

ASPECTS OF LAND-USE AND SETTLEMENT IN PREHISTORIC
AND HISTORIC CAITHNESS

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Declaration

I declare that the research for and writing of this thesis was undertaken entirely by myself.

Signed

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Abstract

This is an examination of the major phases of land-use and settlement in Caithness. These have been considered to consist of four main chronological groups: firstly that dating from the Agrarian Revolution, a watershed in the agricultural history of the region, to modern times; secondly the traditional feudal farming systems up to the time of the Improvements; the third group is that associated with the Norse colonisation of the county; and fourthly the land-use and settlement evidenced by the extant prehistoric monuments.

Each category was examined with reference to all available sources - documentary and toponymic as well as archaeological. The historically documented categories were examined with emphasis on the processes, economics and success of the Improvements.

A database was formed of all prehistoric monuments with information on their recorded dimensions and positional attributes, such as altitude, aspect, land type and proximity to a water source, from which their locational preferences could be obtained. This study has covered aspects of land-use over a broad chronological span using a wide range of sources. It has indicated questions concerning the survival of field monuments and has revealed avenues of future research.

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ABBREVIATIONS

BAR British Archaeological Research Report

DES Discovery and Excavation in Scotland

M.G.C. Macfarlane's Geographical Collection

N.S.A. New Statistical Account of Scotland

OS Ordnance Survey

O.S.A. Old Statistical Account of Scotland

POAS Proceedings of the Orkney Antiquarian Society

PSAS Proceedings of the Society of Antiquaries of Scotland

RCAHMS Royal Commission on the Ancient and Historical
Monuments of Scotland

SAF Scottish Archaeological Forum

SRO Scottish Record Office

Trans. Glasgow Arch. Soc. Transactions of the Glasgow Archaeological
Society

Trans. Highland Agric. Soc. Transactions of the Highland and
Agricultural Society of Scotland

Trans. Inst. Brit. Geog. Transactions of the Institute of British
Geographers

CHAPTER 1: INTRODUCTION

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Caithness, the extreme North East county of mainland Scotland, is unique among the regions of Scotland, being subject to a variety of cultural influences: from mainland Scotland and from the Norse tradition by way of Orkney. It is mainly a lowland county, formed of Caithness flagstone pertaining to the Middle Old Red Sandstone period and with a cultural and geographical affinity to Orkney, although more subject to influence from the mainland than the island group. The Western border with Sutherland is more similar geographically and culturally to that county and thus Caithness encompasses a region of more highland type as well as of lowland nature. The putative differentiation between these two zones shall be examined in this study.

There is thus a number of environments for exploitation within the county offering a number of resources and habitats for the occupants. The lowland area of the county has been noted historically for its good agricultural productivity, particularly of cultivated crops of oats and bear, a form of barley. It was considered to be that part of the highlands and islands which, together with Orkney and Lewis, was "self-sufficient in meal or grain in all but the poorest years" (Dodgshon (1981) 301) as opposed to the areas in which there was a constant danger of famine. The nature of the geological formation of the county meant that there was also a good supply of readily worked stone. The upland zone provided not only land suitable for pasture but also peat, used for construction of farmsteads and dykes in historical times as well as a source of fuel. Peat growth, while its limits have fluctuated, was utilised by the inhabitants of Caithness from prehistoric times, as is evidenced from burnt mounds. The coast of Caithness is long and is made up of stretches of cliffs

interspersed with geos or inlets, while in other areas there are raised beaches and sand dunes such as Keiss, Dunnet, Freswick Bay, Reay, John o' Groats and the Bay of Sannick. All these features offer a variety of littoral resources, while the sea provides marine resources and a mode of transport, although the Pentland Firth in particular was renowned for its tide races and stormy weather.

It is becoming increasingly clear that the distribution of surviving monuments is as much a function of later land-use as a sign of the original pattern of settlement, as exemplified by Fraser (1983) who saw that the original distribution was affected by subsequent formation processes: these consist of natural processes, such as coastal changes - in sea level, erosion and deposition; climatic and vegetational changes - such as peat growth; cultural processes such as agricultural activity, obscuration by road and building construction, supply of building materials and cultural attitudes. The effects of these developments led to a potentially discoverable pattern which by processes of recognition, such as by archaeological fieldwork has led to the observed distribution pattern (Fraser (1983) 239, 259).

Thus in a regional study, before a more profound analysis of one particular chronological period or monument form may occur, an assessment of the major formation processes - which in Caithness are mainly related to agricultural activity of historic times - is necessary. This study of land-use and settlement patterns will cover from all available sources - historical, toponymic and archaeological - the major stages of land-use which have occurred in Caithness. These stages consist of four major categories: firstly the historical period may be divided into that prior to the Improvement activities of the nineteenth

century ie. the Agrarian Revolution and secondly the pre-Improvement or traditional system of land-use. The other two categories are the land-use associated with the Norse settlers and the prehistoric which possibly encompasses a variety of different systems of land-use and settlement.

The sources of information and their content decrease progressively with time. For the historical period, there is documentary evidence derived from estate maps and documents and from secondary sources. There is also oral tradition, referring to post-Improvement times and archaeological evidence, derived from field survey and excavation. It should be noted that this study, with its wide chronological analysis, was made possible by the extensive surveys carried out by Mercer (1980, 1981, 1985a, forthcoming a) and Batey (1984) for which a policy was determined whereby all deserted structures were recorded from prehistoric sites to longhouse farmsteads of the nineteenth and twentieth centuries.

The Norse pattern of land-use and settlement was derived from three forms of information: documentary, toponymic and archaeological. However the content of these sources was far less than for the later periods. For the prehistoric material, only archaeologically derived information could be utilised. There have been many excavations in Caithness: as the history of archaeological activity in the county has been fully and recently appraised by Batey (1987), a repetition of such a summary is not proposed in this study.

It was hoped that by an examination of each stage of land-use, working back towards the prehistoric, that the effects of later formation processes could be recognised. Before a consideration of the information pertaining to the historically recorded land-use in

Caithness, it is proposed to give an introduction to the traditional view of this period.

The systems of agriculture in operation in Scotland were broadly similar, although with regional variations. The major watershed in their development was that of the Agrarian Revolution which altered the landscape and agricultural systems radically. Up to this time, the term pre-Improvement is used to describe traditional farming systems and Improvement and post-Improvement for the time of the Agrarian Revolution and its aftermath. These terms have no absolute chronological significance, for the Improvements occurred gradually and at different rates from farmtown to farmtown. However there is a relative chronological significance.

In pre-Improvement times, the land was divided into estates or townships which were composed of a Mains farm, situated centrally and farmed directly by the proprietor or his factor and, because of this, generally the largest and best holding of the farmtown. The remainder of the township was let, usually without a written lease, to tenants who paid rents in farm produce and in service to the landowner or to the Mains. The land divisions can be envisaged as arable, divided into infield and outfield, meadow, pasture, common-grazing and waste.

The infield was the extent of arable land originally measured out and farmed by the township and always kept under intensive cultivation of oats and bear in rotation. Such a system was sustained only by regular tathing or manuring by farm livestock.

The outfield was farmed on a system of rotation by which it was sown with oats for several years, after which it was left fallow and allowed to grass over. The year before it was due to revert to cultivation, turf folds

were constructed on that area within which stock was kept and later the turf and resultant manure were ploughed into the soil to enrich it for cultivation (Dodgshon (1981) 158). That this system and practice pertained to Caithness can be seen on estate plans which represent the cultivated land as infield and outfield.

The outfield represents "the outward expansion of existing settlement into the surrounding waste" (Dodgshon (1981) 184). The fact that it was of inferior quality to the infield, in that it would otherwise have been included in the original holding, led to its less intensive arable use. Dodgshon (1973) relates its origin as an attempt to prevent the waste of manure produced in the summer when the herds were taken to the common-grazing before being moved to revitalise the infield soils. However there must also have been sufficient surplus labour to accomplish this expansion, and there might also have been pressure to take in more land to provide more produce and labour for a growing population. By the time immediately prior to the Improvements, population pressure probably led to a diminished outfield with the poorer quality land forced to support an increasing number of tenants.

The differences between infield and outfield were evident as the former was measured in the original land units: in Caithness octos, farthinglands and pennylands, while outfield was excluded. A pennyland was not so much a measure of land area but of quality of land ie. an estimate of how much land was worth one penny: thus in the case of good quality land it could be the equivalent of eight acres and in that of poorer ground, up to around sixteen acres. However by the time immediately prior to the Improvements, both aspects of arable land were measured in acres, roods and perches, for example at Brims (SRO RHP 1219).

The patches of rig-and-furrow cultivation were surrounded by the head-dyke, a wall generally of turf construction which separated the pasture and common-grazing from the crops. The grazings were used by the surrounding farmtowns for pasturing their livestock in summer and as a source of peat. After harvest, the dyke was allowed to fall into disrepair and the livestock allowed to roam over the arable to feed on the stubble and to manure the fields for the following year's crop (Sinclair (1795) 203).

In Caithness the tenants' longhouses were located, naturally enough, near a source of water and in particular there was a strong tendency for them to be situated close to the source of tributary streams running to a main river, loch or to the sea, as occurred at Lythmore. This would probably relate to a desire for a purer source of water and for a location away from a possible source of flooding, as well as for an optimal situation with immediate access to arable land and proximity to pasture and fuel.

Due to this need for access, most importantly to arable, but also to pasture, there was also a tendency for the steadings to be built around the fringes of arable land (Hill (1985) 138-140). In some cases, some dwellings were sited at a greater distance from the arable, beyond the head-dyke, which Hill interprets as cottars' steadings, as opposed to those of the tenants which were built within or along this demarcation. There was also a tendency for the siting of steadings to be less organised in highland areas as the arable there was more dispersed (Hill (1985) 142).

