the hypothesis, took place inside House VI is thus 28.5 + 3.5 = 32 kg of slag. This figure can now be compared with the 28 kg of slag obtained from within the house and its features.

An alternative hypothesis can also be tested, i.e. that the activity area outside the house was the site for fusion and the working of blanks, whereas the artifacts were forged in the house. The 87 kg of slag outside imply in this case that c. 620 kg of resmelted iron were brought to the site. The subsequent artifact forging inside the house should thereafter have left 10.5 kg of slag, a figure that corresponds poorly with the collected amount of 28 kg. The test implication thus supports the hypothesis that the activity area south of the house was the resmelting site and that the house was the place for blank and artifact forging.

Two points must be made however. As is evident from the plan of distribution (Fig. 4.68), it is likely that there are further quantities of slag on the unexcavated surface to the west of the activity area south of the house. This means that more than the calculated quantity of iron was resmelted. On the other hand, as mentioned in Section 4.2.5.4., this extra is compensated by the fact that there were numerous kilograms of slag comprised of small uncollectable pellets particularly in and around the hearth C2 (Fig. 4.65). These two uncertain areas do not however affect the applicability of the test implications, only the quantity of iron finally forged. Instead of the 290 kg used in the calculations, a more suitable figure ought to be around 350 kg.

The second test implication, that the slag ought to have different appearances, can also be answered affirmatively. As already mentioned the black, tear-shaped slag, (often in the form of 1–10 mm-sized pellets) comprise a large proportion of the material in the foundation. This type of material is almost entirely absent from the area south of the foundation. Parts of the slag on both activity areas however, also have close similarities.

As mentioned in Section 4.2.5.4., there were a number of pieces of slag containing fast-sintered bones in hearth C7b in House VI. This condition, together with the fact that some of the hearths in the house contain relatively large amounts of bone, suggests that the purpose of these bones was to increase the phosphorus content of the iron. By heating the iron together with bone (or, for example, manure) a certain increase in the iron's phosphorus content can be achieved (Christensen 1979:32).

Phosphorus-rich iron is hard but at the same time suffers from cold shortness, which does not normally give any special advantages in comparison with the more usual method of increasing the carbon content when hardness is required. In certain cases, however, high phosphorus content has been preferred, e.g. when "a type of Polish steel was used in the early middle ages for knives" (Tåhlin-Bergman 1979:117). It is also recorded that pattern welding was used during the Roman Iron Age, which means that carbon-rich and phosphorus-rich (i.e. carbon-poor) iron
lamellae were alternately forged together to obtain a particularly tough, hard and, at the same time, decorative result (Christensen 1979:32).

This type of slag with burnt bone attached has not been found on the activity area outside House VI and this can be taken as supporting the idea that finer forging took place within the house.

Other important test implications can be produced using improved experimental and laboratory methods. In the introduction to this chapter these possibilities were shown through the analysis of the clay material. The results obtained then must not be seen as definitive, but they do indicate the same thing as the test implications, namely that the forging inside the house was of a more refined nature. In this context I will merely suggest that iron was mainly resmelted outside the house whereas the forging of blanks and artifacts took place inside House VI.

If the suggested figure of c. 350 kg of iron blooms represents the initial material, then about 200 kg of iron artifacts were forged during the working of the smithy. A period of use of 100 years thus gives an average annual production of 2 kg. Despite the uncertainty of these figures they do suggest that it is a question of domestic smithwork.

The extensive stratification of hearth C2 (Figs. 4:64, 4:66) suggests that the forging activity was discontinuous, which fits in with a domestic smithy. Thus one cannot assume that the smith was an individual freed from the other activities on the farm.

6.5.2. CASTING

Casting probably took place outside House IV, where there also occur a few stray remains of other handicraft activities, such as iron tools, whetstones and textile working (cf. Tab. 4:19, Fig. 4:45). It is uncertain whether the stray crucible fragments beside House I indicate a casting location.

Section 4.2.4.3. showed that at least moulds for relief brooches, 2 for keys and 1 for small knob rings were in use. Even if the burnt clay (Fig. 4:43) that could not be directly tied to moulds nevertheless represents the same, the total number still remains small. The craft of casting has not therefore formed a full-time occupation and the term "domestic casting" is suitable here. On the other hand the cast products were not necessarily for household consumption in the strict sense. They can of course have been exchanged or bartered.

From the mould and crucible material, one piece of each type has been selected for technological analysis (Excursus 1). The mould fragment (sample No. 5, Tab. 1) was fired at c. 500°C and had a vitrification interval between 800 and 1100°C. The silty clay is tempered with 10% of chamotte and charcoal/ash. This technique for producing moulds and crucibles corresponds fully with, among other things, the material from Helgö (Lamm 1977:106f). The same applies for the analysed crucible fragment (Excursus 1, sample No. 8, Tab. 1), where the tempering is c. 40% but where quartz is used instead of chamotte. Charcoal/ashes are also found in the crucible material. Due to the high percentage of quartz the crucible has a high heat resistance and the sample tolerated 1200°C without being deformed. The crucible fragment only contained 10% of clay which means that the tempering and the coarser fractions (sand, fine sand and silt) formed a stable skeleton held together by the clay.

The technological analyses of the mould and crucible material suggest that a method of producing crucibles and moulds similar to that used for example at Helgö, was employed at Gene. This, together with the use of both open and enclosed crucibles, shows that the casting technique was probably the same in both of these areas.

If the casting on Helgö in Lake Mälaren can be regarded as something of a subsidiary occupation for a mainly agrarian population (Blidmo, pers. comm.) this must apply to an even greater extent in the case of Gene. In the same way as the forging, casting must have been carried on sporadically during the time period in question. Even if both handicrafts were practised by the same person it must still have been a question of a subsidiary activity in relation to other occupations.

In this context it may be of interest to make some comments on the relation of bronze casting to the rest of society. During recent decades the view has emerged that, for understandable reasons, put Helgö as the focus for the production of jewellery in Scandinavia (e.g. Holmqvist 1972:15, Lamm 1973:1). The distribution maps published in Excavations at Helgö IV:1 (Lamm 1972:110f, 125; Holmqvist 1972a:234, 240, 246, 253; Waller 1972:50) must have been drawn with the aim of strengthening such a hypothesis, even though it is not expressed in plain language. In Holmqvist (1972:25), however, one can glean parts of such a hypothesis, where Helgö is first said to have been subjected to the influence of, but also perhaps in its turn to have transmitted to and inspired, other workshops in for example Västerås or in Finnish Österbotten. Holmqvist is thus open to the existence of other workshops parallel with Helgö, but believes that the latter had a transmitting and inspiring role.
On the whole, the comparative analyses regarding workshops in the Helgö project have played an extremely peripheral role and probably this results from the fact that the material in question has been very limited and, where appropriate, difficult to get at. On the other hand, casting remains have been encountered on all the Iron Age settlement sites in Norland, investigated in recent times. This applies then to Trogsta, Högom and Gene. Obviously this may be a fortunate coincidence but equally it may accentuate a completely different structure from that shown by the Helgö-project. Indications of casting operations have also been brought to light on sites near Helgö, e.g. on the Darsgårde settlement site (Ambrosiani 1959:108) and the settlement beneath cemetery No. 8 in Värby (Ferenius 1971:110). On both of these sites, crucibles of the Helgö-type occur. In Bäckby, outside Västerås, 5–6 litre crucible fragments and 2–3 litre mould fragments have been encountered on a site. The material that appeared in the 1950s is not published or reported, but is merely mentioned in a report on a later investigation (Hemmendorff 1980:12).

From the literature it also appears that casting took place on Öland during the Migration Period, e.g. on the settlements of Bo and Örmöga in the parish of Bräätne (Hagberg 1967:99ff; Beskow—Sjöberg 1977: 67ff, 113ff) where both mould and crucible fragments were found, and it has been suggested that certain crucibles at least were of the closed type with handle and mouth (Beskow—Sjöberg 1977:113).

Interesting investigations have also been carried out on western Öland where the finding place of the well-known bronze dies from Torslunda parish was more closely excavated (Hagberg 1976). Two well-preserved three-aisled foundations have been brought to light, originally without stone walls of the Kämpa-grav type (Hagberg 1976:326) and therefore of the flatmark type. In association with the c. 40 metre long foundation, a "slag-like material" was found and submitted to metallurgical (Törnblom 1976) and ceramic investigations (Nordström 1976). The results of the metallurgical investigations showed that the material contained surprisingly large amount of, among other things, copper, lead, zinc, tin, and cobalt (Törnblom 1976:339, Tab. 2a), which were interpreted as evidence for bronze casting on the site.

The results of the ceramic investigations were regarded as showing "that these fragments originate from materials connected with furnaces used for smelting and fritting processes" (Nordström 1976:341). From Nordström's descriptions of this material, I conclude that it is a question of fragmentary crucibles and the remains of a furnace or the like. In the description there are a number of the most characteristic features of crucibles — namely, for example, "rounded outline", "lustrous surface", "the smooth surface appears to consist of a layer of greyish-green or dark green vitrified or wholly fused material", "fabric is intermixed with a large proportion of . . . mineral grains (mainly quartz and feldspar)", "the firing temperature may be . . . between c. 700 and 1000°C", etc. (Nordström 1976:341). All these characteristics fit in completely with crucible material and "rounded edges" also occur on other fragments (Nordström 1976:341), which may indicate for example that two types of crucible were in use.

No moulds have been found on the excavated part of the settlement site. On the whole, however, it appears that casting occurred at the Björnhovda settlement and much suggests that the Torslunda dies were produced here (Hagberg 1976:336f). In this context Hagberg (1976:332) also mentions that goldsmith's work occurred at the partially excavated sites at Bo, Örmöga, Skedstad and Hässleborg, in the Skedemosse area on eastern Öland.

In 1933 crucibles were mentioned in connection with Petersen's account of the house excavations in Rogaland, SW Norway. He names four settlements containing crucibles of the enclosed type with handle and mouth (Petersen 1933:92 and Plates 12, 13, 38, 39). Open crucibles also appear in this material. Crucibles are further mentioned among the finds from much later excavations such as on Ullandhaug, SW Norway (Myhre 1980:55), and Augland near Kristiansand in southern Norway (Rolfsen 1980:15).

In the excavation of the obviously very interesting, but unfortunately unpublished, farmstead at Modvo in Indre Sogn, Norway, even crucibles and a piece of a soap-stone mould were among the rich finds (Bakka 1976:85).

Another interesting phenomenon is the lower half of a soap-stone mould for a relief brooch, found in Rogaland (Hougen 1967:10, Fig. 37). This has a completely flat casting surface (back-side of a relief-brooch) which means that, apart from an upper part, another section of the mould for the arching of the bow is also missing. Such separate mould sections for the bow have been found in Gene (see Fig. 4:54).
On the Migration Period farmstead of Greipstad on Kvaloya, Troms fylke in North-Norway, which is identical in many respects to the Migration Period parts of the Gene farm, a mould fragment of burnt clay was found in a minor house adjoining the longhouse (Storm-Munch 1965:22). In addition there were hearths and blast pits, but it is not clear as to what was cast.

Although a complete survey has not been made here, it is nevertheless obvious that bronze casting (and perhaps goldsmith work) has been a fairly common activity on the farms of the Migration Period. Furthermore it has not only been carried out in central districts but also in the fringe areas of the Migration Period sedentary settlement, as is evident for example from the finds at Greipstad and Gene.

The explanations for the underrepresentation of "domestic casting" in the material are in my opinion the following:

1. The production on a farm has not normally been particularly large, so that the material left behind is not necessarily conspicuous.

2. Usually the remains of moulds and crucibles are tied to habitation sites and where the human activity and dwelling intensity is great (which is often the case), the material in question is extremely fragmentary and is easily overlooked during the excavation. This risk of oversight is particularly strong where slag, daub, or other clay materials occur.

3. There have been few expectations of finding casting remains on an ordinary dwelling site as such finds, according to popular opinion, are associated with central places, chieftain's farmsteads, or suchlike.

These circumstances are believed to have contributed to the fact that even small finds of bronze casting have been passed over by research, quite unstressed. One example of the significance of the proposed domestic casting can be taken. In a similar way clasp buttons from the Högom graves have been added to the type of products that were possibly produced on Helgö (Lamm 1972:115, 120f; Holmqvist 1982:185, Fig. 197).

What then are the implications of these circumstances? Firstly, irrespective of the place of manufacture, the distribution maps of, for example, the Helgö-project show that the sets of jewellery and forms of decoration that were used during the Migration Period were common over wide areas. From this it follows that the boundaries for possible geographical differences are very indistinct. Secondly, local production of artifacts has taken place to a greater extent than was earlier supposed. In order to be able to analyse the diffusion paths of artifacts and eventual differences in the appearance of jewellery, the mould material from different workshops must be studied. In this case the pieces of jewellery themselves are insufficient.

The type of relief brooch that, according to my interpretations, was cast in Gene (Fig. 4:46) is preceded by 8 examples in Fenno-Scandinavia (Koivunen 1975:14f, Fig. 4; Hougen 1967, Fig. 77). These are thinly dispersed over areas from Finnish Lapland in the NE to the county of Rogaland in the SW. A nordic distribution can scarcely be greater. None of the form-elements presented in the Gene moulds correspond with any of these 8 relief-brooches and no style I decoration agrees in detail with the mould fragments.

Two of these brooches are almost identical, namely one from Hällan in northern Hälsingland (e.g. Åberg 1953:46, Fig. 31) and one from Eikeland in north Jaeren (e.g. Hougen 1967:Fig. 77). These two pieces cannot have been made independently and the same can also be said about a number of categories of artifacts during this period. Thus a local production of jewellery occurs, of which some pieces at least participate in an inter-regional circulation. Furthermore
it is possible that different variations of the jewellery were produced in particular regions and that thereafter they participated in a general flow of products. This is indicated, for example, by the fact that no production of relief brooches with a bow disc has hitherto been proven on Helgö (Blidmo, pers. comm.).

A geographical subdivision of relief brooches is suggested by, for example, Meyer (1934), but no clear delimitation is possible for the groups represented in Norrland (Meyer 1934:75ff). Nor do the distribution maps of the Helgö-project show any more salient geographical delimitations (Holmqvist 1972a:234ff).

In this situation one has to conclude yet again that the pieces of jewellery themselves cannot be used to determine geographical groupings of the material, as it can be assumed that they are included in an inter-regional contact and exchange network. In order to solve the question of possible regional differences in the use of a distinct type of decorative element, one must therefore study moulds in different areas. Work of this nature is in preparation by Anna-Karin Lindqvist at the Department of Archaeology in Umeå and in all probability new structures will emerge from such comparisons of moulds. Even if differences could be expected, of course similar production could also occur over wide areas, as for example in the case of pins with profiled heads, which according to present material were cast in both Högom and Gene as well as on Helgö (cf. Sect. 2.2.1., Fig. 2:6; Sect. 4.2.1.5., Fig. 4:6, together with Lamm 1969:139, Fig. 50).

6.5.3. RAW MATERIALS

With regard to the raw materials for the activities and handicrafts carried on at the farm, one can differentiate between local and external. Such materials as gold, bronze and raw iron (the bloom) belong to the latter group, whereas timber and its by-products, clay, wool, bone, stone, etc. belong to the former. A number of raw materials, such as furs and hides, are not found in the archaeological material but they have probably been important local resources for clothing, covers and exchange.