Unlike the tenants' farmsteads, the Mains farms were generally situated in the centre of the cultivated area. The reason for this placement was that it was the centre of the farmtown, both practically

and symbolically. Such a position also facilitated communication and estate management. As it possessed a large amount of arable it was important to be close to it and, as services were paid on the Mains it was centrally positioned for all tenants to reach.

Sited on the fringes of the arable land, the tenants' steadings were close to pasture and its fuel resources. The longhouses were commonly half living area, half byre (Henderson (1812) 29) and thus the position would facilitate the herding of cattle without undue proximity to the open, cultivated fields.

The obtainment of building materials was a source of difficulty for the inhabitants of Caithness, due especially to an almost total lack of trees: one of the few wooded areas was Berriedale. So scarce was this commodity in Caithness and also the Northern Isles, that timber was imported from Scandinavia, even to the degree of components for small fishing boats (Donaldson (1938) 175). Sandstone flags were therefore used when available for the construction and often the fittings of the longhouses (O.S.A. (Parish of Halkirk) 7) and also turf or feal, with a heather thatch for the roofing. The flagstone structures survive better than those of turf, because of the materials used and because the turf examples tended to be built on arable soil and so were destroyed by later cultivation (Hill (1985) 145).

The study of the agricultural Improvements in Scotland has provided much information about the Improvers, their methods and their effects on the tenants. However there appears to have been little research regarding their effects on land-use. The change in agricultural methods and techniques was due primarily to a change in the minds of the landowners as to the best and most profitable ways of managing their land. These proprietors were a small number of people who controlled a

great deal of economic and political power and influence (Adams (1980) 155). An initial band of Improvers among the landowners began to rationalise and improve their farms and agricultural methods and implements, some successfully, others with total failure with the added burden of financial loss.

Adams has indicated that studies of the innovatory diffusion involved in the spread of the Improvements have stressed individual landowners and the ways in which they were influenced to improve their estates. Such an emphasis is warranted as unless the proprietor was prepared to carry out such Improvements, an expensive and calculated risk which could lead to bankruptcy, the Improvements would not occur, no matter how many others advocated their implementation. That some landowners did not succumb to the Improved systems is evident: for example by the mid-nineteenth century it was reported that the new forms of crop rotation were not in practice, there was little attempt at waste reclamation and a lack of enclosures (N.S.A. (Parish of Canisbay) 29).

Gradually the more conservative landowners adopted measures similar to those which had proved successful and profitable elsewhere. In Scotland and Caithness, Sir John Sinclair of Ulbster (1753 - 1835) was one of the earliest and foremost Improvers, due to his help in the establishment of the Board of Agriculture, his promotion of industry in Caithness and the Highlands, his publications, the application of his theories and ideals of farming practice and his involvement with the Statistical Account of Scotland (1796) as well as his participation in politics (Mitchison (1962) passim). Other Caithness landowners named as Improvers were James Traill of Rattar, William Horne of Scouthel, Sir George Dunbar of Hempriggs (Lord Duffus), Captain Henderson of

Stempster, Sir John Sinclair of Dunbeath and Mr. Sinclair of Forss (O.S.A. (County of Caithness) passim).

Sinclair of Ulbster improved stock and introduced new strains of cereal and root crops with a new system of crop rotation. He introduced Cheviot sheep onto his Langwell estate in 1792 (Macdonald (1875) 181) which spread throughout the county, their introduction possibly being hastened by an outbreak of liver rot and scab among the aboriginal kerry breed of sheep in 1807 (Watson (1932) 9). In 1822, again on the Langwell estate, by this time under the ownership of William Horne, Leicester sheep were also introduced. Sinclair of Ulbster also introduced West Highland cattle, crossing them with the native Caithness breed. These innovations in livestock and their management spread throughout the county.

In arable farming, prior to the Improvements, black and grey varieties of oats were the most commonly cultivated cereal crop, the latter being considered the more productive strain, though requiring better quality soil (Henderson (1812) 98). The red oat in 1791 and the dun oat were introduced by Sinclair of Ulbster, the red variety requiring a shorter growing season, but being less productive and unsuited to damp conditions, while the dun strain needed good quality soil for success: all of which would imply a limited success for these innovatory varieties. The Polish and potato oat strains were also cultivated (Henderson (1812) 99). Barley or bear was the second most popularly cereal, while wheat was tried as a cultivar throughout the nineteenth century, but proved unsuited to the climate and soil of Caithness (Henderson (1812) 101; Macdonald (1875) 230). Rye was cultivated, but only in small quantities (Henderson (1812) 92), on land unfit for any other crop such as sand banks (Macdonald (1875) 233).

Of root crops, turnips were widely grown, potatoes were introduced in 1754, first to the gardens of the landed gentry, and by 1806 to the tenants holdings where they were grown in lazy beds (Henderson (1812) 111, 123), for domestic rather than commercial purposes (Macdonald (1875) 237). Pease, cabbage, beans and swedes were also cultivated but on a smaller scale, while clover was sown along with bear after fallowing (Henderson (1812) *passim*). New farming equipment was introduced: the Scotch plough which succeeded the time- and labour-consuming thrapple plough, while harrows, rollers, scarifiers and threshing machines came into use (Henderson (1812) 55-69).

These innovations were accompanied by a change in the landscape by a process of land enclosure into regular fields, with systems of drainage to improve the quality of the ground and the dismantlement of the traditional rig-and-furrow farming with an accompanying dismissal of many tenants from their holdings. Where the nature of the land was unsuited to such measures farmtowns were wholly converted to sheep farming again with the removal of tenants, although these were "not attended by the atrocities committed elsewhere" (Omand (1973) 142). New industries were founded in Caithness to accommodate those displaced by such measures - fishing, woollen, linen and flagstone industries - with the workers re-settled in planned villages such as Lybster. Such schemes provided a source of employment to the surplus population and a source of profit for the landowners who established them.

The quality and extent of cultivated land and pasture were increased by the application of manures, such as marl and fish offal to the soil (Henderson (1812) 71; Macdonald (1875) 180) and by the drainage of the ground, resulting in a regular arrangement of enclosed fields. More

effective rotational systems were also adopted (Henderson (1812) 886) which decreased the possibility of soil exhaustion and increased productivity. Better living conditions began to prevail with the construction of larger, better constructed farm buildings (Stell (1982) 88).

Another development of the Improvement period was the draining and fencing of new farms to form new areas of cultivation, a process aided by the division of common-grazings among the proprietors of surrounding farmtowns. Such a process occurred at Upper Dounreay which had previously been almost entirely under heath. The tenant reclaimed 500 acres after enclosure and drainage on which turnip, oats and grass were grown (Macdonald (1875) 212-3). On maps of the Strathmore estate dating to 1862 and 1867 (SRO RHP 35112 and 22511 respectively), newly established farms were depicted as surrounded by cultivated land reclaimed during the Improvements. Such reclamation was an important feature of the Improvements as well as the improvement of land already cultivated and the introduction of new methods and techniques.

However the longer term success of such reclamation projects is unclear: the existence of patches of green grass among moorland in many areas of the county, for example in the Thurso River Valley on the upper East-facing slope of Buckies Hill, NGR ND 12 62 may indicate that such ventures were often unsuccessful. Also at Bighouse, in the Halladale valley in Sutherland, surveyed by Mercer (1980) there were relict field systems, comprising a longhouse with related rectangular structures, enclosures and large rectilinear fields which may indicate an unsuccessful attempt at farming new areas of land during the Improvement period (Mercer (1980) 60; (1981) 87).

The chronology of the Improvement period is worthy of examination. It is often considered that it extended from the late eighteenth century to the early nineteenth century, the time at which many of the Improving authors were writing about the innovations. However it is clear that Improvements were still being effected by the last half of the nineteenth century: Macdonald reported that draining and enclosing activities were being implemented on the Borrowston estate as late as 1866 (Macdonald (1875) 213), while on the Ulbster estates in Thurso parish "notwithstanding all that has already been executed in the way of house-building, draining, enclosing and other general improvements, much still remains to be done towards rendering the improvements complete...At the present rate of progress the whole should be satisfactorily overtaken within the next ten years" (Macdonald (1875) 219), with the conclusion that "while...enormous improvements have been made of late, much still remains to be done" (Macdonald (1875) 223).

Such is the traditional view of the pre-Improvement and Improvement periods, to be examined in the light of information more directly related to Caithness from secondary and primary documentary sources and from archaeological evidence obtained from field survey.

CHAPTER 2: SECONDARY SOURCES

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The secondary sources pertaining to land-use in Caithness can be assigned to three categories:

1. Travellers' tours and descriptions, written by those who visited the county briefly. Those examined range in date from 1655 to 1776 and consist of the following authors' writings: Thomas Tucker who wrote a report in 1655 about the settlement of the revenues of excise and customs in Scotland and briefly described the trade of the ports of Thurso and Wick; Rev. John Brand who in 1701 toured Orkney and Shetland and included a shorter account of his travels in Caithness; Daniel Defoe who described the locality of Duncansby Head in his tour of Great Britain from 1724 to 1726; Aeneas Bayne who wrote a short, unpublished description of Caithness after a visit in 1735; Richard Pococke, Bishop of Meath, who published his letters to his sister, written on his tour of 1760; Thomas Pennant who visited Caithness in his tour of 1769, considered by Samuel Johnson to be "the best traveller I ever read" as he observed "more things than anyone else does", although in Boswell's opinion, his work was "a heap of frittered fragments" (Curley (1976) 210). The latter criticism may have been due to Pennant's coverage of the Western Highlands and Hebrides in his account, therefore overlapping in time and area with Johnson and Boswell's own tour. Charles Cordiner described a similar tour of Scotland to that of Pennant, intended as a "useful appendage" to his work (Cordiner (1780) Introduction) and which he made in 1776.