The external raw materials, gold and bronze, that were used in Gene for jewellery production, may have been brought from several directions. During the Early Iron Age gold was brought into Scandinavia from the Roman empire in particular, in the form of coins (solidi). In addition, gold rods and the like appear in hoards and on settlement sites in the home area. As mentioned earlier one such hoard was found in the parish of Nora (Sect. 3.4.1.). Theoretically the gold in these northerly tracts may have been brought directly from the Roman area, but more likely it was distributed to different areas via regional and perhaps local circulation. The same also applies to the bronze raw materials and, because re-utilization and re-smelting were practised, finds of raw bronze are very uncommon.

Iron has been extracted from much closer at hand than gold and bronze. Without carrying out extensive laboratory analyses, two alternatives concerning the origin of the iron can be held open: a) the iron comes from some of the known places of production during the Early Iron Age in, for example, Jämtland or Gästrikland (Magnusson 1977:20, Englund 1983:34ff), or b) the iron has been made by the farm population at a nearby location where the raw material was accessible. The proportionately limited amount of iron, c. 1–2 kg per year, that were worked at the farm did not require particularly large raw material resources.

In the technological investigations of clay material from Gene, Hulthén (Excursus 1) draws the conclusion that the raw clay has been obtained from elsewhere. Hulthén obtained reference material from two different places adjoining the settlement, partly from the silty area just east of the foundations and partly from a basin with fine-grained material 500 m north of the settlement. The first sample of raw material proved unsuitable for pottery work of any kind, whereas the second sample had good ceramic properties after sedimentation. Hulthén suggests that the latter may have been occasionally utilized for minor work. But in order to daub a house, for example, enormous sedimentation works would be needed to obtain suitable material. Sedimentation is best carried out in pits or large containers, however such remains have not been observed on the site.

It has been shown experimentally that large quantities of clay are required to daub houses. No less than 9 tons of clay were used up in a house 15 \times 6 m in size (Coles 1973:55). How much clay was used on the Gene-houses is unknown, and it depends on what parts of the houses were daubed. If, for instance, only the roof above the living-quarters was daubed, about 20 tons is a probable figure. Therefore it is doubtful that the clay was transported over long distances; but it is not possible to say from exactly where the clay was obtained, as no detailed mapping of its occurrence has been carried out within the investigation area.

One interesting result from the clay analyses concerns the concordance between a sample of daub (Excursus 1, sample No. 1, Tab. 1) from House 1 and the asbestos pottery (sample nos. 9–10, Tab. 1).
Since the daub must have a local or semi-local origin, in all probability the pottery is also locally manufactured. The total of 10 pottery sherds found so far at the settlement (Fig. 4:55), representing two vessels, indicates a very limited pottery production. The nearest occurrence of the tempering, Krysotile, is in the Swedish-Norwegian mountain range and is another example of raw material brought to the site. Normally, the kind of pottery (bucket-shaped vessels) found at Gene is said to be imported from SW Norway, this could however be discussed, both with respect to the ceramic analyses and to the fact that this type of pottery is also found on other Norrlandic sites (cf. Sect. 2.2.1.).

The results of the clay investigations therefore correspond poorly with the archaeological results, so that the whole question of the origin of the raw material on the basis of the clay analyses must be regarded as unanswered.

6.6 SUMMARY

The only type of grain encountered in the earliest phase at Gene is barley (*Hordeum vulgare*). The composition of the weed flora is interpreted as a clear indication that intensive manuring was carried out. This is also supported by the undertaken phosphate investigations, which show heightened values east of the settlement and c. 150 m to the north and south. Calculated for above the 18 m contour, the area thus obtained takes up c. 3 hectares, which corresponds well with estimates of the size of the cultivated areas elsewhere. It cannot however be assumed that these 3 ha were all cultivated at the same time, as the stock of cattle was probably too small, so that this area should be viewed as the most intensively utilized portion of the arable land. The estimated livestock suggests that c. 1.5 ha were cultivated annually at one time.

During the Migration Period, besides barley, oats (*Avena sativa*) also appear and in the 13th century house (House III) rye (*Secale cereale*) and peas (*Pisum sativum*) are also found. This sequence is interpreted as a successive broadening of the agricultural base and finds of peas indicate an intensification of agriculture between the 7th and 13th centuries.

An intimate relationship is presumed to exist between agriculture and stock-raising, and the stock of animals has been estimated at 15 cattle units throughout the period of settlement. This is based on c. 10 head of cattle kept in House II. The relatively abundant occurrence of burnt bones of sheep/goats shows that this species was common and their numbers are therefore estimated at c. 20. Furthermore it is suggested that 4 pigs, a horse, some calves, lambs and piglets should be added.

From the estimated stock of animals and the size of arable land based upon it, the economic returns from the agrarian and animal production have been discussed. Several assumptions have been made regarding, for example, the yield, consumption and energy values from the livestock, arable land and meadows. The population has been estimated as the equivalent of 10 adults with an average daily energy requirement of 3000 kal per person. The result of these calculations is that agriculture and stock-raising have accounted for c. 60% of the population’s total energy requirements.

The remaining c. 40% has then been divided up amongst the game that has been noted on the site. The most important of these has probably been the seal and if about 20 were caught annually this could provide c. 25% of the total energy requirements. The c. 15% then remaining could be obtained in the form of fish and small game.

This model for the utilization of resources is in no way exact and builds on a dozen or so estimates, but nevertheless, as nothing in the model is given unreasonably favourable values, it gives a picture of the relatively good subsistence possibilities that existed in and around the settlement. On the basis of the rich resources on presumptive meadows and arable land near the settlement—and, not least, their steady increase through land uplift—it is likely that problems concerning these branches of the economy have not been the cause of the movement of the settlement during the 6th or 7th century. The same may also be said about the marine resources which, despite the fact that the sea has withdrawn and thus increased the distance to the water, are well-represented in the latest of the prehistoric features on the settlement site.

The craft analyses have shown that, regarding metalwork, a more organized and differentiated handicraft appears during the Migration Period. The production and working of textiles is weakly indicated throughout the settlement period through occasional finds. The iron-working probably took place on a very limited scale from the beginning of the settlement, as implied by the dispersed pieces of slag around Houses I and X for example. Later, though, a special building was erected for forging (House VI) c. 40 m south of the rest of the settlement. Directly adjoining the smithy there are also some 30 hearth
pits, at least some of which were charcoal pits.

The waste from the forging suggests that a re-smelting site lay outside the house and that blank and artifact forging took place inside. There are several indications that more specialized forging was carried on inside the house. For example the clay analyses showed that the forges were clad with chamotte-tempered clay and in one of the hearths in particular there was much burnt bone, both scattered and fast-sintered in slag. This has been interpreted as indicating the preparation of phosphorus-rich iron.

Calculations based on the quantities of slag show that small amounts of iron were worked, roughly 1–2 kg/year on average and the appearance of one hearth in particular points to discontinuous forging. It has probably not been a question of a smith being totally freed from other productive work.

During the Migration Period casting has also been carried out on a small scale. Among other things bow-disc brooches, keys, rings, and pins have been cast. Bronze and gold have been used, which is evident from both the open and closed crucibles. Also in this chapter, an incomplete outline survey of casting indications on other Migration Period settlements is made. It seems that such indications, most frequently in the form of crucible and mould fragments, occur on an unexpectedly large number of sites in widely different geographical regions. For example, a number of places in central Sweden, Öland, SW Norway, North Norway and Norrland are represented. It is worthy of note that there are such indications on sites in Norrland that have been fairly extensively investigated in more recent times. This as yet little investigated situation puts the Helgö workshop into an entirely different perspective and its role as the inter-Nordic centre of jewellery production must be in great doubt.
7. THE SETTLEMENT DEVELOPMENT

7.1. DATINGS

Light can be shed on the dating of the settlement remains using four different and mutually independent methods, namely:

1. The settlement's height above present sea level. Using the known rate of shoreline displacement, an "absolute" date can be obtained for the earliest settlement.
2. Radiocarbon datings, which also form an "absolute" method.
3. Datings of finds that can be tied to the settlement. A relative method.

"Absolute" means that these dating methods build on the usually imprecise C-14 values. The relative methods 3. and 4. are unlike one another; while the former is based on an artifact's ability to fit into a general Nordic chronology, the latter is founded solely on local circumstances at the place of investigation.

Due to shoreline displacement (Sect. 3.5.3., Fig. 3:22) the earliest possible dating of the settlement can be given. The settlement lies 20–21 m above sea level which, according to the diagram (Fig. 3:22), gives a dating of around 1 A.D. In reality it was obviously impossible to settle on the site at that time and a more suitable level is 18 m a.s.l. (Fig. 6:2). At this level the nearest major beach ridge appears, just west of the settlement at a distance of c. 75 metres. This means that the earliest possible date for settlement lies in the 1st or 2nd century A.D. In this context it should be remembered that the curve of shoreline displacement is still preliminary below c. 40 m above sea level.

7.1.1. RADIOCARBON DATINGS

Hitherto a total of 24 radiocarbon analyses have been carried out on the Gene material (Tab. 7:1). The values of 22 of them lie within the interval 10 B.C.–595 A.D. and, using one standard deviation, the interval 85 B.C.–680 A.D. is obtained. Furthermore there are two later datings, one for House III of 1215 A.D. and the other which was later than 1700 A.D. for a charcoal stack or the like, 150 m NW of the settlement site (area F on Fig. 3:1).

In most cases charcoal has been dated but two samples of birch-bark and one of resin have also been used. The datings of different structures and features are shown in Figure 7:1. The six datings for House I are widely dispersed and lie between 10 B.C. and 495 A.D. Sample No. 17 (Tab. 7:1) is the most divergent and it was taken together with sample No. 5 from the same post-hole S3, which is one of the inner roof-supporting posts in the dwelling room of the house. Sample No. 5 consisted of a couple of larger, connected pieces of charcoal from the lower part of the post-hole, which were collected and analysed directly after the campaign of 1977. On the other hand, sample No. 17 consisted of birch-bark that was found scattered within the post-hole and sent in for dating 4 years after being dug out. In addition the samples were analysed by different laboratories. The birch-bark datings were no less than 450 years younger than for the charcoal (Tab. 7:1).

One can expect that, if a post is lined with birch-bark the age-differences between the fresh bark and fresh timber is at the most as great as the age of the wood itself (i.e. the post); how much depends on, for example, whether the charcoal comes from the heart of the tree or from its outer layers. On the basis of the local vegetation conditions on Genesmon there are good grounds for assuming that 450 year-old trees were not used for posts. Nor is it probable that such old timber was used, especially as the growing conditions were so very good for pine in particular, which seems to have been the type of wood used for the posts (systematic determinations of wood-type have not in fact been carried out).

In House IV there is a parallel situation, namely the datings nos. 18 and 19 (Tab. 7:1), which concern charcoal from a post in post-group No. 2 and birch-bark from a post in post-group No. 1 (cf. Fig. 4:40). In this case both the carbonized birch-bark and the post remains were found in their original position and the birch-bark was some 80 years younger than the charcoal. This is in complete accordance with the expected result.
Table 7.1. List of radiocarbon analyses in Gene. The analyses were carried out at the Laboratory for Isotope Geology in Stockholm (St) and at the Department of Physics at Uppsala University (U). The reference year (in the B.P. system) is A.D. 1950 and half-life (T 1/2) 5568±30 years.

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<thead>
<tr>
<th>Gene No.</th>
<th>Lab. No.</th>
<th>Sampling place</th>
<th>Feature No.</th>
<th>Type of feat.</th>
<th>Sample material</th>
<th>Years B.P.</th>
<th>Datings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>U-4252</td>
<td>Area A</td>
<td>A1</td>
<td>hp</td>
<td>Charcoal</td>
<td>1515±85</td>
<td>435±85 A.D.</td>
</tr>
<tr>
<td>2</td>
<td>Mean*</td>
<td>Area B</td>
<td>A1</td>
<td>h</td>
<td>Charcoal</td>
<td>1470±75</td>
<td>480±75 A.D.</td>
</tr>
<tr>
<td>3</td>
<td>U-4254</td>
<td>House I</td>
<td>A5</td>
<td>ph</td>
<td>Charcoal</td>
<td>1825±75</td>
<td>125±75 A.D.</td>
</tr>
<tr>
<td>4</td>
<td>U-4255</td>
<td>House I</td>
<td>A7</td>
<td>h</td>
<td>Charcoal</td>
<td>1770±85</td>
<td>180±85 A.D.</td>
</tr>
<tr>
<td>5</td>
<td>U-4256</td>
<td>House I</td>
<td>S3</td>
<td>ph</td>
<td>Charcoal</td>
<td>1905±75</td>
<td>45±75 A.D.</td>
</tr>
<tr>
<td>6</td>
<td>U-4257</td>
<td>House I</td>
<td>S6</td>
<td>ph</td>
<td>Charcoal</td>
<td>1960±75</td>
<td>10±75 B.C.</td>
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<tr>
<td>7</td>
<td>St 6998</td>
<td>House II</td>
<td>G19</td>
<td>h</td>
<td>Charcoal</td>
<td>1440±95</td>
<td>510±95 A.D.</td>
</tr>
<tr>
<td>8</td>
<td>St 6999</td>
<td>House II</td>
<td>G52</td>
<td>ph</td>
<td>Charcoal</td>
<td>1725±230</td>
<td>225±230 A.D.</td>
</tr>
<tr>
<td>9</td>
<td>St 7000</td>
<td>Area G</td>
<td>H5</td>
<td>hp</td>
<td>Charcoal</td>
<td>1725±95</td>
<td>225±95 A.D.</td>
</tr>
<tr>
<td>10</td>
<td>St 7193</td>
<td>House II</td>
<td>G28a</td>
<td>h</td>
<td>Charcoal</td>
<td>1565±90</td>
<td>385±90 A.D.</td>
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<tr>
<td>11</td>
<td>St 7194</td>
<td>Area B</td>
<td>G238</td>
<td>h</td>
<td>Charcoal</td>
<td>1605±110</td>
<td>345±110 A.D.</td>
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<tr>
<td>12</td>
<td>St 7195</td>
<td>House III</td>
<td>SA1</td>
<td>Charcoal</td>
<td>735±95</td>
<td>1215±95 A.D.</td>
<td></td>
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<tr>
<td>13</td>
<td>St 7196</td>
<td>House IX</td>
<td>D25</td>
<td>Charcoal</td>
<td>1725±90</td>
<td>225±90 A.D.</td>
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<tr>
<td>14</td>
<td>St 7197</td>
<td>House II</td>
<td>G186</td>
<td>Charcoal</td>
<td>1435±90</td>
<td>515±90 A.D.</td>
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</tr>
<tr>
<td>15</td>
<td>St 8023</td>
<td>House VI</td>
<td>Roof</td>
<td>Charcoal</td>
<td>1575±85</td>
<td>375±85 A.D.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>St 8152</td>
<td>House VI</td>
<td>C2</td>
<td>h</td>
<td>Charcoal</td>
<td>1540±90</td>
<td>410±90 A.D.</td>
</tr>
<tr>
<td>17</td>
<td>St 8303</td>
<td>House I</td>
<td>S3</td>
<td>phil</td>
<td>Birch-bark</td>
<td>1455±280</td>
<td>495±80 A.D.</td>
</tr>
<tr>
<td>18</td>
<td>St 8304</td>
<td>House IV</td>
<td>D38</td>
<td>Charcoal</td>
<td>1530±280</td>
<td>420±80 A.D.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>St 8305</td>
<td>House IV</td>
<td>D37</td>
<td>Charcoal</td>
<td>1610±280</td>
<td>340±80 A.D.</td>
<td></td>
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<tr>
<td>20</td>
<td>St 8306</td>
<td>Area F</td>
<td>A1</td>
<td>Charcoal</td>
<td>&lt;250</td>
<td>&lt;1700 A.D.</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>St 8542</td>
<td>Area J</td>
<td>J1</td>
<td>Charcoal</td>
<td>1335±85</td>
<td>95±85 A.D.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>St 8543</td>
<td>Area K</td>
<td>H1</td>
<td>Charcoal</td>
<td>1550±85</td>
<td>400±85 A.D.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>St 8544</td>
<td>Cemetery</td>
<td>Mound 22.6</td>
<td>Resin</td>
<td>1555±90</td>
<td>395±90 A.D.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>St 8545</td>
<td>House I</td>
<td>A125</td>
<td>Charcoal</td>
<td>1690±80</td>
<td>260±80 A.D.</td>
<td></td>
</tr>
</tbody>
</table>

*mean value of samples U-4253 (=1610±120 B.P.) and U-4273 (= 1380±100 B.P.).