Of these, Bayne's manuscript and Tucker's report belong to Hill's class of "synthetic accounts in which a conscious attempt is made to describe and explain early or contemporary systems of land-use and social

organisation" (Hill (1985) 136). The remainder of the authors describe and explain the countryside and locales of the county as their journey took them, and any information concerning land-use and economy is almost incidental.

2. Accounts of the county, written by inhabitants. All of these are synthetic accounts and consist of the documents pertaining to Caithness incorporated in Macfarlane's Geographical Collections (M.G.C.) including descriptions of some of the parishes and of the county as a whole, dated between 1724 and 1726. Rev. Alexander Pope, Minister of Reay, wrote an Appendix to Pennant's Tour (Pennant (1776) 318-346) describing the parishes of Northern Scotland, including Caithness, in 1772 though this concentrates on ancient history, antiquities and large houses.

The Old and New Statistical Accounts of Scotland (O.S.A. and N.S.A.), in which each parish was described by the incumbent minister, also belong to this category. They were compiled according to pre-established guidelines (in N.S.A.: I Topography and Natural History; II Civil History; III Population; IV Industry; V Parochial Economy) intended to provide a measure of comparability.

3. Accounts relating directly to the agriculture of Caithness. These include Capt. John Henderson's "General View of the Agriculture of Caithness" published in 1812 and John Sinclair of Ulbster's works "General View of the Agriculture of the Northern Counties" (1795), "An Account of the Systems of Husbandry adopted in the More Improved Districts of Scotland" Vols. I and II (1813) and "General Report of the Agricultural State and Political Circumstances of Scotland" Vols. I-III; Apps. I-II (1814). These were intended to be descriptions of the farming

practice in this area, in particular of the agricultural improvements implemented or, more usually, about to be introduced.

It is unclear, however, to what extent any of these sources may be regarded as reliable. In regard to the first category, it would be impossible that a visitor to the county could have understood and known all aspects of the society they described in their accounts. Also, as these visitors tended to associate themselves with the upper stratum of society, it is unclear whether their statements as to the wealth and prosperity of the county can be related to all the inhabitants or only to the proprietors and their Mains farms. Furthermore, as many were English or living in England, they had a tendency to be prejudiced against the Scots, partly due to English propaganda relating to the Jacobite Rebellion of 1745, but also due to their philosophy as "it was suggested in the eighteenth century that noble savages could still be found in some remote parts of Europe....for example, in the Scottish Highlands and Islands" (Aldridge (1984) 345). Such a prejudice can be typified by Johnson's opinion that "till the Union made them acquainted with English manners, the culture of their lands was unskilful, and their domestick life unformed" (Johnson (1924) 24) and was latent among the other travellers of the eighteenth century who went on a fashionable tour of Britain.

Another problem, particularly inherent in Bayne's account, is that it is impossible to determine whether information was gained by direct experience or by hearsay. Here, the general statements concerning the agricultural nature of the parishes, eg. of Watten Parish: "well served in corn and cattle" (Bayne (1735)) cannot possibly have encapsulated the economy of the entire district. Difficulties in appraising the knowledge of the authors also rise within the second category. One example of this is in Pope's Appendix where Orlig Parish was stigmatised as having

"nothing memorable in it" (Pope (1776) 331). As this is most unlikely, such a statement may imply that it was an area with which Pope was unfamiliar.

With regard to the O.S.A. and N.S.A., the capability of the ministers to discuss the parochial economy is unclear and the amount and quality of information must have depended to a large extent on the interests and attitudes of the parish incumbent. For example, one minister wrote at length about the fisheries at Wick but was mainly concerned with the immorality of the participants than with the actual fishing activities (N.S.A. (Parish of Wick) 154). One might also question the impartiality of the reports in that some of the problems of the small tenants may have been omitted or muted due to a desire to cause no offence to the proprietors.

The chief objection to Henderson's and Sinclair's accounts of agriculture lies in their enthusiasm for the agricultural reforms, due to which they appeared to find no advantages in the pre-Improvement farming systems and few disadvantages in the new practices. Also, it is unclear which of the described Improvements had been effected and which were only being considered for introduction.

All accounts agree that Caithness was an agriculturally productive area, both for internal consumption and for export. The fullest description of its exports was that included in M.G.C.: "Beef, tallow, hides, butter, cheese, meal, bear, plaidins. Some oyl, wild leather and fures, salmon, white fish and slates; and return wine, brandy, salt, lime, cloth, silks and cramery-ware" (M.G.C. III (1906-8) 86). Bayne also included pork, hams, geese and goose-feathers in his list of exports (Bayne (1735)).

The quantities of the items were sometimes included: one example, taken from the customs books at Thurso in 1726 revealed that 35 lasts of beef and mutton, 6 lasts of tallow, 17 bags of feathers, 10-12 lasts of salmon, 1000 calfskins, 300 cow hides, 15000 bolls of oats and meal and 40000 cod were exported (M.G.C.I (1906-8) 169). (For a description of measures and their equivalents, see Appendix I). In other sources, the amount of corn reported as sent from the county each year ranged from 16000 bolls in 1695 (Bayne (1735); Brand (1883) 225) to Cordiner's estimate of 40000 bolls, suspect because it is so high in comparison with the other figures recorded and also because it was based on hearsay (Cordiner (1780) 88).

Despite a tendency for these sources to concentrate on cereal exports, it is clear from all sources that animals and animal products were important export items. Indeed, Tucker ((1891) 175) mentioned only beef, tallow and hides in his account of trade items from Thurso and Wick, with no mention of cereal products or fish, unlike that of Kirkwall where corn, fish, tallow, butter and hides were listed. However this may have been an oversight when dealing with "two small ports" (Tucker (1891) 175). It was estimated that in some years 2200 head of cattle were traded to Southern Scotland and England, though in bad years they were killed and salted (Pennant (1776) 182). This may be an underestimate, however as it was reckoned that 1000 head of cattle were driven from Halkirk Parish alone (O.S.A. (Parish of Halkirk) 91).

However, the quantity of exports does not necessarily reflect the productivity of the county. Brand, in regard to Orkney, related that "the rents when collected whether payed in Money, Meal, Oats, Barly or Butter are ordinarily sent South, which causeth a great grudge among the People, some of them thereby being redacted to great straits, not getting

Meal, Barley or the like sometimes to buy as in the late dearth, tho then the product of these Isles, comparatively, were beyond that of many other places in the kingdom" (Brand (1883) 39-40). That this situation could apply to Caithness, so similar economically to Orkney, may be attested to by an item in the Papers of Sinclair of Freswick which was a petition from the tenants of Dunnet to plead that they should not be removed from their land because of a riot in March 1847, committed to prevent shipment of grain due to their own shortage (GD 136/ 995). This was a year of famine caused by the general failure of the potato crop during which such distress was widespread. As it was also at a time when small tenants were being removed from their land, another cause of the riot may have been fear of clearance, the grain shipment being a pretext. Grain shortage caused by the export of rents may only have affected the tenants in bad years, as the only dearth recorded in the secondary sources was during the crop failure of 1783 (O.S.A. (Parish of Wick) 268) but the example serves as a caution against relating export directly to productivity.

The consequent imports are of two kinds: luxury goods such as Bordeaux and Lisbon wines (Bayne (1735)), material for clothes (Cordiner (1780) 88), silks and brandy (M.G.C. (1906-8) 86) which reveal that the trade was in the hands of the proprietors and those who could afford such items; and wood, iron, salt, sugar (Cordiner (1780) 88), dressed flax, coals, lime and other hardware (O.S.A. (Parish of Thurso) 184), goods which would not be available in Caithness itself.

Arable land and its produce would appear to have been accounted more highly than any other. "It is observable that if any Buy a piece of land, only what is Arable is Accounted for, as for what Serveth for

Pasture, they use not to take notice of, tho upon that consideration they may value their acres at a greater rate" (Brand (1883) 225-6). This arable land was mainly situated around the coast and along river valleys (Cordiner (1780) 83; M.G.C.II (1906-8) 451).

The staple crops were bear and black, grey and white oats in alternate sowings, the bear sown in April, the oats in May and both harvested in September and October. Cordiner was probably misled in his tale of crops in Reay being sown in late June, ready to be harvested in little over six weeks (Cordiner (1780) 90-1). The manure - kelp mixed with dung and dry earth or peat - was used only with the bear crop and its fertilising capacity was exhausted in one season (O.S.A. (Parish of Canisbay) 14). The minister of Canisbay indicated that there was usually a yield of 1:5 oats and 1:7 barley, though sometimes the latter produced as much as 1:11 in a good year (O.S.A. (Parish of Canisbay) 13). This is similar to the situation in Orkney, where the yield was, for oats 1:3 or 1:4 and for barley 1:4 to 1:6, although apparently some areas could produce as much as 1:10 or even 1:24 from the bear crop (Fenton (1978) 334) - though this could be an exaggeration. The reported average yield was above that for the whole of Scotland which was 1:3 for oats and 1:4 for bear, oats suffering because because they were not manured and were harvested late, exposing them to damage by frost and storm (Shaw (1980) 98). It is possible that the yields recorded in the O.S.A. were exaggerations or were only obtainable in exceptionally good years on high quality land. The yields of 1:3 and 1:4 are very low, however, and it is possible that there was a different method of calculating the return on a sowing.

Potatoes and sown grass were grown in small patches round the tenants' steadings and green crops, pease, beans, flax and turnips were also cultivated by the end of the eighteenth century (O.S.A. (County of

Caithness) passim). The latter crops were noted as being recently introduced, but it is unclear as to how widely they were cultivated. Their introduction was an indication of the start of the agricultural Improvements.