Thus we have a classic repudiation of C-14 results that do not correspond. The young dating of the birch-bark in post-hole S3 may quite simply be attributed to the later activity which de facto took place on the site after the burning of House I (overlain by two later foundations). This activity is also evident from the three hearths lying a few metres NE of the post-hole, one of which (namely A1 or No. 2 in Tab. 7.1) is dated to 480±75, i.e. corresponding fully with the birch-bark in S3.

Even ignoring the result from sample No. 17, we obtain a fairly large range of datings in House I, namely 10 B.C.—260 A.D. This is probably related to the circumstances mentioned above, where different parts of both old and new posts were dated. Only in one case, namely in sample No. 24 which is an intact post in the northern part of the foundation, was it possible to select the youngest part of the post (i.e. charcoal from its outermost preserved layers). This is also the youngest dating from House I. The next youngest is from hearth A7, sample No. 4, which is related to the fact that the hearths are normally cleaned out so that one therefore obtains a dating for a late stage in its usage. Probably the age of the wood itself is significantly lower than that of the roof-supporting posts.

I venture to suggest that the maximal age of the wood used for a post is about 100 years, based on the growing conditions that apply today on Genesmon and on the post dimensions observed in House I (Tab. 4:2). Theoretically this means that the C-14 datings ought to be reduced in age by 0–100 years, depending on which part of the post was dated (on condition that old timber was not used).

If one really wants to stretch the material, one can reduce the age of the oldest values by c. 100 years and retain the youngest so that all values, using one standard deviation, include for example the year 175 A.D. Hence no direct discrepancy necessarily arises, despite the wide dispersal of the values. It is however probable that this dispersal shows something of the house’s period of usage, in that both new (replaced) and old construction elements are dated. The conclusion from the above discussion is that House I was built some time between 100 and 200 A.D. and burnt during the 4th century A.D.
Fig. 7.1. Graphic representation of C-14 datings from the settlement at Genesmon. Samples grouped for each house foundation or feature type.

The datings for House II (Fig. 7.1, Tab. 7:1) show greater concordance and, using one standard deviation, all the samples fall within the interval 415–455 A.D. Three of the four datings concern hearths, whereas the fourth (No. 8, Tab. 7:1) is from a post-hole in the S gable end of the house. The latter is not however particularly usable due to the large standard deviation.

The hearth found beneath the western trench of House II (and therefore pre-dating the building) has been dated with one standard deviation to between 235–455 A.D. (No. 11, Tab. 7:1). The probable date for the construction of the house may thereby be set in the 4th century, partly with regard to the other datings and partly on the basis that Houses I and II cannot be contemporary.
The comparatively small range of datings can probably be explained by the house either having a shorter period of usage and/or, as the datings are mainly for hearths, having a later phase more clearly marked in the datings.

With regard to the C-14 datings for Houses IV and VI, they are similar and concentrated around 400 A.D. (Fig. 7:1). The datings for House IV were mentioned above. In House VI the datings comprise partly timbers from the carbonized roof and partly the charcoal layer in the bottom of hearth C2 (nos. 15 & 16, Tab. 7:1). The datings may be regarded as being fully in agreement and, as in House IV, the period of usage may be roughly set at 300–500 A.D.

The uncertain post-hole in House IX (D25) has been dated to 225±90 (No. 13, Table 7:1). This is somewhat lower than the datings for House IV but cannot be completely separated from them. Here we mainly have to trust that the stratigraphical circumstances have been correctly interpreted.

As shown in Figure 7:1, C-14 datings have been made for six hearths, one of which has already been named (No. 11, Tab. 7:1). Of the remainder, two datings concern hearth-pits (nos. 1 & 9), two concern other hearths (nos. 2 & 22) and one concerns the most northerly "refuse pit" J1 (No. 21). Two features lying as far apart as possible were deliberately selected for dating. A distance of 160 m separates the southernmost (No. 22) from the northernmost (No. 21) dated feature and the latter exhibited the youngest value of all the prehistoric datings, namely 595±85 A.D.

Dating No. 2 (Tab. 7:1) concerns the hearth A1, which lies immediately E of House I and in line with the W wall of House VIII. The hearth is either younger than both of the houses or has an intermediate dating.

Finally there is a dating for grave 22:6 (No. 23, Tab. 7:1). In this case resin was used, which gave the value 395±90 A.D. Previous research has noted that C-14 datings of resin do not produce results that agree with the dating of artifacts (Ambrosiani 1964: 65, Ferenius 1971:82ff). Regarding the Migration Period, the average resin datings produce a figure c. 150 years earlier than the artifact datings (Ferenius 1971:84). The question is which of them is wrong, the resin or the artifact datings? A table of cross datings (C-14 datings compared with artifact datings) is prepared by Ambrosiani (Ferenius 1971:85) and only a few comments will be made here. Obviously resin can be kept for long periods and new material can be added later, which could explain that resin can reach a higher C-14 age (Ferenius 1971:83). However, this can scarcely explain the 150 years. Besides, resin belongs to a tree's youngest constituent parts and, at the time of production, it has no age to speak of.

It is further maintained in Ferenius' thesis (1971:84) that the difference between resin and artifact datings is greatest during the Migration Period. This also indicates that the artifact chronology for the Migration Period might be a significant source of error.

The C-14 datings from grave 22:6, regardless of the resin's own age, show that there is a chronological link with the settlement.

7.1.2. ARCHAEOLOGICAL DATINGS

7.1.2.1. Stratigraphical conditions

As is evident from earlier chapters, there is generally no vertical stratigraphy within the settlement area. In isolated cases such as in the relationship between Houses III and X, a direct overlapping occurs. Otherwise, however, younger houses and features seem to have been built with knowledge of where their predecessors were situated. Hence extensive overlapping has been uncommon.

The overlappings that nevertheless occur are very similar, between Houses I and II on the one hand and Houses IV and VII on the other. In the former case the younger longhouse (House II) has been placed parallel to House I so that its E trench, i.e. the weak outer wall, coincided with the W wall of House I. This situation is supported by field observations as well as by C-14 datings for both foundations. A similar relationship exists between Houses VII and IV, where the former is the older. No clear overlapping could be observed, however, in the field but several other indications point to this, in particular the clearly infilled post-holes in House VII and the constructional similarities between Houses I and VII and Houses II and IV.

Further stratigraphical conditions occur with regard to Houses VIII and I. These buildings may have been adjoining and thus contemporary, but this is contradicted by the following two circumstances (cf. Sect. 4.2.1.1.):

a) House I has burnt down, whereas House VIII has not, and
b) in the houses' common wall-section (A37c Fig. 4:8) two not exactly parallel trenches can be observed. The more dominant (irregular) of these belongs to House VIII.

The conclusion is thus that both houses represent different periods and that House I is the older of the two.
The stratigraphical conditions, therefore show that House I is older than Houses II and VIII, that Houses IV, VII and IX are not contemporary and that House X is older than House III.

7.1.2.2. Find datings

In this context, datable finds are those that can be fitted into the current archaeological artifact chronology. The detailed chronology that is eagerly sought is difficult to attain, and is mainly hampered by difficulties of determining the periods of manufacture and usage of types of artifacts (cf. Almgren 1955:70ff).

A striking, but perhaps not general, example of this is a find from Täby where a Migration Period relief brooch was found in a grave together with, among other things, oval brooches from the Viking Period (Modin 1973:56ff). In this grave there thus occurred two so-called key types of artifacts representing widely different periods. Similar, but perhaps not such extreme, examples are also found in other contexts (e.g. Selinge 1977:246).

In general there appears to be fairly close argument between the find-material and C-14 datings on the Gene site. In this case, however, it is not possible to be more precise than to assign the datable finds to the Late Roman Iron Age and the Migration Period. Among the types of finds that occur it is only the iron fibula (Fig. 4:19) that to some degree has counterpart in the older of these periods. The three bronze wrist clasps (Figs. 4:56 & 4:83), and the casting material are placed according to current chronology in the Migration Period, while the strike-a-light stone (Fig. 4:56) and both pairs of bronze tweezers (Figs. 4:18–19) are generally dated to Early Iron Age.

A certain element of modern material also appears, mainly in the form of horse-shoe nails. Among other things, Genesmon has long been a popular place for riding. Obviously forestry has been practised here throughout historic time. This too means that odd iron objects have been lost, objects which could be confused with prehistoric finds. Generally, however, this has not been the case, for the prehistoric finds exhibit clear concentrations whereas modern finds occur completely at random and on a small scale.

The earliest limit for the settlement is determined by the conditions of land uplift and corresponds in terms of time to 100/200 A.D. The time intervals for the different houses (Tab. 7:2) are based on the stratigraphical relationships and the C-14 datings are taken into consideration. Find datings are of limited use as they can only be related to a foundation in exceptional cases.

Fig. 7.2. Proposed settlement development on Genesmon c. 100–600 A.D.
Table 7.2. Combination of the dating methods for the house foundations at Genesmon.

<table>
<thead>
<tr>
<th>HOUSE NO.</th>
<th>C-14 and STRATIGRAPHY</th>
<th>FINDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>100/200 – 300/400</td>
<td>–</td>
</tr>
<tr>
<td>II</td>
<td>300/400 – 500/600</td>
<td>–</td>
</tr>
<tr>
<td>III</td>
<td>1100 – 1300</td>
<td>–</td>
</tr>
<tr>
<td>IV</td>
<td>300 – 500</td>
<td>Mig. P.</td>
</tr>
<tr>
<td>VI</td>
<td>300 – 500</td>
<td>–</td>
</tr>
<tr>
<td>VII</td>
<td>100/200 – 300</td>
<td>–</td>
</tr>
<tr>
<td>VIII</td>
<td>300/400 – 400/550</td>
<td>–</td>
</tr>
<tr>
<td>IX</td>
<td>100 – 300</td>
<td>–</td>
</tr>
<tr>
<td>X</td>
<td>older than 1200</td>
<td>–</td>
</tr>
</tbody>
</table>

The table suggests that House I coexisted with first House IX and later House VII. This is also indicated by constructional similarities, in particular the single walls. Therefore Houses II, IV, VI, and VIII appear to have been and probably were used simultaneously, at some time during the period of settlement. With the exception of House VI, the wall construction of which is uncertain, all the houses had the double wall construction in common. With its special function House VI may have had another structure, e.g. single walls, but even so it may belong to a later phase. According to the existent wall sections the remains encountered from House X ought also to belong to a later phase but, as this material is very fragmentary, the question must remain open (Fig. 7:2).

Apart from the possibility that more foundations can in theory be encountered within the study area, the conclusion should stand that a relatively vigorous expansion of the farm took place during the Migration Period and, among other things, coincided with a widening of craft activities.

7.2. THE CONNECTION BETWEEN THE DIFFERENT FEATURES

7.2.1. THE ARCHAEOLOGICAL CONTEMPORANEITY

One recurring problem with archaeological datings is the question of the contemporaneity between dated objects. The C-14 datings that are found for the Iron Age often have a standard deviation of ±100 years. In order to attain a 95% probability (two standard deviations) the deviation is doubled. This means that two C-14 dated objects that were given identical datings, e.g. 400±100 A.D., could in the one case have been in use 200 A.D. and in the other 600 A.D., i.e. non-contemporary. In an archaeological interpretation the objects would be contemporaneous if no spectacular circumstances were in direct contradiction.

How then do we know that the foundations on Genesmon did not successively replace each other, one by one? Purely theoretically we cannot be certain, as the available values for each foundation (Tab. 7:1) could be used in many interpretations. In addition, the field observations only pointed out which houses could not have been contemporaneous and in principle gave no information on which ones might possibly have been contemporaneous. In order to get at the problem of the houses' possible contemporaneity, a succession of logical arguments is therefore produced so as to explain the position of the foundations in a satisfactory way.

That the houses should have successively replaced one another is contradicted by the fact that different types of house can be distinguished; on the one hand very long houses and on the other houses that are significantly smaller. Logically it is difficult to explain that house requirements should have varied so greatly during the period. If one recognizes that several houses existed at the same time, then a general farm structure can in fact be observed.

The farm structure in the older case is based on the larger House I and the smaller House VII and in the later case on their counterparts, namely Houses II and IV. The grouping is supported by the fact that the respective houses in each structure have similar constructions while the two temporal horizons are not in complete accordance. A new type of wall construction has been introduced and applied to the newly built houses.

7.2.2. PROBLEMS OF CONTINUITY

The settlement on Genesmon represents a period of totally c. 1000 years. Has this site been continuously occupied during all this time? No, everything points to the fact that the Medieval Period house has no connections with those of the Early Iron Age. This is evident from, for example, Figure 7:1 where this late dating stands completely isolated at the same time as settlement from the intervening period, the Late Iron Age, is totally missing on Genesmon, but present in Gene village, 1 km north of the site (Sect. 3.4.2.).

Has the site been continuously occupied during the Early Iron Age? The answer to this question is connected with what was said above, about the diffi-
The location on the beach ridge west of the settlement, out towards open water and behind the houses in relation to the arable land, is the only exposed place where new building has to be carried out for one or another reason the new house is not placed directly over, for example, a burnt house if it can possibly be avoided. Such a procedure is probably both complicated and labour-demanding.

7.2.3. THE RELATIONSHIP BETWEEN DWELLINGS AND GRAVES

By means of the C-14 dating and the finds made in three of the graves it has been shown that there is a chronological agreement between houses and graves. The location on the beach ridge west of the settlement, out towards open water and behind the houses in relation to the arable land, is the only exposed place near the settlement. This location has a communicative function, which is also the case to an even higher degree for the three smaller mounds 10–12 (Fig. 3:1) south of the settlement. However, because of their relatively small dimensions these burial mounds have never constituted a significant signal.

The intimate connection between house and grave, dwellings for the living and the dead, is quite obvious. The three small graves south of the settlement constitute something of an anomaly, the explanation of which may be sought along three lines:

a) settlement also exists close by,
b) these graves are an expression of social differentiation on the farm,
c) these graves belong to the Late Iron Age and not to the hitherto encountered settlement.

The first two explanations can be linked if subordinated individuals had both their houses and their graves on this place. Since there is no observable lack of space in the cemetery, which could accommodate several times as many mounds, reasons of space cannot therefore have led to the placing of the graves 10–12.

None of the three graves has been excavated and they have, at some unknown date, been subjected to extensive damage. This has involved the exposure of stone material from the mounds’ construction. The presence of stone, and that the three graves lie so well-exposed on the 18 m beach ridge, can be interpreted as signifying that they belong to the Early Iron Age. A further supporting argument is that the nearest house (VI) has not been damaged at all since the 5th and 6th centuries A.D. If a later settlement had existed nearby, it would be strange if this had not left its mark on this area. One suggested explanation for the rather peripheral site of the three graves might then be that they are an expression of social difference. Individuals belonging to this social stratum are “worthy of burial” but may represent, for example, a subordinate family living on the farm or a separate occupational group.

The social stratification does not need to be vertical, i.e. based on different status, but it can also be horizontal, i.e. grouping of individuals according to their special occupation or skill (of course status could be involved in horizontal stratification). An example of such a horizontal stratification could concern individuals working with forging or casting. It has been suggested earlier (Chap. 6.5.) that these activities had not developed into specialist occupations during the Migration Period. A certain degree of specialization and social roles was, however, probably connected with these activities. Since the smithy, for example, was located a bit outside the rest of the buildings on the farm, one idea could be that the graves of the individuals usually engaged in forging were also placed a bit from the other graves.

In these cases where studies have been possible in central Norrland, there is a very close relationship between settlement and graves. This is easiest to study where the remains of habitation are in the form of terraces (e.g. Selinge 1977:335, Fig. 73; Liedgren 1981:47ff & 1983). An interesting observation in this
context is the fact that farms are not only indicated by cemeteries but also by single graves (Liedgren 1981:53, Fig. 6). The consequences are, firstly, that interpretations in settlement archaeology cannot ignore the occurrence of single graves and, secondly, that the number of graves is not directly related to the size of the population but rather that each burial location represents a farm.

That the number of people worthy of burial does not correspond to the actual population has previously been established for virtually the whole of Norden (e.g. Hagen 1953:116, Welinder 1973:65, Selinge 1977:346). The other conclusion that a location comprising only one grave corresponds to a single farm has not, as far as I know, been the subject of much discussion.

Since secondary graves, double graves or graves under flat ground have not been found, neither in the cemetery nor elsewhere on the site, the visible number of graves seems to be a correct measure of the number of individuals buried. During the c. 400 years that the farm was inhabited only 12 persons have been buried, which means that on average one person has been buried each 30th year, i.e. approximately one burial per generation.

7.2.4. THE RELATIONSHIP BETWEEN HEARTHS AND HOUSES

Within and in association with the foundations, some 40 hearths have been found (Fig. 4.2). Of these c. 15 have served as indoor hearths. The large hearths in the living quarters of the long-houses differ markedly from the rest (both indoor and outdoor hearths) by virtue of their rich and disturbed contents. The other hearths are superficially similar, often with an intact charcoal layer within or most often on, which fire-cracked stones occur. As a rule, scattered burnt bones of animals also appear in the hearths.

To these slightly more than 40 hearths must be added a similar number of hearths pits, i.e. hearths visible in the surface of the ground (cf. Fig. 3:1). These always lie outside the houses and their greatest concentration occurs immediately west of House VI. Within the sample squares and searching trenches (Fig. 4:1) a further 10 or more hearths have appeared, which were not visible on the surface or related to any foundation known at present. As seen just now, the total picture of the distribution of hearths, suggests a certain connection between house and hearth, but perhaps quite a large number of them are in fact located at some distance from the nearest house. One can note also, that there is a tendency for these hearths to appear in pairs or in small complexes (cf. Fig. 4:2).

Regarding the hearth pits, their concentration in association with House VI implies a functional connection between the house and the hearths. Thus they ought primarily to have resulted from the forging that took place in House VI, an activity which distinguished this house from the others. Slag, burnt clay and burnt bones, together with a few iron finds (cf. Figs. 4:68–69) were found in and around one of the hearth pits (H2), nearest to the activity area south of House VI. This shows that at least some of these hearth pits were used in the direct working of iron. One necessary and important product for smith-work is charcoal, which must have been made locally. From both historic and prehistoric times it is known that the production of charcoal took place in pits (e.g. Hagen 1953:108ff, Thålin-Bergman 1979:107f). It is therefore probable that a number of the hearth pits that lacked finds were used for this purpose. The low phosphate content may be seen as weak support for this surmise (Fig. 4:82).

7.3. RELOCATION OF THE SETTLEMENT

One apparently very typical situation has been established on the Gene site, namely that the settlement has been moved with the transition to the Late Iron Age, i.e. at some time during the 7th century A.D. Such a relocation has been suggested by a number of investigations by settlement archaeologists and human geographers (e.g. Ambrosiani 1964:210; Myhre 1972:126, 1980:138f; Sporrong 1971:197; Carlsson 1979:157).

That a change in the cultural landscape takes place with the transition to the Late Iron Age is evident from a number of pollen diagrams (Königsson 1968:142f; Welinder 1975:69; Vorren 1975:179, Fig. 3, 1976:17f; Engelmark 1982:161, Fig. 2). In all these diagrams it has been observed that the open portion of the landscape decreased during parts of the Late Iron Age. In some cases, as in a hitherto unpublished diagram from Hög parish in Hälsingland, the cultural landscape is totally overgrown during the transition to the Late Iron Age (Engelmark, pers. comm.).

Signs of a similar tendency also appear with regard to construction technique; on Öland—Gotland the so-called Kämpagravshusen decline markedly in numbers at about that time (Stenberger 1964:631), similarly in
lies in the fact that the farms’ infields increased in size and that the settlement is relocated simultaneously in places as far apart as Öland/Gotland, the Mälar Valley, SW and N Norway and Norrland? No, hardly. We have to make up our minds about two important but unreliable sources; namely the datings on the one hand of the settlement units and on the other of the pollen diagrams. Frequently the basis of the dating is founded on C-14 analysis with regard to both settlement and pollen samples. But, just as often, individual farms are dated by means of finds in dwellings or in graves, and unexcavated units are sometimes dated from the criteria of grave morphology.

Without going deeper into these problems, I can only take up an attitude of scepticism towards the idea that the great synchronization of datings that can be observed actually corresponds to reality. This problem appears again with regard to archaeological contemporaneity (Sect. 7.1.3.).

In this context the artifact datings for the periods in question are exceedingly important. A number of authors have also taken up a critical attitude towards the traditional chronology of, for example, artifacts that are normally attributed to the Migration Period. Thus Magnus (1975:109), for example, wants to assign a number of finds considerably further back in time than was previously proposed. A.B. Johansen (1979:35) also shows that scholars have reasoned in a circle with regard to datings of groups of objects from this period. In my opinion the evolutionistic viewpoint that has completely characterized the formation of the artifact chronologies (i.e. that after a certain time one morphological element is transformed into another) is in principle a misleading point of departure. A systematic study of various form elements would probably show that many of the forms of prehistoric objects at present separated in time in fact existed side by side.

This suspicion that ”Migration Period” finds, for example, occur both in the Roman and Merovingian Periods leads also to wider limits for the dating of the settlement change. Regarding the pollen diagrams, it cannot be denied that a decline in the intensity of
cultivation actually happened in the above-mentioned regions. But the question is then whether these two changes took place simultaneously. Most of the pollen diagrams build on C-14 datings and on pollen samples taken in basins with unknown rates of sedimentation. The rate or course of this sedimentation is found by means of interpolations between the points dated by C-14. Accordingly, a rather uncertain dating of the intermediate points is obtained. Psychologically it is also possible that pollen-curve variations are adjusted to one another, more or less unconsciously, and that in this way certain increases or decreases are amplified.

Through these partly unsupported doubts, I have tried to show that possibilities may have existed for a non-synchronous change of the settlement within the above-mentioned regions. This does not however mean that changes have not taken place within a relatively short period. The difference in the rate of change, whether it took place simultaneously over the whole region or over a longer time and on different occasions, simply entails that different types of explanation must be employed.

Consequently, the settlement development in Gene must be seen in the light of a commonly observed settlement change. As evident from earlier chapters the latest settlement-related C-14 dating is 595±85 A.D. (Tab. 7:1, sample 21). The most recent dating in any of the houses is sample 14 in House II, which was 515±90 A.D. (Tab. 7:1). Provided that there is no Late Iron Age settlement on Genesmon, these datings agree very well with the results of previous research on settlement development.

In this context the graves 1 km north of Genesmon could be mentioned (Sect. 3.4.2.), one of which yielded Viking Period finds. Although no datings occur from the Merovingian Period, I nevertheless regard these graves as the direct continuation of the settlement on Genesmon. These graves lie inside the present village of Gene, which was first named in sources from the 16th century. The recently discovered mound in Vågsnäs can be seen as an indication that the Genesmon settlement was split up into two farm holdings during the Migration Period. Both Gene village and Vågsnäs are located exactly 1 km from the site on Genesmon (Fig. 3:15), something
that can give information on the size of the intensive part of the site's catchment area if the hypothesis is correct.

It is difficult to determine the context of the 13th century house. But, as no related settlement is found in the area and farming was probably carried out from this house during the 13th century, the explanations can possibly be sought in a transhumance system or for example in some sort of tenant system, in which the tenant belongs to Gene village but lives in a peripheral location. According to this hypothesis, the settlement development in Gene ought therefore to resemble Figure 7.3.

7.4. ON EXPLANATIONS FOR THE RELOCATION OF THE SETTLEMENT

In Section 6.2.2. it has been shown that the causes of the relocation of the settlement ought not to be sought in the development of stock-raising and the same can also be said regarding agriculture. The fast land uplift in this region and the accompanying exposure of meadowland in particular (but also, in the long run, of cultivable land), relatively near to the settlement must be regarded as a favourable factor for a continued or intensified agrarian economy. As shown in Chapter 3.6., the area of fine-grained soils more than doubled within 500 metres of the settlement when the shore-line fell from the 20 to 15 m contours. To clarify the picture, the conditions above the 10 m contour are included here (Tab. 7.3).

Table 7.3. Land gains during the first millennium A.D. within 500 m of the settlement. Cf. Tab. 3.9.

<table>
<thead>
<tr>
<th>Land area over</th>
<th>Fine-grained soils (ha)</th>
<th>Coarse-grained soils (ha)</th>
<th>Sea (ha)</th>
<th>Lake (ha)</th>
<th>Total (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 m.a.s.l.</td>
<td>11</td>
<td>13</td>
<td>55</td>
<td>-</td>
<td>79</td>
</tr>
<tr>
<td>15 m.a.s.l.</td>
<td>24</td>
<td>20</td>
<td>35</td>
<td>-</td>
<td>79</td>
</tr>
<tr>
<td>10 m.a.s.l.</td>
<td>34</td>
<td>30</td>
<td>13</td>
<td>2</td>
<td>79</td>
</tr>
</tbody>
</table>

This succession of territorial gains can illustrate the favourable conditions experienced by stock-raising and agriculture on Genesmon during the whole of the first millennium. Again it should be noted that the figures are approximate and that the actual land utilization was not in any way tied to the 500 m radius.

One factor that must also be taken into account is that the valley east of the site was probably water-filled at the time of the founding of the settlement, thus uniting the present Vägefjärden/Bäckfjärden with the mouth of the river Moälven to the north (Fig. 3.21). The very narrow channel existing at that time must have dried up relatively soon after the founding of the settlement, seeing that the highest point in the valley bottom now lies at 17–18 m above sea level. Thus direct boat traffic was impeded northwards from the settlement to the river Moälven. On the other hand contact with the sea and archipelago was not lost in any way, so that the opportunities for seal-hunting and fishing were probably unaltered. That seal-hunting was also of importance during the later stage is evident from the bone material in the youngest of the features, J1 (Tab. 4.27). From the point of view of communications, however, the change must be seen to be of negative but unknown significance.

On the basis of the data presented here, it is not possible to give any valid local explanation as to why the Gene settlement was relocated during the transition to the Late Iron Age. Again, it should be pointed out that the move was not caused by any extensive fire or suchlike on the site. The youngest dwelling, House II, has not been burnt but was deliberately abandoned. On the other hand the two smaller houses (IV and VI) were burnt, but this alone cannot be taken as an explanation. Bearing in mind what was said at the start of this chapter, the change in the settlement must probably be viewed in a wider context. It is not possible to find local factors for every farm in this large area that could result in a settlement change taking place within perhaps a 200-year period.

During the Early Iron Age at least, northern Ångermanland participates in an inter-regional complex where for example certain types of artifacts link together different regions, directly or indirectly. We can only speculate about what these artifacts in fact unite and which types of relationships hold the regions together. But that the Mälar Valley, central Norrland, as well as southern, central and northern Norway, all have similar economic and social structures is evident from the material remains and their similarities, and that the changes in one region also could be observed in the other regions.

7.5. SUMMARY

Regarding the dating of the settlement, four types of dating have been employed. Firstly, the land uplift conditions have given the settlement its earliest
possible dating of c. 100/200 A.D. Secondly, a total of 24 C-14 samples have been analysed (Tab. 7:1), 22 of which relate to the prehistoric settlement and which range between 10±75 B.C. and 595±85 A.D. These datings were carried out on charcoal from hearths, charcoal and birch bark from post-holes and in one case from a resin-caulking. The charcoal-dated posts are a little too old as it is the original material (the wood itself) that is dated. Thirdly, in certain cases the stratigraphical relationship shows those houses and features that cannot have been contemporaneous. Fourthly, a small number of datable finds occur in and close to the foundations.

If these dating possibilities are combined, we find that Houses I and IX are the oldest, after which House IX is replaced by House VII and perhaps accompanied by House X. Houses I and VII are later replaced by their younger counterparts, Houses II and IV, and in addition Houses VIII and VI (Fig. 7:2).

This chapter also appraises the archaeological contemporaneity and the relation between the various features. Among other things, the way the later houses are situated suggests that they were build with knowledge of where the earlier ones had stood. This is interpreted as a sign of direct continuity. In addition, in both the early and late stages, the same fundamental farm structure is found, based on one large and one small house placed parallel and about 15 metres apart. The wall constructions are also changed uniformly and in the early stage the walls are single and several variations occur in the same house. In the later houses the walls are double and more uniformly constructed. These circumstances point unequivocally to the fact that the site was continuously occupied for c. 400 years (100/200—500/600 A.D.).

An intimate relationship exists between graves and settlement and during the settlement period only 12 individuals have been buried on the site. No secondary or flat-ground burials have in fact been encountered. This means that about one burial took place per generation. The three smaller and separately-placed graves c. 70 m south of the cemetery, have been interpreted as an expression of vertical or horizontal social stratification. No practical reasons and, for example, no adjacent settlement can at present explain the location of these graves.

A model is proposed for the settlement development in Gene (Fig. 7:3). With the transition to the Late Iron Age around 500/600 A.D. the farm was split into two units and both move exactly 1 km from their place of origin. One moved north to the present village of Gene and the mouth of the river Moälven, and the other south-east to the village of Vägnsäss.