The majority of meadow grass grown in Caithness was natural (Pennant (1776) 181; O.S.A. (County of Caithness) passim) despite references to its cultivation in small plots. Bayne (1735) reported that Bower Parish was noted for its natural meadows and produced more hay than any other parish in Caithness. Halkirk too was noted for its natural meadows (O.S.A. (Parish of Halkirk) 59-60). The hay was harvested in late August and "was cut with very short scythes and with a brisk and strong stroke" (Pennant (1776) 181). This may have been the same type of scythe as that used in Orkney, with a short blade 12" to 15" long, with a long haft and one handle (Fenton (1978) 340).

Farming implements and methods were rarely mentioned in the earlier sources. The feature which must have been most obvious to travellers and therefore remarked upon was the presence of conical straw stacks bound with simmons about eight feet high which contained barley seeds (Pococke (1887) 159) and which were said to preserve the grain for two years (Pennant (1776) 182). Such structures for the storage of threshed grain were also common to Orkney, South West Scotland and Ireland (Fenton (1978) 370-2) due to the restricted size of outbuildings and the production of surplus grain which had to be stored prior to shipping.

Farming methods less obvious to passing travellers were generally not described, although the O.S.A. contained accounts, mainly derogatory, of the plough and ploughing methods used by the tenants: "Four of these garrons (*native horses*), or sometimes four oxen are yoked in a plough a-breast, and not two and two in the long draught as in other

places....The short draught or four a-breast is never equal, but the one end of the long beam or first bar always goes before the other, just as the driver whips up the cattle on his right or on his left hand. The driver is in the middle, and walks backwards all the way; whereby indeed, he has it in his power to give more or less earth to the plough, by pushing off the two horses, on which he leans his hands, to either side" (O.S.A. (Parish of Wick) 259-60). On the Island of Stroma, the plough was not used, but all arable farming was said to be carried out by spade, producing a greater yield (M.G.C.I (1906-8) 152; Pennant (1776) 179). Such cultivational technique was a feature of agriculture in Orkney and Shetland and demonstrates Stroma's strong cultural links with the Northern Isles (Fenton (1978) 285-9).

By the time of the O.S.A., some agricultural Improvements had been introduced and more were proposed. The opinion of the ministers was that longer leases should be introduced and that services should be abolished, though the latter was said to have occurred in some places (eg. O.S.A. (Parish of Bower) 5). While it can be seen that longer leases would mean greater stability of tenure for the tenant, it is unlikely that the tenants necessarily shared the views of the ministers as regards the conversion of services, as money was difficult to obtain and often rents were raised to a higher level when converted from payment in kind and in services (Henderson (1812) 40-1).

There were calls for improvements in agricultural practice as well as land tenure and criticism of existing techniques: eg. that, as cultivation was in patches with small cottages built on them, much potential arable land was wasted (O.S.A. (Parish of Bower) 2) and that pastureland was also being wasted due to a lack of enclosures which prevented the growth of cultivated pasture such as rye grass and clover (O.S.A. (Parish of

Halkirk) 60). The lack of enclosures on tenants' holdings was also deplored by Sinclair, as there the only fence of any kind was the head-dyke separating the arable from pasture, built of feal and therefore entailing the removal of turf and the destruction of some land, turf also being used as a fertiliser. It was also in constant need of repair due to its neglect after the crops were harvested and it was no longer a necessity to prevent livestock from trampling the crops. Then "the country becomes one great common, over which immense numbers of cattle are straggling" (Sinclair (1795) 203). In this criticism Sinclair either misunderstood the situation or was blinded by his enthusiasm for the Improvements to the logic of the early system. The feal dyke was deliberately spread over the arable land at this time to fertilise it while the presence of cattle on it also helped to manure it in preparation for next year's crop.

The Improvements made by the time of the O.S.A. were confined to the Mains farms, those of Watten (O.S.A. (Parish of Watten) 226) and Castlehill (O.S.A. (Parish of Olig) 142) being noted in the reports as having been enclosed, ditched, hedged and farmed under new systems of rotation. Henderson and Sinclair described many other methods of Improvements, carried out on the proprietors' lands or on larger holdings and in the appendix to Henderson's work "a number of intelligent quarters" contributed their opinions on the best methods of enclosure, wasteland reclamation, crop rotation and drainage but it is unclear whether these had been proved in practice or were merely theoretical (Henderson (1812) Appx.119-60).

By the time of the N.S.A., Improvements appear to have been more widespread. There are frequent references to enclosure of land by means of stone and wire fences and hedges, ditching, draining, reclaiming waste ground, constructing roads and better farm buildings and use of new crop

rotations. The methods by which these were accomplished were less often documented, but were occasionally included in the N.S.A. reports: "First enclose with ditch and thorn hedge, protect with flags set on edge; then drain out the springs with three feet or four feet drains as required; plough in and allow to lie for a year or more; lay on marl or shell sand at the rate of twenty to twenty-five loads per acre, then cross plough and work it down for turnips with dung, or bone dust, or both; feed the turnips off with sheep; then oats, or bear and grass seeds; then pasture with sheep for a few years; and the land is generally fit for any rotation" (N.S.A. (Parish of Odrig) 64; also N.S.A. (Parish of Dunnet) 44). New implements were also used, the most noted being the iron plough drawn by two rather than four horses (N.S.A. (Parish of Canisbay) 29). Other implements - harrows, rollers, scufflers, horse hoes, scarifiers, skims and threshing machines (Henderson (1812) 55-69) - were described but were probably confined to the proprietors' and larger tenants' holdings.

Alterations would not appear to have been extended to the small tenants' holdings. Many N.S.A. accounts relate that the land was only improved on the Mains, the remainder of the county retaining traditional farming systems (N.S.A. (Parish of Canisbay) 34); (Parish of Watten) 55; (Parish of Odrig) 64). In only one recorded instance were the small tenants affected, when their land on the Scarmclet estate was divided by ditches six feet wide and three feet deep, to keep off cattle and drain the land (N.S.A. (Parish of Bower) 115). Also, in the matter of leases of seven to twenty-one years, regarded as so necessary in the O.S.A., while the tenants of large holdings were issued with these, small tenants were kept on the land on a year to year basis (N.S.A. (County of Caithness) passim) and so the traditional system of land tenure was retained. In addition it was reported that the small tenants were deterred from

improving their holdings because of an immediate rent increase (N.S.A. (Parish of Canisbay) 29-30). Thus, despite the concentration of later authors on the Improvements, there would appear to have been little change for the majority of the inhabitants of Caithness.

Pastoral farming was less frequently described in the secondary sources, but this does not necessarily imply that it was of little importance. Stockraising and its products figured prominently in the lists of exports and cattle fairs were numerous (O.S.A.; N.S.A. (County of Caithness) passim). In spring, summer and autumn, the tenants kept their horses, cattle, sheep and pigs on the common-grazings nearest their holdings and in winter the cattle were sheltered in byres (N.S.A. (Parish of Canisbay) 28). One of the problems associated with wintering cattle was that, as arable land was cultivated with oats and bear, there was often insufficient grass to feed livestock over winter. In May or June till the end of October, surplus stock was sent to the Highlands to graze on heathland for 1/- a head (Sinclair (1795) 195-6). The sheep were prone to foot rot (O.S.A. (Parish of Halkirk) 86) and they were confined overnight, though not fed, in small huts and were not sheltered in winter (Henderson (1812) 206; O.S.A. (Parish of Watten) 253). In spring they followed the plough to feed on mugwort (Henderson (1812) 207).

Before the Improvements, the sheep and cattle were of indigenous stock and it was said that on average each tenant possessed one or two cattle and a flock of ten to twenty sheep (N.S.A. (Parish of Canisbay) 29). By the time of the O.S.A. Cheviot sheep had been introduced to the Langwell estate by Sinclair of Ulbster (O.S.A. (Parish of Latheron) 130) and Sinclair was advocating the establishment of sheep-farms in areas where pastoral farming was important on the grounds of its greater

profitability: he argued that cattle farms could be made from two to eight times as valuable when converted to sheep (Sinclair (1795) 184-5) and that displaced tenants could be re-located in planned villages and re-employed in newly established industries such as spinning and fishing (Sinclair (1795) 188-90).

By the time of the N.S.A. Cheviot and Leicester sheep and Teeswater and Highland cattle had been introduced to Caithness. As with other Improvements at this time, the new breeds were confined to the proprietors' Mains farms and larger holdings. The new breeds may have been given preferential treatment and pastured on sown grass due to their greater value and their possession by the upper strata of agricultural society who held the best quality land, while the native breeds were confined to hill pasture (N.S.A. (Parish of Latheron) 97; (Parish of Watten) 54). Another reason for preferential treatment of new stock may have lain in the fact that, despite the disparagement of many authors for the native forms (eg. N.S.A. (Parish of Dunnet) 37 - "a worthless breed and not easily improved") even Henderson had to admit that native sheep were less prone to disease, being more suited to their native environment, than the new breeds, Cheviots being especially prone to foot rot (Henderson (1812) 207). Thus their placement on better drained and superior quality land may have been a necessity.

In many areas Sinclair's theories had been put into practice and sheep-farms were established, the consequent clearance of tenants from their holdings resulting in emigration and poverty (N.S.A. (Parish of Reay) 18). In Reay Parish, the farms of Shebster and Sandside were converted to sheep, despite prior land reclamation or, more probably, due to its failure (N.S.A. (Parish of Reay) 19). In the report of Halkirk Parish, there was no mention of conversion to sheep-farms, but its occurrence

may be implied by the statement that many tenants would have preferred to cultivate waste ground than emigrate (N.S.A. (Parish of Halkirk) 77). That such events were not necessarily recorded in the N.S.A. is shown in the case of Latheron Parish. Here the only suggestion of increased sheep-farming was in the numbers of sheep, listed as 12000 (N.S.A. (Parish of Latheron) 104) compared to the O.S.A. figure of 2555 (O.S.A. (Parish of Latheron) 130). However the Sinclair of Freswick Papers, dated February to September 1835, contain records of the agitation of Dunbeath tenants at the proposal to convert the estate to sheep-farming and its resultant evictions. Petitions and threatening behaviour were to no avail and provided an excuse for the proprietor to effect the clearance (GD 136/ 956) the population falling from 224 in 1829 (GD 136/ 935) to 72 in 1847 (GD 136/ 995), most of whom were on the estate to assist in draining the land to prepare it for sheep. The total fell further as more tenants were removed (eg. GD 136/ 1016). The omission of such events from the N.S.A. serves as an indication of the incomplete documentation of secondary sources.