In order to throw light upon the reasons for the relocation of the settlement, the situation is compared with other Scandinavian regions. In most cases, using archaeological and pollen-analytical material, a settlement change has been demonstrated together with a regression in the cultural landscape, in association with the transition to the Late Iron Age, i.e. "simultaneously" with the division of the Gene farmstead. This applies, for example, to N and SW Norway, Öland/Gotland, Östergötland and the Mälar Valley, together with coastal Norrland. In such a broad perspective it is impossible to seek local explanations for the development of one individual farm. Instead, even though the changes in Scandinavia took place over a couple of centuries, these circumstances show that very intimate, direct and/or indirect connections exist within this huge region. The explanations should be sought in the socio-economic and political organization of society and in the inter-regional structure.
8. THE ORIGIN OF THE SEDENTARY SETTLEMENT;
A DISCUSSION

8.1. INTRODUCTION

It is clear that the new type of settlement that can be seen to appear at the beginning of our calendar also involved a change in the mode of production. At this time too, a similar change in building techniques can be observed for the greater part of Scandinavia. These new techniques may be characterized by house constructions of a considerably more stable nature, surrounded in many places by observable permanent crop growing and husbandry features such as enclosed fields, paths or live stock, etc. (Lindquist 1974; Carlsson 1979; Widgren 1983; Myhre 1972, 1980, 1982; Johansen 1979; Hvass 1982). The farming units found during these periods are similar in form, but appear for example in Jutland in the form of villages, i.e. several farm units situated close together (cf. Hvass 1979) or as on Gotland and in Östergötland as scattered but functionally united farms (e.g. Lindquist 1974, Widgren 1983) or, finally, as in Norway and central Norrland in the form of isolated farms with no visible connection with other farms (e.g. Myhre 1980, Selinge 1977).

This difference in the degree of agglomeration of the farms may be governed primarily by regional considerations with regard to conducting agriculture on a more intensive basis and the level of population. Agricultural conditions are, of course, quite different in e.g. Denmark and Norrland, while the similarities between coastal Norrland and Norway are more apparent. Isolated farms may for example also occur in good agricultural regions, and vice versa. But in general, the degree of agglomeration of settlements is governed by the conditions for conducting this most important activity.

Based on the results of a number of recent investigations, the type of settlement which is referred to in this thesis as sedentary may be characterized by a farming system with annually cropped permanent fields (Swed. ensädesbruk) based on the consistent use of manure (cf. Lindquist 1974, Carlsson 1979, Myhre 1980, Widgren 1983, and the results from Gene, Chap. 6). This farming system may constitute a different proportion of the total production on a farm, and in the case of Gene it is suggested that about 60 % of the energy needs of the population came from agriculture and husbandry (Chap. 6:4). On the other hand, Widgren (1983:79), dealing with Östergötland, has calculated that approximately 93 % of the energy needs of the population were taken from agriculture and husbandry. Despite the differences in these calculations, the agricultural system as such was probably the same, playing in both cases a vital part in determining the nature of the settlement.

One of the conditions for the appearance of sedentary settlement was probably utilization of manure. This is probably most apparent in a case such as Gene, where the settlement was located in the same place for about four centuries, apparently with the same type of resource utilization for the entire period. The soils there are of such a quality that it would not allow of intensive use for such a long period of time without any kind of fertilizer. In addition to the botanical indications of manuring, there is thus also an obvious logic in the fact that fertilizers were consistently used in agriculture. Even though permanent fields existed, it is possible and even highly probable that the usually sown fields were allowed to fallow and that adjacent fields were sown. However, such a rotation does not lead to a moving of a settlement, since the fields are always situated close by.

In pre-sedentary farming systems, which do not use fertilizer, there is no return to areas which were earlier cultivated before a fallow period consisting of a considerable time period makes further sowing possible. For this reason, the settlement is also mobile.

The coast of Norrland has provided no trace of pre-sedentary (including possible semi-sedentary) house foundations or other dwelling constructions. Practically the same is true of SW Norway (Myhre 1980:473), although some foundations have been found on dwelling sites (e.g. Gjessing 1943; Skjolsvold 1970, 1970a) which show that rectangular houses have been used since the Middle Neolithic Period. In Norway, there has been no clear case of a three-aisled long-house dating from the time before the Roman Iron Age, the first houses of this type appearing in the so-called ring-shaped yards which can go as far back as the Pre-Roman Iron Age, but primarily they belong to the Roman Iron Age (Johansen & Sobstad 1978).
No recent survey of Swedish prehistoric houses exists, but according to my knowledge the same conditions apply as in southern Norway. Even if three-aisled long-houses existed before the Roman Iron Age, they are not particularly common or characteristic for the period before the beginning of our calendar (cf. e.g. Hyenstrand 1968, 1976; Jaanusson 1981:15ff). However, this is a claim that can be made of the following centuries when the three-aisled long-house dominates house construction completely. Probably, Myhre’s claim (1980:474) concerning the almost parallel development of building activities in Denmark (cf. Hvass 1982) and southern Norway from the middle of the Roman Iron Age is also true for a considerably larger area, covering the greater part of Scandinavia up to the Tromsø area of northern Norway (e.g. Storm-Munch 1965, Johansen 1979) and along the coast of Norrland up to and including northern Ångermanland.

This striking similarity and contemporaneity in building changes during the Roman Iron Age, covering so large and heterogenous an area, requires an explanation over and above the local and regional contexts. As I see it, it is more or less out of the question that a comprehensive wave of colonization emanated from the central areas of the respective regions northwards, even if this type of explanation would have been the most usual for earlier and contemporary scholars (e.g. Hallström 1942, Slomann 1950, Åberg 1953, Stenberger 1964, Sjøvold 1973, Selinge 1977). On the other hand, it is quite clear that there was a highly developed degree of communication, direct or indirect, between the different regions, regardless of how the establishment of sedentary settlement came about.

Although the long-houses in the different areas are not exactly the same it is clear that they were built using the same governing idea or building principle. The most striking example of this is in my view the general similarity between the houses in such different places as Gene and Vorbasse.

8.2. IMMIGRATION OR INTERNAL DEVELOPMENT UNDER INFLUENCE?

This question can be approached in many ways. Arguments can be raised for or against immigration, and for or against internal development. It is possible to test hypotheses to show that this or that explanation is more relevant etc. However, a hypothetical-deductive test will not be carried out here because I believe this to be an unsuitable method of working when the question is as complicated as this one. The hypothetical-deductive method is most appropriate for approaching questions which are less complicated in which the relevance of the test implications are more easy to control. Since earlier research has almost unanimously claimed that the coast of Norrland was colonized from the south (Målar Valley/Gotland) during the Roman Iron Age, I will first of all limit my work to producing arguments which, in my view, contradict such colonization or immigration.

However, before tackling conditions in Norrland, a short summary is presented of the results by previous research concerning the appearance of sedentary settlement in northern Norway and Österbotten, Finland. This was motivated, at least in the case of northern Norway, by the apparent fact that settlements from Roman Iron Age seem to appear as suddenly as those in Norrland and, in addition they have a similar appearance.

8.2.1. THE APPEARANCE OF SEDENTARY SETTLEMENTS IN NORTHERN NORWAY

Even if different theories have been put forward concerning the origin of the Roman Iron Age settlement in Northern Norway, the most dominating theory has been that it was established as a result of immigration from SW Norway. A summary of such arguments has been made by Sjøvold (1973). Based on more or less the same material, others, e.g. Rolfsen (1973), have argued for a domestic continuity in Northern Norway. This is very characteristic for this problem, namely that the same data can be used as an argument for both theories.

Together with a number of excavations (e.g. Storm-Munch 1965, Johansen 1979) a quite new type of data has been produced during the latest decade in the form of pollen-diagrams from known settlements (Vorren 1975, 1976). A pollen-diagram from a farm at Bakkan av Bø on Andøya, Västerålen (cf. Fig. 2:1) shows that cultivation existed continuously on the site from 410±110 B.C. and that sporadic cultivation occurred from 1120±80 B.C. (Vorren 1975:179, Johansen 1979:105).

From the settlement in Bostad, Vestvågøy, Lofoten (cf. Fig. 2:1) a pollen-diagram shows that there had been continuous cultivation from about 5th century B.C. (Johansen 1982:62) and on Moland,
Vestvågøy (Johansen 1979:101f), sporadic cultivation was shown between 900 B.C. and 200 A.D. when the continuous cultivation began (Johansen 1982:62).

In addition to these indications from pollen-analysis, demonstrating a local continuity in the resource utilization, there are also recent finds of Pre-Roman Iron Age pits and hearths, e.g. from the farms mentioned above, Bestad, Moland and in Hofsoy (Johansen 1979:113). Despite the fact that several of these farms have older settlement layers and the pollen-diagrams show continuity from about 400 B.C. (Bakkan av Be), no house remains from these older periods have been found.

In Trøndelag, an area which was not considered to have been colonized from the south during the Roman Iron Age (Sjovold 1973:260), a number of features from the Pre-Roman Iron Age have recently been found (Farbregd 1972, 1980; Marstrander 1977; Wik 1982). In addition, a ring-shaped yard has been found in Trøndelag (Farbregd 1980:57ff). These were earlier known only in Rogaland and N Norway and constituted an important argument for the immigration hypothesis (Sjovold 1973:261).

These new observations give support to the hypothesis of a local agricultural continuity in the area of Trøndelag and Northern Norway during the whole of the Iron Age. No depopulation, for example during the Pre-Roman Iron Age, occurred. The few remains that nevertheless exist from, for example, in Trøndelag’s Pre-Roman Iron Age can probably be explained as manifestations of a lack of ability to distinguish the simple features that are in question here.

Level-ground graves are also represented in a number of burial sites from the Roman Iron Age, and these may date back to the Early Bronze Age or the Pre-Roman tradition (Marstrander 1977:105).

Concrete attempts have been made, for example in the case of Inn-Trøndelag, to establish a link between the buildings of the Bronze Age and those of the Early Iron Age (Marstrander 1977:106ff) in order to illustrate the continuity of settlement. The evidence is, however, rather thin, although there are indications of activity which are difficult to explain as the results of temporary visits or the like.

In Northern Norway, the same applies, although the archaeological material is even less clear, but the pollen-diagrams which are available make this even clearer. Thus there is much in the recent finds from the Norwegian coast that suggests that there was a continuous settlement there during the entire Iron Age, and that this took on a sedentary form during the Early Roman Iron Age and grew in size during subsequent centuries.

The question is whether conditions in SW Norway can be described in the same way, albeit with a greater frequency. If this is the case, then the similarities between these Norwegian areas could only be explained by the existence of inter-regional contacts in the form of exchange activities on various social levels.

8.2.2. THE ESTABLISHMENT OF SEDENTARY SETTLEMENTS IN ÖSTERBOTTEN

There is only one excavation of Iron Age houses mentioned from Österbotten (Meinander 1977:31, Valonen 1977). This foundation in Gulldynt is uncertain in the question of dating and also with regard to construction (cf. Valonen 1977). In addition to the excavation in Gulldynt, a couple of uncertain foundations are reported in Lägged (Meinander 1977:29).

Despite the intensive field inventories of recent years, foundations have not been found to the same extent as, for example, in Medelpad or Hälsingland. This must either depend on shortcomings in surveying or, which is more likely, on another building technique in this region. The buildings must have been built in such a way that they leave little or no visible remains. Foundations of the type found on Åland (e.g. Hackman 1940, Kivikoski 1946), and which otherwise are linked to the building remains of central Sweden, have not been reported from Österbotten.

In general, Kivikoski (1967) and Salo (1968) regard the settlement from the Roman Iron Age in Österbotten as the result of two phenomena: domestic continuity and Baltic colonization. Kivikoski concentrates primarily on the finds, and notes a few Scandinavian elements from the Early Roman Iron Age (1967:124). Salo’s main interest is in the form and type of the graves, and he notes that Southern Österbotten has tarand-like graves, which together with the finds would indicate Baltic colonization (1968:230, Fig. 116). He also notes that cremation burials constitute a domestic tradition from the Bronze Age (1968:190).

In the question of continuity, Meinander has also put forward opinions on different occasions (e.g. 1969, 1977). In the former work, he puts forth the view that the so-called Morby-pottery, which occurs along the Finnish coast from Esbo in the south to Southern Österbotten in the north, dates from the Pre-Roman Iron Age, probably from the entire period (1969:67).

In the latter of Meinander’s works, he points to other indications which illustrate a continuity be-
between the Bronze and Iron Ages. Among other things, he mentions that the round cairn, which totally dominate the Iron Age graves, must be linked to the Bronze Age cairn (1977:23). On the other hand, it is not possible to identify cairn groups on a corresponding level to the Pre-Roman Iron Age, i.e. 20–25 m a.s.l.

This is well illustrated by Siiriäinen's (1978) level analyses of cairns on the coast of central Österbotten. In the southernmost of his two investigated areas, the cairns are clearly concentrated to two levels: 30–45 m a.s.l. and 15–20 m a.s.l. (1978:18). If the cairns originally lay close to the shoreline, these intervals generally represent the Bronze Age on the one hand and the Roman Iron Age and Migration Period on the other. At the level of the critical border between the Bronze and Iron Ages, when practically all the cairns over 30–35 m a.s.l. were built, and another during the Roman Iron Age and the Migration Period, when all the cairns between 15 and 30 m a.s.l. were built (1978:19). Despite this, he believes that there is a continuity in settlement between the Bronze and Iron Ages in the Österbotten coastal area (1978:23).

Meinander mentions a cairn type that is just a few metres in cross-section, low and without structural details as a linking group of remains between the two periods (1977:23). Such features, which can also contain a square frame of flat stones in the centre, are found in a series along the east coast of the Bay of Bothnia. Often, these graves contain some simple iron artifact, a knife, an axe, a spearhead, or sometimes a simple ring of bronze. In Lappfjärd in Southern Österbotten, there are similar stone-settings containing Morby pottery. Some of these graves have contained finds from the fourth century A.D., but Meinander claims that it is just these graves that are responsible for the transfer of the traditions of the Bronze Age to those of the Iron Age (1977:24).

Meinander's conclusion is that there is a group from the Pre-Roman Iron Age characterized by the Morby pottery, and cairn-like stone-settings which differ from the Bronze Age and the subsequent Iron Age cairn. In fact, there is a contradiction in this line of reasoning, since both Meinander and Siiriäinen have also claimed that the similarity between the grave types is an indication of continuity between the periods in question.

Several pollen-diagrams show that there was cultivation in SW Finland during the Pre-Roman Iron Age (Tolonen et al. 1979:55). Studies have also been made of a bog lying 17.5 m a.s.l. in Vörä in S Österbotten (1979:49ff). Within a distance of 1–2 km from the sampling site there are a number of Iron Age remains dating from 200–700 A.D. Unfortunately, these pollen-diagrams do not reflect the period prior to the Roman Iron Age. However, there is a high degree of agreement between the archaeological and the radiocarbon datings. The existence of Cerealia and other cultural species gives the date c. 300–600/700 A.D. (Tolonen et al. 1979:51).

Despite the lack of direct evidence of cultivation and husbandry during the pre-sedentary period in S Österbotten's coastal area, there is still reason to suppose that both cultivation and husbandry did exist. In addition to the established Pre-Roman Iron Age cultivation and clearing activities in SW Finland (Tolonen et al. 1979:55) which can be linked to the activities of the Morby population (cf. Meinander 1969:61ff), there is evidence of Cerealia cultivation as far north as the Torne Valley from 2500 B.C. From 1600–400 B.C. there are also signs of human activity on the culture landscape in the entire coastal area of N Österbotten (Sundström et al. 1981:268).