Sea fishing played an important role in the Caithness economy for those living near the coast. Bayne (1735) reported that there had been a considerable fishery on the coast, but that it had decayed due to lack of encouragement. Pennant ((1776) 182) remarked on Whaligo, a small herring fishery near Staxigo where 2000 barrels of fish were landed in 1771 in one day, but added that a lack of ports was an obstacle to the establishment of other fisheries, despite the abundance of cod, herring and other white fish. In the O.S.A., there were frequent references to the importance of fishing in the reports of coastal parishes (O.S.A. (County of Caithness) passim).

In the N.S.A., a more detailed description of the fisheries occurred (N.S.A. (Parish of Dunnet) 42). It was said that the most numerous class of inhabitants were fisher/ farmers, all coastal residents being to some extent involved in fishing, including craftsmen (who also farmed) and cottagers from the interior when not required to work on their estates. In spring there was lobster fishing; at the end of May and June, after the sowing, the tenants would cut peats and prepare for the herring fishery which took place in July. Then the fishers and young women went to the Wick fishery for six weeks, returning in September for the harvest followed by the fishing of cod, saithe and silags. Only small tenants were involved in fishing, those with larger holdings being purely farmers. The small holders may have had to supplement their farming as in Latheron Parish, which by the time of the N.S.A. possessed successful herring, cod and lobster fisheries, the rent of the land was high despite its indifferent yield as the small tenants were expected to make up any shortfall by fishing (N.S.A. (Parish of Latheron) 97).

In the account of Thurso Parish it was recorded that the herring, haddock, cod and lobster fishings were free of rent, whereas freshwater fishings, for which the rivers Forss and Thurso were noted (M.G.C.III (1906-8) 83; Bayne (1735); Pope (1776) 331; Cordiner (1780) 88), were rented at 1000. Thus it would appear unlikely that the majority of inhabitants were legally involved in this, but that it was confined to the proprietors, large landholders and rich visitors.

Another marine resource exploited by the inhabitants of Caithness was that of seals, hunted in November with a method described by Pennant: "numbers of seals are taken in the vast caverns that open into the sea and run some hundred yards under ground. Their entrance is narrow, their inside lofty and spacious. The Seal-hunters enter these in small boats

with torches, which they light as soon as they land, and then with loud shouts alarm the animals, which they kill with clubs as they attempt to pass. This is a hazardous employ; for should the wind blow hard from sea, these adventurers are inevitably lost" (Pennant (1776) 182-3).

The other major benefit of coastal farming was the access to kelp or seaweed used as a fertiliser: "near the sea they make a compost of sods, seaweed and dung, move it once and then shred it off very thin to lay on the land" (Pococke (1887) 160). Pennant indicated that limestone could also be added to turf and kelp to form a fertiliser and was scandalised that it was carried to the fields by women (Pennant (1776) 183). In some O.S.A. accounts, the amount of kelp gathered annually was recorded: 20 tons in Dunnet (O.S.A. (Parish of Dunnet) 30); 40-50 tons in Wick (O.S.A. (Parish of Wick) 244); and 100 tons in Canisbay (O.S.A. (Parish of Canisbay) 19), although the accuracy of these estimates is uncertain. The beaches of Orkney between the high and low water marks were estimated as producing 21 tons of seaweed per acre, or 38774 tons total by a survey in the 1940s, while the sub-littoral quantity was 1 million tons (Fenton (1978) 274). Thus it is probable that the O.S.A. figures were under-estimates or that Caithness beaches were not being exploited to their full potential. As it would appear impossible for the ministers to know the exact amount of kelp used on the land, it is possible that their results were reached by assessing the quantity shipped to Leith and Newcastle for glass and soap manufacture (Henderson (1812) 252) as in this case the amount would be ascertained before being sold.

In the N.S.A. the gathering of kelp was often said to be dying out and yet it was still recorded as being in use as a fertiliser (N.S.A. (Parish of Canisbay) 29). This may be explained by either a decline in the amount of kelp exported for manufacture or by the fact that proprietors were

using improved fertilisers such as bone dust, marl and lime and therefore the ministers assumed that the decline was general.

The size of agricultural holdings was occasionally included in the secondary sources. In the O.S.A. it was recorded that an average holding consisted of 12-20 acres infield, 2-6 acres outfield, 1-2 acres meadow, a total of 15-28 acres (O.S.A. (Parish of Watten) 227). This differs from another account where the estimated average was one pennyland, while many only held half a pennyland ie. 4-8 acres (O.S.A. (Parish of Reay) 18). The reason for this difference may be that the quantity of pasture was not counted: it was noted that some tenants might have 20 acres of arable and 800 acres of moor (N.S.A. (Parish of Watten) 54). Thus in Reay Parish, where there was a large amount of high moory land and relatively little arable, the small arable holdings might be compensated with a large quantity of pasture whereas in Watten Parish, for example, where the land was low lying, there would be a larger amount of arable and relatively little pasture.

Henderson's account of land tenure was relatively detailed (Henderson (1812) 36): the townlands were occupied by tacksmen who kept a part of the land to farm themselves, subletting the remainder to tenants in holdings of 10-20 up to 40 arable acres and of 1-5 to cottagers. The tacksmen collected the rents and sometimes increased them so as to make a profit. Henderson also stated that the runrig system of land tenure was in disuse, but in 1812 he was probably anticipating such developments.

By the time of the N.S.A. the rents had mainly been converted to money, but in the O.S.A., indications of the payments in kind and services were included (eg. O.S.A. (Parish of Reay) 156-8). These are of

importance as it is possible to see the shifting significance of the arable and pastoral elements of the economy, reflected by the different types of products demanded. In Bower it was noted that "grass farms in the Highlands paid veal, kid, butter and cheese etc. And tenants on the sea coast paid teind (*a tithe of the catch*) and quatel fish (*a percentage of the catch*), and oil, out of each boat belonging to them, and carried sea-ware for manuring the proprietor's farm" (O.S.A. (Parish of Bower) 5).

Henderson gave three examples of rents in kind, mainly to contrast them with money rents and show the increased profits by means of conversion to a money rent and also to reveal that in some areas the tenants were encouraged to pay in kind by converting the products and services at a very high rate (Henderson (1812) 40-1). In the case of Weydale and Todholes in 1762, the total rent to be paid for a twenty pennyland or 160 acre farm was: 109 bolls, 1 firloft, 1 peck, 2 lippies of victual; 90 fowls; 270 eggs; 80¹/₂ feet of custom peats; 21 geese; the tenth pig; and unlimited services. In the case of a 10 acre farm in Latheron, the rent demanded was: 1 boll of oatmeal; 6 feet of custom peats; a meat lamb; a wedder; wintering 4 head of cattle; 7 fowls; vicarage; a load of heather simmons; 2 days ploughing with one plough; and 10 days services of one person. These rentals reveal differing emphases between arable and pastoral, the latter example including more pastoral elements and the former having more arable features.

It would appear that Sinclair's division of Caithness into an upper district comprising hilly and mountainous land - Latheron, Halkirk and Reay Parishes - and a lower district, the remainder of the county, of a flat and level nature (Sinclair (1795) 180) is justified in a general sense. In

the upper district, pastoral farming was of greater significance, as can be seen by the provenance of the information regarding this aspect of the agricultural economy, whereas in the lower district, arable farming was predominant. This is somewhat of an oversimplification as hillier parts of other parishes must have operated on a mainly stock raising basis while parts of Latheron, Halkirk and Reay were certainly suited to arable cultivation, but it is valid as a generalisation, relating to the emphasis of the agricultural economy.

During the Improvements in the lower district, although the proprietors and large holders were improving their land, the small tenants do not appear to have been affected but would seem to have continued to farm according to the traditional systems. Nor is there any evidence for population reduction until the second half of the nineteenth century, as is shown by the primary sources. However, this decline had been preceded by a sharp population rise and after the decrease the tenant numbers were little less than those prior to the Improvements. The population increase in the first half of the nineteenth century may be related to the reclamation of waste land and ditching/ draining/ road-building operations during the Improvements and the decrease due to the failure or completion of these Improvements.

In the upper district, more similar geographically to Sutherland, there was conversion to sheep-farming, more profitable than the traditional farming systems. The conversion resulted in an amount of tenant evictions although these were not as widespread or drastic as those in Sutherland. One of the reasons for this was that fishing, linen, woollen and flagstone industries were established and planned villages built to accommodate some of the displaced tenants. The division into upper and

lower districts is therefore re-inforced as they were affected in differing ways by the Improvements.

CHAPTER 3: PRIMARY SOURCES: CARTOGRAPHIC

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One strand of the primary sources relating to Caithness is the body of estate plans of the area: during the transitional period between the traditional agricultural systems and the implementation of Improvement farming, there was a fashion among landowners to commission a survey of their estates, a fact which has resulted in the depiction of many farmtowns at this crucial stage of their development. However, often it is unclear whether the Improvements depicted on the maps were only planned and possibly never implemented or whether the proposed schemes were actually in existence.