Although the indications are not strong, it is possible that S Österbotten could show the same main tendencies concerning settlement development as central Norrland, i.e. that sedentary settlement appears during the first century A.D. and that a restructuring of the settlement takes place at about the same time as the change to the Late Iron Age. It should be pointed out here, however, that the grave types in Österbotten, for example, and those in central Norrland are quite different. In the former area, earth-free cairns or stone-settings dominate, while the latter area has predominantly mounds with or without central cairns, or stone-settings mixed with earth. S Österbotten has much in common with the coastal areas of Västerbotten and Norrbotten when it comes to grave types (cf. Broadbent 1982:148).

It is clear from the available find material (e.g. Åberg 1953:77, Fig. 96; Erä-Äsko 1965; Holmqvist 1972) that S Österbotten was involved in inter-regional contacts during the Migration Period. This shows that sedentary settlement is an established phenomenon in the area. However, in light of the lack of conclusive indications in the form of building remains and adequate pollen-diagrams, the question of the establishment and development of sedentary settlement must be left open for the time being. However, the above-mentioned archaeologists are united in the belief that the buildings in S Österbotten are at least partly the result of domestic continuity between the Bronze and Iron Ages.
8.2.3. THE ESTABLISHMENT OF SEDENTARY SETTLEMENTS IN CENTRAL NORRLAND

8.2.3.1. Previous research

The previous research in this area can be summarized as follows: settlements from the Roman Age are the result of immigration/colonisation from the south. This view has a century-old tradition (e.g. Hildebrand 1869; Hallström 1926, 1942; Slomann 1950; Åberg 1953; Stenberger 1964; Seling 1977). It should be remembered that this research does not claim that Ångermanland was colonized during the Roman Age, what is meant here is primarily the areas of Hälsingland and Medelpad. Sedentary settlement in Ångermanland was considered—until the Gene investigation—to have begun during the Migration Period in the area around the river Ångermanälven (Seling 1977: 241ff) and during the Viking Period in N Ångermanland (Baudou 1968:150, Seling 1977:358). The Gene-investigation has thus showed that there are probably shortcomings in the accepted colonization model and that the entire area up to and including N Ångermanland must be included in the discussion of the establishment of sedentary settlements.

One exception to the rather unanimous concept of the sedentary settlement's provenance is that of Baudou in one of his recent articles (1977a). Here, he points out a number of clear differences between conditions in Hälsingland and those in Uppland. These differences are concerned with grave types and the appearance of the burial grounds. Large mounds (often more than 20 metres in diameter) occur in Hälsingland during the Roman Iron Age, but this is not the case in Uppland during the same period. Baudou continues (1977a:20):

Mounds of such dimensions... are generally found in developed societies which are able to co-ordinate their resources in order to produce such constructions. It would be surprising if these mounds came from a period just at the beginning of a period of development in a newly-colonized area. Neither does this appear to be the case. (Translated by John Hall.)

In support of this view, a pollen-diagram from Trogsta is cited. Here indications of cultivation occur from the period of transfer from sub-boreal to sub-atlantic, i.e. around 500 B.C. This pollen-diagram has been produced by Roger Engelmark but not published. It has, however, been reviewed in a seminar paper (Isaksson et al. 1977). These indications show that the imported Roman finds which, for example, were found in a couple of large mounds, are borne by an agrarian society that was established over a period of 400–500 years (Baudou 1977a:20).

Some of the arguments for immigration shall be considered. Slomann (1950:54) says that Roman Iron Age settlement on Gotland and in Uppland was large and rich enough for an expansion to be possible. Some of the Norrlandic artifacts, she argues, like the drinking-horn from Attmar, Medelpad, and composite, handled combs, point directly towards Gotland. It should be said, however, that the similarity of artifacts between e.g. Medelpad and Gotland, is in no way exclusive. The artifacts mentioned by Slomann are of a rather inter-Nordic character. It would be quite different if the two regions in question had identical types of artifacts and at the same time different types from surrounding regions. One of the reasons Slomann connects Gotland and Medelpad could be that a thorough artifact-tytpology was available for Gotland (Almgren 1914, Almgren & Nerman 1923).

Another and more recent argument was formulated by Seling (1977:412). He rejects the regional or local continuity in coastal Norrland because of the different locations of the settlements of pre-sedentary and sedentary populations. Different settlement locations, of course, also indicate a socio-econimic change on a local or regional level. In the transition from mobile or semi-sedentary to sedentary settlement, the location of settlement became fixed and determined by resource utilization. Ultimately this location is determined by the structure of the economic system. Exactly the same location of dwelling sites could occur both for a pre-sedentary group with an extensive farming system and a sedentary group with an intensive farming system. The difference is that the dwelling site of the mobile group was only one of a number of dwelling sites. The quite different economic systems can thus have their dwellings on the same site. This is also observed in a number of cases, e.g. on the sedentary site at Trogsta where some Late Neolithic or Early Bronze Age artifacts have been found (Liedgren 1981:58).

Other arguments claim that colonization took place in order to take advantage of mercantile interests (Stenberger 1964:431f) or in order to exploit natural resources such as hides and bog ore (Engelmark 1982: 158f). Such mercantile interests and exploitation of natural resources could of course be undertaken by a domestic population which established itself in an environment in which these raw materials occur. Engelmark's reasoning also contains a clear element of environmental determinism when he states that...
there are no indications of ecological changes that could have forced groups of extensive farmers or hunters to abandon their previous economy and go over to intensive agriculture. Even if ecological changes have a part to play in social changes, they cannot be ascribed a decisive role. This has been demonstrated often, e.g. the fall of the Roman Empire and the invasions of Germanic tribes had nothing to do with ecological changes, as is the case with the development of the feudal mode of production or the Russian revolution. All of these changes are only possible to explain from a starting point of the human being and his collective and personal relations.

8.2.3.2. Factors that contradict colonization from the Mälar Valley to central Norrland

Under this title, I would like only to put forward such factors as have not already been taken up for discussion, i.e. a questioning of the idea that communities that are so clearly seen during the first centuries A.D. are the result of groups coming from the Mälar Valley. It is very difficult to illustrate colonisation or migration during prehistoric times by means of archaeological material (cf. Malmer 1975:117f) and this may paradoxically form one of the reasons for such explanations having been so readily accepted. Such claims are equally difficult to disprove. In other words, the arguments that are often presented are reversible—they are able to be used by both sides as support for their theories.

One of the most important facts behind the hypotheses concerning immigration or colonization is that the period immediately preceding the immigration period is so weakly identified. This is the case in Norrland, where material remains from the Pre-Roman Iron Age are few. This lack of finds may be placed in strong contrast to the finds and artifacts of the subsequent periods, which may not be many, but which have a clear character and "high quality" nature, for example the Roman imports, the large mounds and, not least, the building remains.

The palaeo-botanical studies of recent years along the coast of Norrland have shown that the Pre-Roman Iron Age saw the beginning of a change in the farming system which may be of a different type than that used during earlier periods. Two pollen-diagrams by Roger Engelmark are of primary importance here, diagrams which have unfortunately not yet been published. The first of these was mentioned above and comes from Trogsta, close to the excavated settlement (Liedgren 1981, 1983), and shows, despite certain problems with establishing the earlier date, clear indications that cultivation took place during the Pre-Roman Iron Age and on (cf. Baudou 1977a: 20; Isaksson et al. 1977/87, Fig. 35).

The second pollen-sample was taken from the area very rich in Iron Age monuments on the border between Hög and Hälsingtuna parishes in N Hälsingland. Here, there was continuous cultivation from the Pre-Roman Iron Age up to the Early Iron Age, when cerealia-pollen suddenly ceases (Roger Engelmark, pers. comm.).

Three pollen-diagrams from along the lower reaches of the river Ljungan by the lake Marmen in Medelpad show from the end of the Bronze Age or at the time of the transfer from the sub-boreal to the sub-atlantic period "a strong but short-lived agricultural expansion" (Engelmark 1978:46). From the same period, four pollen-diagrams from the inland area around lake Holmsjön, about 100 km upstream the river Ljungan show a heavy attack on the forest . . . The occurrence of the pollen grains of weeds simultaneously with the birch pollen peaks are regular enough to indicate that the clearings were man-made, probably to produce pasture and/or winter fodder (Engelmark 1978:45).

There are more pollen-diagrams that could be mentioned in this context (cf. Sect. 3.4.2.), but the above-mentioned material indicates that changes took place in the cultural landscape during the Pre-Roman Iron Age which could be interpreted as the prelude to the farming system conducted during the sedentary phase.

The results of archaeological analyses of the coast of Norrland has also demonstrated that there occurred parallel changes in many respects during the Stone and Bronze Ages in S Scandinavia and central Sweden and along the coast of Norrland at the same time as there are clear local elements and variations (e.g. Baudou 1968, 1974a).

This underlines the importance of the fact that at least a couple of thousand years prior to the establishment of sedentary settlements along the coast of Norrland there were developed contracts with southern areas. During this entire period, there are similar remains and artifacts at the same time as there are domestic variants or forms. That this is the case also for the period after the establishment of the sedentary settlement will be exemplified here. These examples may be seen as indications of domestic continuity and local/regional variations on a general Nordic theme.
A first indication in this direction has been noted in Chapter 5, in which the construction of the Gene houses and their functions were analysed. The important fact here is that the houses have another design than e.g. houses from central Sweden or S Scandinavia, despite the fact that the general idea behind the constructions is the same. It is as yet too early to make generalisations since only a few foundations have been investigated, but there are some common characteristics with other houses from Norrland.

The settlements in Norrelland which have been studied and generally accepted as representing the oldest sedentary period, i.e. the settlements in Trogsta and Gene together with those on Onbacken and in Högom, perhaps, have not yielded any pottery. As far as we know, there are no pottery found in the few excavated graves from the Early Roman Iron Age (cf. e.g. Slomann 1950:7ff, Baudou 1974:36ff, Selinge 1977:251ff). During the Late Roman Iron Age, and especially during the Migration Period, ceramics become more and more common in the Norrelland graves (cf. Slomann 1950:18) and even occasionally in the settlements. These occurrences are not particularly common, however. In only 21 of 79 (27 %) excavated and dated graves from the Late Roman Iron Age and Migration Period in Ångermanland, Medelpad, and Jämtland were pottery found (Backe-Högberg 1981:30ff). The real figure may be even lower, since the so-called West Norwegian pottery that is in question here constitutes a chronological key artifact and is thus over-represented in the treatment of dated graves. The pottery types that are meant here are one-handed pots (Slomann 1950:33ff) together with three recently discovered bucket-shaped pots from Medelpad (Selinge 1977:270).

The pottery found in the sedentary settlements in Gene (Fig. 4:55), Högom (Fig. 2:7), and Lucksta (Sect. 2.2.1.) are as far as I can judge of only one type, namely asbestos-tempered bucket-shaped pottery. The pots are, however, quite unlike each other. According to traditional Norwegian chronology, this type of ceramic does not belong to the oldest type of bucket-shaped pot (which does not have asbestos, soapstone or talc as temper) but rather, this type appears during the Migration Period (Bøe 1931:165ff). It seems probable, then, that the pottery that have been found in the hitherto known sedentary settlements in Norrelland represent a later chronological period and thus do not reflect the pottery of the period of establishment.

No direct comparisons with central Sweden can be presented at this point, but the available literature suggests that there is a completely different ceramic tradition in Norrelland compared to central Sweden, and that the occurrence of ceramics is far more common in the latter area (e.g. Ambrosiani 1959, Hyenstrand 1968, Jaanusson 1981). Graves with pottery in the Mälar Valley’s Early Roman Iron Age are not uncommon (e.g. Ambrosiani 1964:26ff, 34ff). However, this is not true of the settlements of the period, but there is nothing in the published material that indicates that ceramic manufacture should have been abandoned during this particular period (cf. Ambrosiani 1958, 1959; Tesch 1972; Baudou 1973; Modin 1973; Fernholm 1982).

If it was colonists that came from central Sweden to the coast of Norrelland during the Roman Iron Age, then the material must be interpreted as indicating that these interrupted a long ceramic tradition. This seems unlikely, and I interpret this as an indication that such a colonization did not take place. It is more reasonable to regard the asbestos-tempered pottery in the sedentary settlements as having been manufactured based on north Fenno-Scandinavian traditions.

The problem with this hypothesis, however, is that no sedentary asbestos-pottery has been able to be dated to the first centuries A.D. Regarding the pre-sedentary pottery, it can be mentioned that such objects have been found in a couple of settlements on the Ångermanland coast from the Late Bronze Age (Baudou 1977:48ff, 56ff), which have been able to be linked to agricultural activities (Huttunen & Tolonen 1972:16ff, 21ff). Slightly younger, at the beginning of our time reckoning, we find asbestos-pottery from the settlement at Nämforsern (Baudou 1977:74), where, however, no pollen-analysis has been able to be conducted. But the settlement contains several typical artifacts which must be interpreted as indicating that contact (interaction) existed between sedentary and pre-sedentary groups during the Early Iron Age.

Such contacts must have taken place if one considers that the method of temper pottery with asbestos was transmitted from hunting and gathering groups to farming groups. This is how Storm-Munch (1962:37) postulates the establishment of asbestos pottery in the agricultural N Norwegian society. Briefly, Storm-Munch (1962) claims that the groups that migrated from SW to N Norway during the Roman Iron Age came into contact with the north Fenno-Scandinavian tempering-method. The method subsequently spread within the agricultural society to SW Norway.

This hypothesis is, however, not shared by Meinan-
Ceramic manufacture in the broadest sense nevertheless occurred in central Norrland during the sedentary period's earliest phase, which is apparent from the finds of spindle whorls, loom weights, and not least from daubing material and the like. The technological analysis of ceramic products from Gene (Excursus 1) can be interpreted in a number of ways. For example, two pieces of daubing clay from House 1 were analysed (samples 1 and 6) together with two samples of asbestos ceramic (samples 9 and 10). One of the daub pieces (No. 1) had a fine-grained structure and a good correlation with the clay in the asbestos-pottery samples. The other piece of daubing clay (No. 6) was more coarse. These results can be interpreted as follows: House 1 was daubed with at least two types of clay, one fine-grained and one coarse. In Chapter 4 and 5 it was shown that different sections of the house had different constructions, probably because of the differing functions of the rooms. This difference between the various sections could also be reflected in the choice of daubing clay. Since daubing clay was probably gathered within a "reasonable" distance from the settlement, this should also apply to the pottery clay, and the pottery should therefore be considered to have been manufactured locally.

If this conclusion is correct, it means that the tempering material, Kryso tile in the case of Gene, must have been taken to the settlement directly or indirectly from the natural sources in the Swedish-Norwegian mountain chain, or from central Finland. During the pre-sedentary period in Norrland, when asbestos-tempered pottery was fairly common (cf. Meinander 1969:60; Fig. 15, Baudou 1974a:41) and when the population was fairly mobile or only semi-sedentary, opportunities were probably greater for obtaining asbestos primarily from the Swedish-Norwegian mountain chain. On the establishment of sedentary settlements, such opportunities decreased in all probability, and may therefore have resulted in a decrease in the number of such pots.

However, a quite different chain of events can be observed in the Norwegian material, where asbestos-tempered pottery occurred in sedentary settlements to a great extent (Boe 1931:165ff). The explanation must be sought in the distance to the natural sources of asbestos and other similar tempering materials.