Roy's Military Survey

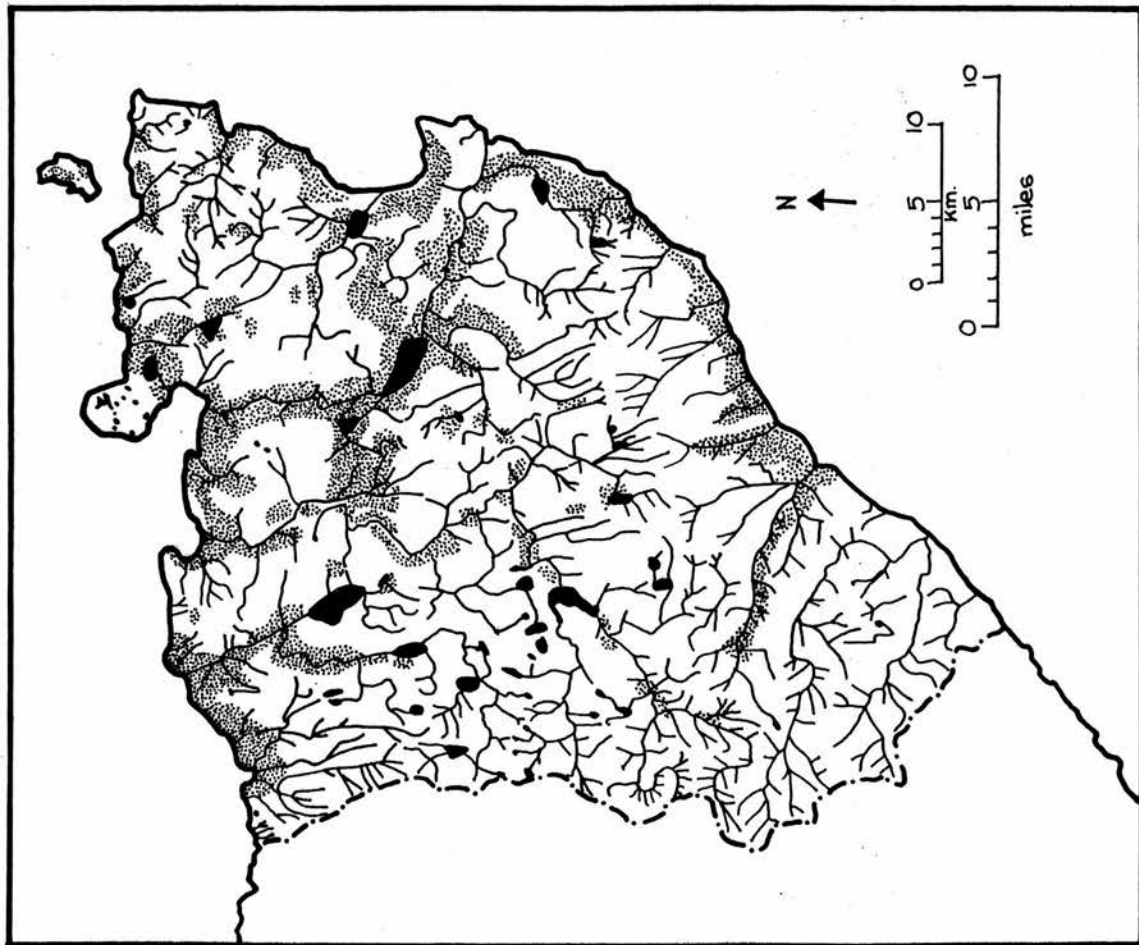
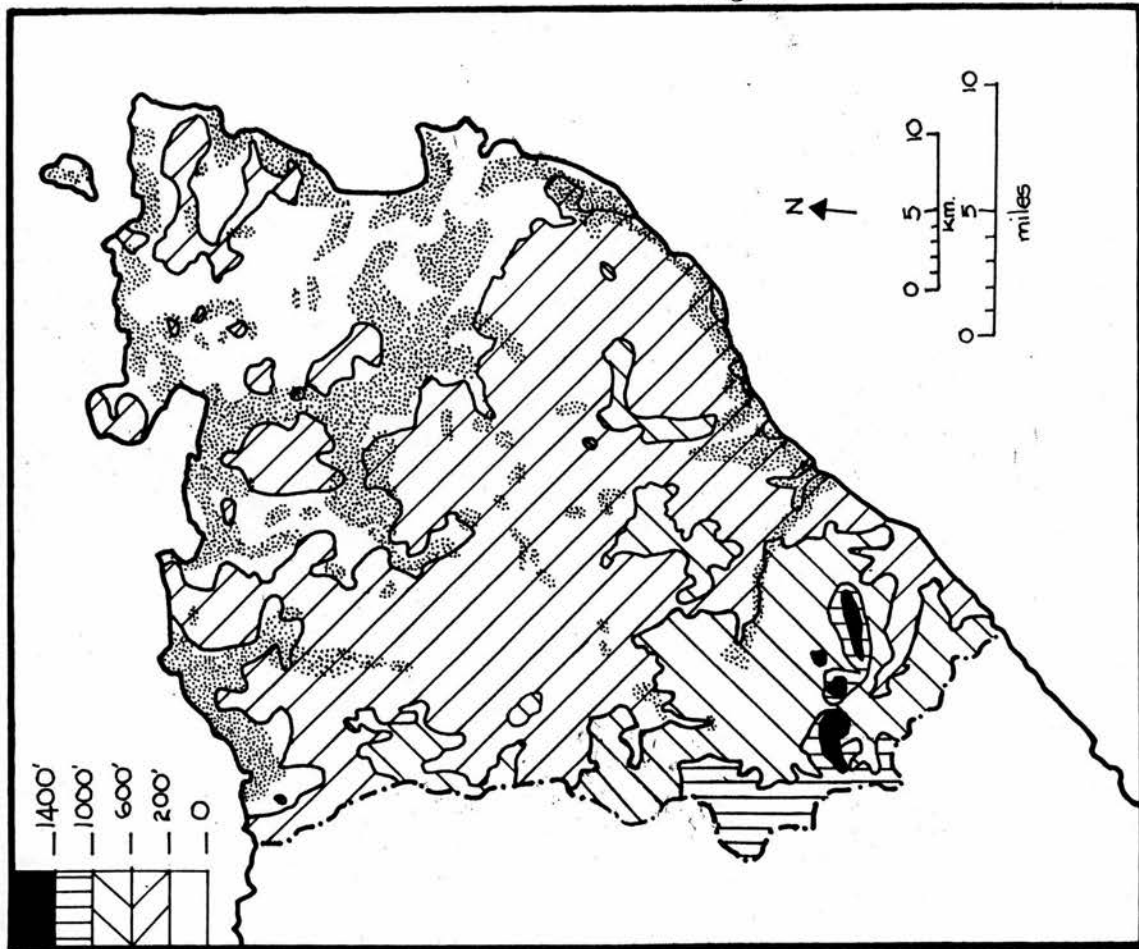
The earliest cartographic source is not an estate plan but rather Roy's Military Survey of Scotland. After the Jacobite Rebellion of 1745, the government in London wished to establish military bases in Scotland, to construct roads in order to make the country more accessible and to obtain a more accurate depiction of the geography of the region. These policies, particularly the latter, resulted in the mapping of the entire area of mainland Scotland between 1747 and 1755. As it encapsulated the area at one moment in time, it has served as a basis for historical and geographical studies (Skelton (1969)) and is considered by some historical geographers to be the single most valuable record of eighteenth century Scotland (Parry (1980) 181).

One of the more recent studies based on an examination of Roy's Military Survey is that of Parry, investigating fluctuating limits of agriculture in South East Scotland (Parry (1973), (1976)). By comparison

with other maps, Parry considered that there was only a 5% error in the recording of farms in this region and also a correlation between the limits of abandoned farmland as seen on aerial photographs and that depicted on Roy's Military Survey, with the conclusion that "the cultivation limits marked on the Military Survey apparently reflect with a reasonable accuracy the cultivation limits of the mid-eighteenth century" (Parry (1980) 181). However he concedes that "the location of farmsteads, cultivated lands and roads" were mapped with "some locational inaccuracy" (Parry (1980) 181). It is also unclear as to why the date of cultivation boundaries as revealed by the aerial survey should be the same as that of Roy's Military Survey. Again, with a number of cartographers working regionally throughout Scotland on Roy's Military Survey, such validity as is assumed by Parry for the borders region of Scotland cannot automatically be extended to Caithness.

Indeed in the latter area there are indications that, while it might be safe to use Roy's Military Survey on a county wide basis, it must be used with caution if examining particular estates or areas on a more detailed basis. For example, Loch Calder (Cadell) was represented as being far smaller than on an estate plan dated to 1802 (SRO RHP 417) as well as present day limits. There is no evidence to suggest any alteration in the size of the loch by damming or draining and it is most probable that the discrepancy is due to an inaccuracy on the part of Roy's Military Survey. Another mistake is in the omission of the farmtown of Shebster, in Reay Parish, which suggests a lesser degree of accuracy. Nevertheless the extent of the land cultivated would appear to coincide with that depicted on pre-Improvement estate plans and it is possible to accept its information on a generalised

Fig. 1



DISTRIBUTION OF CULTIVATION, 1755, AFTER ROY'S MILITARY SURVEY

basis, if not on a more precise level. In Caithness the distribution followed a pattern similar to that of other areas of Scotland in the mid-eighteenth century: a coastal, riverine and loch-side correlation with a concentration on lower lying ground, as one would expect (see fig. 1).

There was an almost complete fringe of coastal cultivation extending from Dunbeath to Reay, with the exception of exposed promontories (Duncansby Head, Noss Head and Dunnet Head), coastal uplands (Brims Hill, the area of higher land between the Ord and Dunbeath) and marshy ground (Keiss Links). In the New Statistical Account it was stated that land close to the sea was given an annual value ranging between £1 and £1/ 5/- per acre, while land in the interior was estimated as being worth 12/- to 15/- per acre. The explanation for this difference was that coastal fields were less prone to frost damage or rotting, being less marshy and kept at a more even temperature by proximity to the sea. Such a situation would also have allowed ready access to fishing grounds and marine resources, such as kelp for fertilising the arable land, which would raise the value of coastally situated land holdings. However a coastal location did have inherent disadvantages, such as greater exposure to the elements. It was said that the cultivated area on the island of Stroma was often damaged by salt spray because it was more exposed to sea and wind than the mainland. Also Brand, in 1698, observed that between Thurso and Dunnet he "saw much low ground overblown with sand for two miles back from the sea, which formerly, not many years since was a pleasant meadow" (Brand (1883) 225), now the Links of Greenland, an area with a concentration of prehistoric settlement preserved by the windblown sand which rendered the area incapable of cultivation.

The major river systems and most of the lesser waterways were cultivated along their banks. In the lower reaches of the rivers this took the form of an almost continuous band but in highland reaches, closer to the sources the cultivation was more dispersed, smaller in extent and less regular, being situated in the bends of rivers. The main hazard of such a highland situation was flooding and thus in more fertile areas where the area of potential arable was greater, the stretch of land closest to the rivers or surrounding lochs, especially the latter, was used as meadowland (Henderson (1812) 140), less easily damaged by flooding and requiring less time for maintenance, as little grassland was cultivated prior to the Improvements but was mainly left to grow naturally.

Lochs in Caithness were also surrounded by cultivation, Lochs Watten and Scarmclate in particular being associated with a wide swathe of cultivated land running North West/ South East and towards the West where it reached the banks of the River Thurso. Macdonald reported that crops grown close to the lochs were prone to mildew caused by loch mists and general dampness, citing these as reasons for the drainage of Loch Seister (Syster) and Loch Haellan (Heilen) (Macdonald (1875) 176). Despite the possibility of diseased crops the fringes of lochs were a focus of cultivation. With this in mind, although the coastal region of Caithness was the location of much of the cultivated land - and that regarded as of greatest value when assessed for rentals - Macdonald was incorrect to state that "up to the beginning of the present (ie. nineteenth) century, the only regular tracts of cultivated land of any size in the county ran along the seaside. The interior was mottled with small, irregular spots of badly cultivated land" (Macdonald (1875) 186). Even

this statement is inaccurate as comprehensive tracts of the interior were cultivated.

A comparison of Roy's Military Survey with the Macaulay Institute soil chart reveals that the cultivated area of Caithness corresponds with the distribution of non-calcareous gleys, some peaty gleys, brown forest soils and brown rankers, soils associated with an undulating lowland. Indeed, the cultivation generally falls between 0 - 100m OD rising to around 150m OD in highland areas. This is dissimilar to Parry's results in Southern Scotland where land was commonly cultivated at 350m OD and sometimes higher (Parry (1980) 181) - a reflection on the uncultivable nature of upland soils in Caithness which are almost entirely blanket peat.

The Land Capability maps of the Macaulay Institute reveal the gradings of land in which the agricultural potential of land is gauged according to the climatic, pedological, topographic and other geographical factors which affect farming practice and land-use . As these factors have changed little during the last 250 years it is valid to assess the agricultural potential of the arable ground used by pre-Improvement farmers by direct correlation with the modern map.

The areas surveyed by the Macaulay Institute were divided into zones in order of descending capability. The best quality land in Caithness belongs to Zone 3 (2) "of average production, but high yields of barley, oats and grass often obtained. Other crops are limited to potatoes and forage crops. Grass leys are common and there is increasing growth limit and degree of risk for arable crops". The distribution of this zone corresponds to that of most of the cultivated land depicted on Roy's Military Survey. Zone 4 areas, "land with moderately severe limitations that restrict the choice of crops and/ or demand careful management"

(eg. Warse, Seater and Duncansby) were also arably farmed while land of lesser potential (Zones 5 and 6 - "land with severe limitations that restrict its use to pasture, forestry and recreation" and "land with very severe limitations that restrict its use to rough grazing, forestry and recreation" respectively) were not devoid of arable cultivation although this may have been outfield rather than permanently cultivated infield - the distinction between these forms of arable land is not made on Roy's Military Survey.

The Evidence of Estate Plans

To examine the nature of farming practice and land-use in Caithness in a more detailed fashion it is necessary to study other forms of evidence, due to the flaws inherent in Roy's Military Survey. One such source exists in the corpus of estate plans. As said above it was a common practice for landowners, particularly those contemplating Improvements to their farms, to commission a survey of their property. These plans have been shown to fall into three broad categories: a map showing unimproved land, often used as a basis for subsequent Improvements (eg. that of the Brims estate (1769) SRO RHP 1219); a map of proposed Improvements superimposed onto a plan of the unimproved estate (eg. Lythmore (18th century) SRO RHP 2793); and a plan of estates on which the Improvements had already been implemented (eg. The Crownlands of Dorrery (1848) SRO RHP 2776), this threefold division according to Hill ((1985) 130). A fourth category which could be added to this classification is that of maps pertaining to estates in the process of Improvement (eg. Shebster (1806) SRO RHP 1226; Castlehill (1772) SRO RHP 1220), which include elements of all three previous categories

and which may be more revealing about the processes of land improvement than the other groups.

The advantages of using these estate plans is that they reveal to varying degrees and in a variety of ways, the extent and location of the arable land, with the infield and outfield areas often distinguished, pasture with a description of its nature, moss and waste at one point in time. The tenants' farmsteads are invariably recorded as are any roads and rivers. Less frequently, prehistoric and early historic monuments are marked, some of which are no longer extant which provides an idea of the degree of destruction which has occurred since the plan was made as well as being of use to a surveying archaeologist who might examine such maps relating to the area of survey in order to note potential sites prior to the actual exercise. Commonly comments and notes on areas capable of Improvement and the methods of achieving this are included.

However to appreciate more fully the processes of improving the land and the development of the agricultural landscape, a chronologically sequential series of maps is required relating to the same estate to form a basis for comparison. In some areas such as the Lammermuirs this exists, where Parry (1980) was able to correlate changes in the limits of cultivation with historically recorded fluctuations in the prices of agricultural products due to the precision in dating he achieved from his data. However the basis for such exact chronology is not entirely evident in the Lammermuirs and it is certainly not the case in Caithness. In this area there are only two estates with successive maps of the same ground illustrating the development of the agricultural landscape: those from Castlehill, the first, dating to 1772 (SRO RHP 1220) showing the estate in unimproved condition but for the land pertaining to the Mains farm and the second, undated but probably not much later than the earlier

plan as they were drawn by the same hand (SRO RHP 1221) revealing further Improvements about to be introduced to the farmtown. The other example is that of Lythmore where a plan of the unimproved estate exists, over which a proposed scheme of Improvements was imposed, dating to the eighteenth century. There are also two later plans dating to 1831 (SRO RHP 2794) and 1848 (SRO RHP 2795/6) revealing the estate after the Improvements had been implemented. Other relevant estate plans are few in number and some are merely rough sketches and impossible to use. Where there is only one map of an estate in existence the only comparison that can be made is with the first Ordnance Survey maps dating to the 1870s. Although by this means an understanding of the contrast between pre- and post-Improvement can be realised, there is little evident relationship between the two agricultural systems and a complete understanding of the process of change is impossible.

The available and relevant estate plans were mainly centred on the North and East of the county where the majority of the arable land was located. The Southern and Western area of the county, as seen from the secondary sources, probably operated on a different economic basis with more of a pastoral emphasis. Thus even the evidence of the extant estate plans cannot be said to encompass the entire region.

The Development of Pre-Improvement Farmtowns

The estate plans can provide information about the earlier development of the traditional farming systems in an indirect fashion. The early farmtowns are seen at present to have been part of a changing and adapting farming system rather than being stagnant (Whittington (1975); Whyte (1979, 1980)) from the sixteenth century to the time of the

Improvements, with no reason to believe that this was not the case throughout their existence (Dodgshon (1980)).

One element in such a process was the splitting of the farmtowns. In Caithness the prime example of this process can be seen on the Brims farmtown situated on the coast between Holburn Head and the River Forss. It is possible that the farmtown originally consisted of a Mains, the remainder being farmed by tenants. Subsequently the township divided into Easter and Wester Brims under the central authority respectively of Easter and Wester Mains. At a date later than the formation of the original arable fields, sufficient arable was brought into cultivation on the Eastern fringe of the farmtown to permit the creation of a separate farm, the Park of Wester Brims, consisting only of outfield, implying its less fertile nature in that it could not be cultivated on a permanent basis.

Such division of property apparent on the Brims farmtown can be viewed as a recurrent feature of Scottish townships and an example of a change in society and land management at a fairly early date - though one which cannot be precisely dated in the case of Brims. Dodgshon (1981) propounds two possible explanations for such an occurrence: firstly that it was an attempt to physically separate the farmtown with a fragmentation of proprietary rights ; secondly that it was possibly an exercise to effect smaller and more efficient townships by reducing the amount of time taken by the tenant to reach his holdings, making management easier and more profitable for the landowner as it was considered that the number of tenants on each township could be increased (Dodgshon (1980) 129-132), although with hindsight it can be seen that such an increase in tenant populations could lead to pressure on land resources and might lead to the reverse - overpopulation leading

to decreased profitability, one of the reasons for the clearances of tenants during the Improvements. In the case of Brims, there are indications that there was fragmentation of proprietary rights: for example the common-grazing was divided between the two farmtowns. Nevertheless, the two farmtowns were obviously regarded as two halves of a whole in their being mapped as one township in 1769 and therefore it may have been a bid for greater efficiency rather than a separation of proprietary rights.