Another factor that illustrates the difference between central Sweden and central Norrland is the burial traditions (Baudou 1977a:19f, Selinge 1977:234f). The typical burial grounds in the Mälar Valley from the Early Iron Age, with stone-settings in various forms, round, oval, square, rectangular and triangular (Ambrosiani 1964, Hyenstrand 1974), are not to be found in central Norrland. Here, the dominant grave type is the mound. 70% of the registered Iron Age graves in Västernorrland County are of this type (Selinge 1977:194f). Add to this the differences mentioned earlier concerning the large mounds, and the difference between the areas becomes even greater. Also the mode of cremation is more varied in central Sweden than in central Norrland. There is a certain variation in, for example, Medelpad (Selinge 1977:234) but the dominant type from the earliest Iron Age is the cremation layer, which appears in central Sweden during the Migration Period (Selinge 1977:235).

There is also a clear difference when it comes to the frequency of graves. In the hitherto studied farms in Norrland, which all have nearby graves or burial ground, and where the time of settlement is known, it can be seen that between three and six graves have been made per century. Since this is a question of farm settlements and burial grounds belonging to them, it should be possible to compare figures with those of Ambrosiani (1964:204f) concerning the Mälar Valley. There, he estimates the burial frequency as being 50–60 per century and settlement unit. This figure includes graves that have disappeared or are hidden under burial grounds. Since he also calculates a settlement unit as consisting of one farm, this means that the grave unit frequency differs widely from that of Norrland. A certain raising of the figure for Norrland must be made, however, because of the existence of secondary graves (Selinge 1977:339).

The difference cannot be explained simply by the fact that the central Swedish graves had a longer period of use because it would mean that the central Swedish graves would have to have been used 5–10 times as long on average. The difference thus probably indicates that different selection procedures existed in the respective areas.

8.3. SUMMARY

Over large parts of Scandinavia, by the transition to our calendar, a new type of settlement occurred. This is characterised by three-aisled houses where the main building on the farm is built in a stable fashion and divided into a number of rooms each with its own function. The main activity is agriculture together with husbandry and the systematic use of manure.
Regional conditions and traditions probably control the relative importance of agriculture and the distribution of settlements in the area, but the agricultural system itself is probably similar over the entire area. The state of research regarding the establishment of the Iron Age settlement in N Norway is such that new data of archaeological and especially palaeobotanical nature, has led archaeologists to stress the domestic continuity in the region. As regards Österbotten, the sedentary settlement is almost unknown. The argumentation is primarily built on strictly archaeological data and several archaeologists have stressed domestic continuity. But since the settlement is little known, the question of the establishment of sedentary settlement must be regarded as uncertain.

With regard to previous research concerning establishment of Iron Age society along the coast of Norrland, the opinion is more unanimous than is the case in N Norway and Österbotten. With only a few exceptions, it has been claimed that the Norrland coast was colonized from central Sweden/Gotland. This view has a tradition going back more than a century, and the main aim of this chapter has been to illustrate some data which contradict this central Swedish colonisation. In this context, an important fact is that the domestic background is treated and that it is made clear that for at least two thousand years prior to the establishment of sedentary settlements, the coast of Norrland had close contacts with the south and that the area in question shows local/regional qualities. During the pre-sedentary stage in this area, there are also indications of agriculture and stock-breeding. During the Pre-Roman Iron Age, these activities may have been of a semi-sedentary character. This domestic background makes it possible to see the sedentary settlement as a result of a socio-economic change under external influence.

As the most important indications against immigration from central Sweden, the difference in the ceramic tradition and the different grave traditions were mentioned. The settlement and grave pottery from the Early Iron Age are neither collated nor treated, which is why a certain doubt must exist concerning how conditions are in this respect, especially in central Sweden. The literature available however, suggests that pottery generally occurred in central Swedish settlements from the Early Iron Age. No ceramics have been able to be linked to the oldest phase of the Norrlandic sedentary settlement, and if pottery occur later, then it is tempered with asbestos, which is primarily linked with the north Fenno-Scandinavian tradition from the Bronze Age and the Early Iron Age.

The varied burial grounds typical of the Mälar Valley from the Early Iron Age are almost completely missing in coastal Norrland, where instead the graves are dominated by the mounds (sometimes large mounds) and cremation layers. This type of grave is represented from the oldest period of the Iron Age and it becomes typical for the Mälar Valley during the Late Iron Age.

The conditions related above indicate, in my opinion, that there was no colonization from central Sweden during the Roman Iron Age. Instead, the material may be interpreted as showing that a socio-economic change took place during the centuries around the beginning of our calendar and that the semi-sedentary groups along the Norrland coast, under strong influence from central Sweden and Southern Scandinavia, changed to a sedentary economy. The base in this sedentary economy was cattle and agriculture with permanent fields and the systematic use of manure, combined with gathering, fishing and hunting. Thus the branches of subsistence are traditional in the area, but one innovation must be the going over to annually cropped permanent fields and the dependency on manure.

The causes of this suggested socio-economical transition cannot be sought locally, since similar changes may be seen over a large area at this time. Probably, the change had to do with outside conditions, i.e. conditions in Scandinavia vis a vis the Roman Empire. Such a relation can have two important aspects: firstly, a political side, and secondly an economic one. The political side refers to an organizational change which in some way constitutes an answer to the powerful state of the Roman Empire (cf. Balandier 1971:167ff). This organizational change is visible of course, directly in the Germanic tribes closest to Limes; but as a chain reaction in relation to the economic situation, this may have been felt far from the Roman Empire itself. For example, during the period, Öland is supposed to have produced leather for shipment to the Roman Empire (Hagberg 1967:121ff). The hides of Norrland are often taken up as examples of "export products" to areas in the south (e.g. Baudou 1977a:20). Roman imported finds are also found in the Norrland coast area, which shows clearly that contact, direct or otherwise, with the Continent took place. In my opinion, these changes should be examined against the coexistence of different regions, both hunting and gathering societies in the inland areas of Norrland and in the agrarian society along the coast, as well as in the societies in central Sweden and Southern Scandinavia and their reactions to events on the Continent. It is within these interactions that the explanation for these changes should be sought.
9. SOME RESULTS, CONCLUSIONS AND NEW QUESTIONS

Chapters 5 to 8 ended with summaries in which a number of the most important results and conclusions were given. In this final chapter I will direct attention to a number of methodological questions together with some of the most important problems connected with the Early Iron Age which one way or another are reflected in the Gene investigation.

From a methodological point of view, two facts have played a particularly important part. Firstly, the field work has been able to be conducted at a controlled tempo, which is and has been important for many reasons. Among other things, this has made it possible to allow areas to remain freely exposed or under plastic sheets for a long period of time, which has shown itself to give a much better picture of features that were difficult to interpret or uncertain. Many of the features that appeared in this way, sometimes even whole parts of wall trenches, would probably never have been found if the excavation had been conducted under pressure, as is often the case with rescue excavations.

Secondly, thanks to the interests within the department, palaecological questions constituted from the start a fixed aspect of the investigation. Samples of earth from practically every post-hole, hearth or other feature were floated primarily in order to find carbonized seeds. In some particularly advantageous cases, buried soils were also floated. The analyses of all of these samples by palaecologist Roger Engelmark is not yet fully complete, but the results that have been presented in this thesis demonstrate that this material has provided the basis for extracting completely new and important data. Some of the results deal with the seeds themselves, indicating that from the beginning of the settlement, only barley was used, oats being introduced during the Migration Period. During the 13th century a further two species appeared, namely rye and peas. The results so far only indicate trends which may alter when more features have been studied.

Another palaecological result with important implications was that the distribution of weed species, as found primarily in House I, indicates that the weeds emanate from an environment connected with intensively manured and cultivated fields. It has also been shown that the distribution of carbonized seeds within the foundations clearly and regularly demonstrates the existence of different activities, rooms or divisions within the building in question. This method must be recognized as one of the best available in this type of analysis in which no dividing constructions can be observed. The distribution of seeds in a building provides first an indication of whether the house has been divided into rooms, and also which species of plant have been used. It also provides opportunities for interpretation as to how these plants were used. In order for this method to be used, the house should have burnt down, or some other preserving event should have taken place, and subsequent activities should not have been too extensive.

Considerably more data may of course be extracted from the palaecological material than has been possible in this thesis. However, the results show that the method as such cannot be ignored in the future.

In conclusion, I will summarize what I believe to be a number of important results, conclusions and new questions arising from the Gene investigation. In order to underline the summary nature of these notes, I shall present them in the form of a list, and at random. It may seem that several of the points coincide, but these illustrate the same problem but from slightly different angles.

**Result 1:** Prior to the Gene investigation, there existed no known ancient monument or find to indicate the existence of a sedentary settlement in Ångermanland as early as the Roman Iron Age, i.e. roughly contemporary with the counterparts in Hälsingland and Medelpad.

**Conclusion 1:** The character and development of this apparently peripherally placed settlement in Gene must indicate the existence of several contemporary settlements of a similar type in the coastal area between Medelpad and northern Ångermanland.

**New question 1:** These settlements should, like Gene and others, be indicated by the existence of a cemetery or of individual graves. The dating of grave types should be able to be improved. What do the graves and cemeteries look like that indicate the existence of settlement of the Roman Iron Age?
Result 2: Sedentary settlements were established during the Roman Iron Age up as far as the parish of Arnäs, which is indicated by a practically continuous chain of graves and cemeteries of the mound type.

Conclusion 2: The coastal area of southern and central Norrland, which is topographically and climatically homogeneous, is closely integrated on a social and ideological level and is distinctly different, at least during the Early Iron Age, from the coastal area of northern Norrland.

New question: What is the difference between the societal systems of northern Norrland and those of southern and central Norrland, and why were sedentary settlements established earlier in the latter areas?

Result 3: The house types in Gene, as represented by the two largest houses, have many similarities and appear at almost the same time as a new house type for example on Jutland, SW and N Norway.

Conclusion 3: There must exist very close connections, direct or more probably indirect, between these areas.

New question: What are these links?

Result 4: The use of resources during the early sedentary phase is similar as during the pre-sedentary phase, but agriculture and husbandry play a more important role.

Conclusion 4: This has, from a purely technical point of view, been made possible by the systematic use of manure. The introduction of this farming system has been dated by many researchers to 100–200 A.D. and the appearance of the long-houses on Gotland, in Östergötland and similar houses in SW and N Norway, together with the introduction of a larger and steadier long-house on Jutland, could be interpreted as indications of the introduction of this farming system. In short, the greater part of Scandinavia went through a series of developments during these centuries that was probably related.

New question: What is the nature of the causes behind this apparently similar pattern of change?

Result 5: At Gene, a clear change may be observed during the period of settlement, 100/200 to 500/600 A.D. (a) There is an increase in the number of smaller houses, (b) there is a change in building techniques, (c) some of the houses have more specialized functions, (d) more specialized handicrafts appear, (e) in addition to barley, oats also begin to be used.

Conclusion 5: Although there was no professional handicraft industry, the establishment, for example, of a special smithy probably indicates that one or a few individuals could be periodically released from other activities on the farm. This would indicate that the farm produced a permanent surplus of food stuffs during the settlement periods. We can also assume an increase in population.

New question: Could such a surplus emanate from a greater per capita production, improved agricultural techniques and hunting or trapping activities, i.e. from its own production or from a position of "chiefs' farm" constituting a redistributive centre in a farming community or district?

Result 6: The settlement probably had a production structure predominantly based on agriculture (suggested to about 60 %), but also trapping, fishing and hunting (suggested to about 40 %).

Conclusion 6: This indicates firstly that these activities go back to the pre-sedentary phase. Secondly, there are farms situated further in from the coast where agricultural production probably constituted a greater proportion of activities.

New questions: If there are local differences in the activities within a region, how should these be explained? Are there explanations other than the difference in resource supply? Could the reasons be of a socio-economic nature, so that for example central farms with a broad range of activities and strong external connections were situated on the coast and surrounded by a more agrarian or otherwise specialized inland units?

Result 7: A review of settlement material from other places has shown that bronze casting was a rather common handicraft on the farms of the Migration Period.

Conclusion 7: During this period, regional (farming district-level) or even local (farming community-level) production of bronze jewellery occurred. In some way, and for reasons that we do not yet know, this was distributed over a wider area by social or economic transactions.

New question: Why did regional or local jewellery manufacture appear, and what were the reasons for the distribution of the finished products?

Result 8: The settlement in Gene was moved at the time of the transition to the Late Iron Age.
Conclusion 8: Similar movements occurred at this time in other areas, and the explanations should therefore be sought in an interregional context.

New question 8: As in question 4 above, there is a similar change to be seen over a wide area of Scandinavia and the question is what it was that altered in the interregional context and why the local units reacted in a similar way to these changes?

Result 9: The origin of sedentary settlements in Central Norrland should be seen as a local reply to the changes in the interregional structure.

Conclusion 9: The building and farm structures of the Roman Iron Age show that the population was well acquainted with house construction techniques. This ability cannot have appeared from the blue. Since changes both before, during and after the appearance of sedentary settlements took place in a parallel fashion along the coast of Norrland and in southern Scandinavia, this should also be the case for example in the Pre-Roman Iron Age. We can therefore suspect the existence along the coast of Norrland of settlement types of a semi-sedentary character, consisting for example of three-aisled houses of a smaller and less sturdy type.

New question 9: Are these settlements situated in places that are typical and particularly difficult to discover?

Result 10: The Gene settlement as a whole generally demonstrates the same pattern of development as has been suggested in other areas in Scandinavia.

Conclusion 10: This shows that the area of study is part of an interregional structure which has its roots in the Bronze Age and perhaps even earlier.

New question 10: What is the nature of this inter-regional structure and how did it operate? Which factors played a part in the changes that occurred in this structure?
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1. ABBREVIATIONS USED IN TEXT AND REFERENCE LIST:

- **A.D.** Anno Domini
- **ATA** Antikvarisk-Topografiska Arkivet (Antiquarian-Topographical Archives), Stockholm
- **AW** Arable weed
- **BBP** Berry-bearing plants
- **Bbr** Bockbredd (Trestle width)
- **B.C.** Before Christ
- **B.P.** Before Present
- **CP** Cultivated plants
- **Dnr** Diarienummer (official register-number of documents)
- **fr** fragment
- **H (h)** Hearth
- **Ha** Hectare
- **H_br** Husbredd (House width)
- **HK** Högsta Kustlinjen (highest coastline)
- **HP (hp)** Hearth pit
- **KVHAA** Kungl. Vitterhets Historie och Antikvitets Akademien (the Royal Swedish Academy of Letters, History and Antiquities), Stockholm
- **M** Mean value
- **m a.s.l.** metre above sea level
- **Ne** Nötkreatursenhet (cattle unit)
- **P (p)** Pit
- **P°** Phosphate degree
- **PH (ph)** Post-hole
- **R** Ruderal
- **Rää** Riksantikvarieämnet (Central Board of National Antiquities), Stockholm
- **RN** Rensningsnivå (clearing level)
- **SHM** Statens Historiska Museer (Museums of National Antiquities), Stockholm
- **SP** Shore plants
- **T (t)** Trench

2. PARISHES IN ÅNGERMANLAND

1. Täsjö
2. Bodum
3. Fjällsjö
4. Junsele
5. Ramsele
6. Ådals-Liden
7. Anundsjö
8. Björna
9. Trehörningsjö
10. Gideå
11. Edsele
12. Helgum
13. Reseleg
14. Skorped
15. Sidensjö
16. Mo
17. Själevad
18. Örnsköldsvik
19. Arnäs
20. Grundsvanda
21. Nättra
22. Långsele
23. Ed
24. Sollefteå
25. Multrå
26. Sånga
27. Överlännäs
28. Boteå
29. Dal
30. Torsåker
31. Stymäst
32. Ytterlännäs
33. Bjärtrå
34. Ullånger
35. Vibygerå
36. Graninge
37. Viksjö
38. Gudmundrå
39. Skog
40. Nordingrå
41. Nora
42. Högsjö
43. Hemsö
44. Stigsjö
45. Såbrå
46. Håmsöand
47. Häggdånger
3. LEGEND

USED ON PROFILES AND EXCAVATION PLANS

On each profile-drawing the height above sea level has been marked on the left vertical frame. From that scale also the measurements can be deduced.

- **A** - present ground level
- **B** - A-horizon: eluviated (podzol) soil
- **C** - B-horizon: illuviated (iron enriched) soil
- **C** - C-horizon: unaltered soil
- **filling**
- **slightly humic filling**
- **strongly humic and/or sooty filling with and without charcoal fragments**
- **strongly humic and/or sooty filling with burnt clay**
- **charcoal with determinable fibres**
- **stone**
- **fire-cracked stones**

USED ON EXCAVATION PLANS ONLY

- **features, posts and pits with feature number**
- **hearth**
- **present pit**
4. PLANT NAMES MENTIONED IN TEXT AND TABLES

<table>
<thead>
<tr>
<th>Latin</th>
<th>English</th>
<th>Swedish</th>
</tr>
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<tbody>
<tr>
<td>Alnus glutinosa</td>
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<td>mjölon</td>
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<td>malört</td>
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<td>havre</td>
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<td>oat</td>
<td>starr</td>
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<td>Carex</td>
<td>sedge</td>
<td>svinnalla</td>
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<td>Chenopodium album</td>
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<td>knappaßv</td>
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<td>common spike-rush</td>
<td>smultron</td>
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<td>Empetrum nigrum</td>
<td>crowberry</td>
<td>krakbär</td>
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<td>Frangula vesca</td>
<td>wild strawberry</td>
<td>pipdan/toppdan</td>
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<td>Galeopsis tetrahit/bifida</td>
<td>hemp-nettle</td>
<td>snäsjmara</td>
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<td>goosegrass</td>
<td>gräs</td>
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<td>Gramineae</td>
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<td>korn</td>
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<td>Hordeum vulgare</td>
<td>barley</td>
<td>en</td>
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<td>Juniperus communis</td>
<td>juniper</td>
<td>rödplister</td>
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<td>Lamium purpureum</td>
<td>red dead-nettle</td>
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<td>Lastrea dryopteris</td>
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<td>Linum usitatissimum</td>
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<td>ekorrbär</td>
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<td>pors</td>
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<td>bog myrtle</td>
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<td>Pisum sativum</td>
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<td>akerpplört</td>
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<td>smorblomma</td>
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<tr>
<td>Ranunculus repens</td>
<td>creeping buttercup</td>
<td>revsmörblomma</td>
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<td>Rubus idaeus</td>
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<td>hallon</td>
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<td>ångsyra</td>
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<td>Rumex acetosella</td>
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<td>bergsyra</td>
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<td>vit-ag</td>
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<td>Salix</td>
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<td>vide</td>
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<td>Secale cereale</td>
<td>rye</td>
<td>rag</td>
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<td>Sorbus aucuparia</td>
<td>rowan, mountain-ash</td>
<td>rönn</td>
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<tr>
<td>Spergula arvense</td>
<td>corn spurrey</td>
<td>akerspergel</td>
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<tr>
<td>Stellaria medium</td>
<td>chickweed</td>
<td>vatarv</td>
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<tr>
<td>Thlaspi arvense</td>
<td>field penny-cress</td>
<td>penningört</td>
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<td>Trifolium repens</td>
<td>white clover</td>
<td>vitklover</td>
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<tr>
<td>Triticum</td>
<td>wheat</td>
<td>vete</td>
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<td>Urtica dioica</td>
<td>stinging nettle</td>
<td>brännäsda</td>
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<tr>
<td>Vaccinium myrtillus</td>
<td>bilberry</td>
<td>blåbar</td>
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<tr>
<td>Vaccinium vitisidaea</td>
<td>lingonberry</td>
<td>lingon</td>
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5. CHRONOLOGICAL TERMS USED IN TEXT

<table>
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<tr>
<th>PERIOD</th>
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<tbody>
<tr>
<td>Early Bronze Age</td>
<td>1500—1000 B.C.</td>
</tr>
<tr>
<td>Late Bronze Age</td>
<td>1000—500 B.C.</td>
</tr>
<tr>
<td>Pre-Roman Iron Age</td>
<td>500—0 B.C.</td>
</tr>
<tr>
<td>Early Roman Iron Age</td>
<td>0—200 A.D.</td>
</tr>
<tr>
<td>Late Roman Iron Age</td>
<td>200—400 A.D.</td>
</tr>
<tr>
<td>Migration Period</td>
<td>400—600 A.D.</td>
</tr>
<tr>
<td>Merovingian (Vendel) Period</td>
<td>600—800 A.D.</td>
</tr>
<tr>
<td>Viking Period</td>
<td>800—1100 A.D.</td>
</tr>
<tr>
<td>Medieval Period</td>
<td>1100—1500 A.D.</td>
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STUDY OF CERAMIC ARTIFACTS AND RAW CLAY FROM GENE, PARISH OF SJÄ-LEVAD, ÅNGERMANLAND (RAÄ NO. 22)

On the instructions of Per Ramqvist, Umeå, a technological study of ceramic artifacts such as fragments of moulds and crucibles, asbestos pottery, daubing clay and raw clay from the archaeological investigation of Iron Age features in Gene has been conducted.

The following questions constituted the bases for the investigation:

a) Is the pottery of local manufacture?
b) Which methods of manufacture have been used for the pottery?
c) Was the raw material for the daubing clay locally available?
d) Could the clayey silt, found close to the excavation area, have been used as raw material for pottery and daubing clay?

METHODS

Ceramic thin-sections have been produced of both pottery and daubing clay for petrographic microscopy of the clays and tempering material.

Thermic analyses (TCT, Hultén 1976) have been conducted in order to identify the type of clay, ceramic qualities, range of vitrification, original firing temperature and the mineral content of the asbestos fibres.

Chemical analyses for the presence of calcium and for testing clay minerals.

Wet sifting and sedimentation of the raw clay samples for calculation of the clay fraction.

RESULTS (see Table 1)

Raw clay samples

The three samples of clayey fine sand/silt were sifted through a Tyler filter with size of 0.06 mm. The

<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>TYPE OF SAMPLE</th>
<th>FIND SPOT</th>
<th>HOUSE NO.</th>
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<tbody>
<tr>
<td>1</td>
<td>Fragment of daubing clay</td>
<td>ph A106</td>
<td>I</td>
</tr>
<tr>
<td>2</td>
<td>Burnt clay</td>
<td>h</td>
<td>III</td>
</tr>
<tr>
<td>3</td>
<td>Burnt clay</td>
<td>h A10f</td>
<td>I</td>
</tr>
<tr>
<td>4</td>
<td>Burnt clay</td>
<td>449 465</td>
<td>VI, S of</td>
</tr>
<tr>
<td>5</td>
<td>Fragment of mould</td>
<td>506 461</td>
<td>IV</td>
</tr>
<tr>
<td>6</td>
<td>Fragment of daubing clay</td>
<td>ph A5</td>
<td>I</td>
</tr>
<tr>
<td>7</td>
<td>Fragment of crucible</td>
<td>h C8</td>
<td>VI</td>
</tr>
<tr>
<td>8</td>
<td>Fragment of crucible</td>
<td>508 463</td>
<td>IV</td>
</tr>
<tr>
<td>9</td>
<td>Sherd of asbestos pottery</td>
<td>516 472</td>
<td>VII</td>
</tr>
<tr>
<td>10</td>
<td>Sherd of asbestos pottery</td>
<td>500 469</td>
<td>VII</td>
</tr>
<tr>
<td>Raw clay I</td>
<td>Clayey silt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw clay II</td>
<td>Clayey silt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw clay III</td>
<td>Silt with low clay content</td>
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</table>
sludge, consisting of fine sand, silt and clay, was allowed to sediment and dry. Sample briquettes were produced from the upper layer of clay and fine silt for thermic analyses.

Sample No. III had too low a content of clay and fell apart completely at 500°C.

Sample No. II, while containing more clay, did not hold together after firing to 1000°C.

This clay silt cannot have been used either for the manufacture of ceramics or for daubing house walls.

Sample No. I, unlike the other two samples, held together well on firing at temperatures as low as 500°C. It is relatively temperature resistant and has a range of vitrification between 1100—1200°C. At 1200°C the sample melted under fermentation.

In order to make an approximation of the content of clay minerals, the following analysis was conducted: 2 x 2 g of clay was dried and acid was added (HCl-3 %). Following this, one sample was tinted with saffronite, and the other with malachite green. The latter sample turned red and the former took on a blue tint. These reactions indicate the presence in the clay of smectite, probably also illite, and that kaolinite is not present (Ronge 1967, VI:11).

When the acid HCl was added, the clay showed no reaction. It is thus free of calcium.

**Daubing clay**

Sample nos. 1, 2, 3, 4, and 6 consist of burnt clay, probably daubing clay. This can have been used in construction for daubing walls, hearths etc. Daubing clay was also used for lining reduction furnaces in iron manufacture.

An adequate daubing clay for construction purposes should contain enough "temper" to prevent the clay splitting on drying. A fine sandy, silty clay without coarse sand particles is the best raw material. For use in iron manufacture, the daubing clay should also withstand relatively high temperatures without melting.

All of the daubing clays studied fulfill the requirement for non-shrinking material content (sand—silt). The sand fraction is missing completely, or occurs very rarely.

All of the samples except No. 1 contain large quantities of silt. Sample No. 1 has a fine-grained structure. It includes diatoms of the *Melosira* type, and large quantities of mica, including phlogopite, which is an iron-free variant of biotite. This daubing clay differs radically from the others.

With regard to heat resistance, sample nos. 2 and 3 had a higher value than nos. 1, 4 and 6. No. 3, which

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>CLAY</th>
<th>TEMPER</th>
<th>COMMENTS</th>
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<td>SORTED</td>
<td>UNSORTED</td>
<td>TREATED</td>
</tr>
<tr>
<td>1</td>
<td>+ ph zi mg</td>
<td>x</td>
<td>+ ph zi mg</td>
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<tr>
<td>2</td>
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<td>x</td>
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<tr>
<td>10</td>
<td>+ ph zi mg</td>
<td>x</td>
<td>+ ph zi mg</td>
</tr>
</tbody>
</table>

Table 1. The result of petrographic and thermic analyses of ceramics, burnt clay and raw clay from the Gene settlement, Själevad parish, Ångermanland. Abbreviations: ph = phlogopite, zi = zirkonite, mg = magnetite, am = amphibolite, ti = titanite, au = augite. Codes: + = present, • = minor representation, • = frequent.
Fig. 1. The diagrams show the results of the thermic analyses of samples raw clay I (a), 2 (b), 5 (c) and 8 (d). The codes under Value and Chroma are according to Munsell Soil Colour Chart System. The codes under HUE have been abbreviated: 0 = 10 R, 1 = 2.5 YR, 2 = 5 YR, 3 = 7.5 YR, 4 = 10 YR, 5 = 2.5 Y, 6 = 5 Y.
Moulds and crucibles

Sample nos. 5, 7 and 8 contain an additive of fine carbon or ash in the clay. This, together with finely crushed quartz and chamotte, is a common type of temper for moulds and crucibles (compare similar material from Helgö and analyses conducted by B. Hulthén, described in Lamm 1977:106–107).

Sample No. 8 contained tempering of crushed quartz, while sample nos. 5 and 7 contained chamotte.

The crucible fragment, sample No. 8, had a high heat resistance. The sample withstand 1200°C without deforming. This is because of the high content of quartz (melting point = 1756°C) around which the clay forms a cohesive matrix. The clay has been given an early vitrification point with the help of carbon/ash as a flux (Grim 1962:141–203). The clay constitutes only about 10% of the crucible material (Fig. 1d). It is not certain whether sample No. 7 is a fragment of a crucible or mould, or whether it is merely surplus material from such objects. The clay in mould No. 5 is of the same type as daubing clay No. 4 (Fig. 1c).

Pottery

Two pot sherds, sample nos. 9 and 10, were reinforced with a fibrous mineral (asbestos). As with the mould in sample No. 8, the temper constitutes more than half of the total mass (55%). The temper, which in both cases consists of chrysotile (mineral within the serpentine group) has the same function as the quartz in the crucibles. Chrysotile does not melt until 1550°C. The clay began to vitrify already at 800–900°C, and melted at 1000°C. However, no deformation occurred because of the fact that the chrysotile fibres form a skeleton-like structure in the ware.

There is a clear correlation between these pottery clays and the daubing clay in sample No. 1.

SUMMARY

The questions that formed the basis of this study can, to a great extent, be considered to have been answered by the results of the analyses. Since the problem concerning the origins of the pottery has a certain connection to daubing clay No. 1, the following may provide an alternative solution: daubing clay (No. 1), was probably collected from a deposit of clay situated outside the area of study. This dense, fine-grained clay was maybe primarily meant to be the raw material for pottery manufacture. In this case, it has only exceptionally been used for daubing purposes. The presence of diatoms in sample No. 1, and the lack of such in sample nos. 9 and 10 may depend on differences in the temperature of firing. The daubing clay has only been exposed to temperatures between 300–400°C. On the other hand, the pottery has been fired to about 600°C, and at this temperature diatom fragments can be damaged or completely destroyed.

In addition, the pottery was fired in a reducing atmosphere, i.e. in a covered fire or pit. The pots have been exposed to secondary oxidized fire. This may have occurred in connection with their being used over an open fire.

One factor contradicting the local manufacture of pottery is the low frequency of such finds at the settlement. Even a relatively modest level of manufacture should have resulted in a larger amount of material.

Generally speaking, the clay that was necessary for the various activities at the Gene settlement must have been gathered from elsewhere. Bearing in mind the lower clay content in raw clay No. 1, comprehensive sedimentation facilities would have been necessary in order to satisfy the requirements of raw clay. Of course, in individual cases, and for small scale work, the local supplies may have been used.

The problem of transporting heavy clay over great distances may have been solved in the following way: In the autumn, before the frost and snow make gathering more difficult, the clay required for the following season is placed on wagons or sledges. The arrival of snow enables transportation, and the clay can be taken to the settlement where it is allowed to settle over the winter. In late spring or early summer, it is then ready to be used for different purposes.

The existence of iron slag particles in sample No. 4 is an indication that daubing clay was used in connection with iron production. I have made similar finds in clay linings from reduction pits in Hagestad in the
parish of Löderup. Both slag and metallic iron was preserved in the vitrified, melted clay (Strömberg 1981:21).

Sample No. 4 had been exposed to temperatures between 800—900°C. With regard to the raw material used for temper of the pottery—chrysotile—this mineral is to be found in the Swedish mountain areas.

The problem of the origin and distribution of Swedish asbestos-pottery is currently the subject of a large scale study. Hopefully, the Gene pottery will be able to be included in a larger context when that investigation is completed.

REFERENCES


Lund 1983-03-10