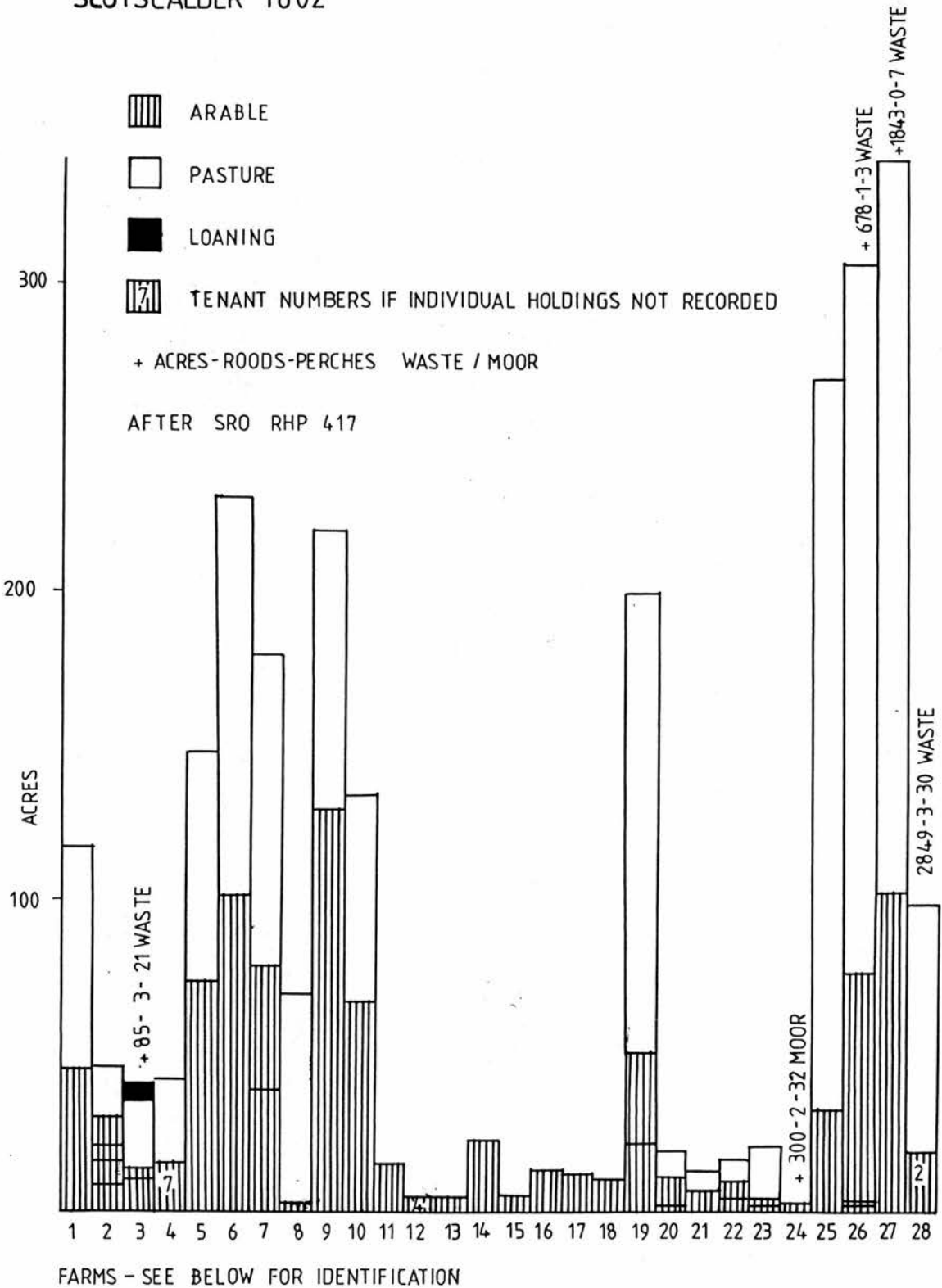
The Composition of the Farmtowns

The estate maps generally included a table of contents describing the amounts of land of the four basic divisions: arable, sometimes with infield and outfield treated separately, pasture, common and waste. The map of Scots Calder of 1802 (SRO RHP 417) contains the most detailed synthesis, listing in detail the tenants' holdings individually (see fig. 2).

On this farmtown, seventeen holdings were occupied under single tenancy, fifteen under multiple tenancy while one lay vacant. In the case of the multiple tenancies, the arable holding was subdivided and allotted separately to each tenant while the pastureland and waste ground were held in common. This difference may be due in part to the lack of any necessity to divide the pastureland, but also to the emphasis on arable farming: every tenant, however small his holding, possessed a measure of the cultivated land but not necessarily any pastureland. The reliance on and consideration of arable as the most important facet of agriculture is supported by the secondary sources, particularly in Brand's statement concerning the disregard of pastureland in any transaction (Brand (1883) 225, see above in Secondary Sources).

Fig. 2

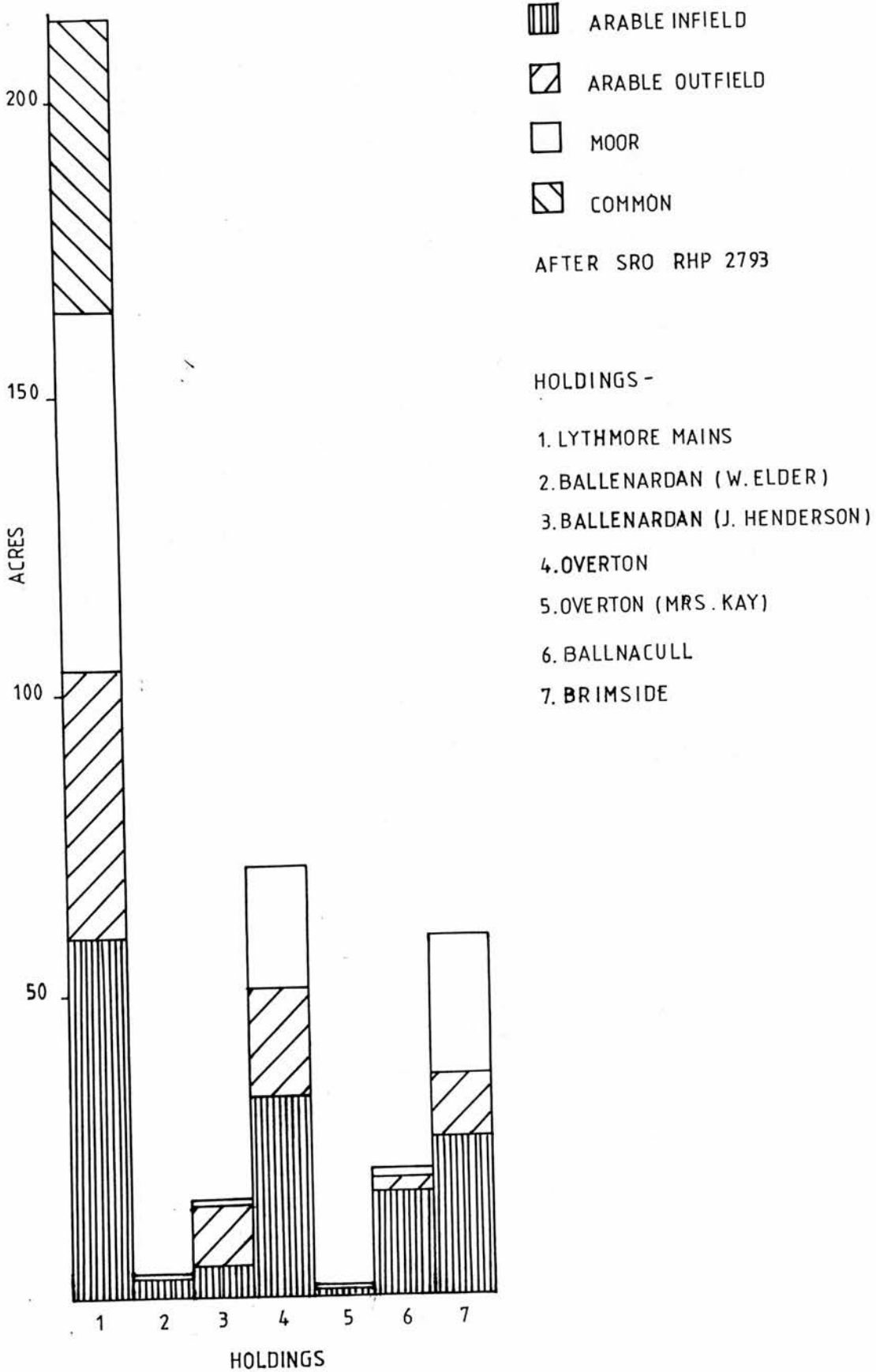
SCOTSCALDER 1802



1 Framside; 2 Park of Framside; 3 Bualagnafaat; 4 Hyshald; 5. Togie, Braeedge, Mushald and Kirkald; 6 North Calder and Carnavagry; 7 Sourn; 8 Bualhalladale; 9 Mains and Achivindergale; 10 Achavarne; 11 Little Achavarne; 12 Bualru and Apendicle of Achavarne; 13 Croitnault; 14 Plocan; 15 Bualmashel; 16 Croitdon; 17 Critanmich; 18 Bualreach; 19 Upper and Lower Achavroll; 20 Achagharisgall; 21 Blarnahishac; 22 Claisheal; 23 Bardmeless; 24 Achnagee; 25 Tongside; 26 Olgrimmor; 27 Olgribeg and Bualtogil; 28 Braehour.

Fig. 3

LYTHMORE 18th CENTURY



At Scotscalder, the quantity of arable ranged from the farms of Bualru and Apendicle of Achavarne, classed together as one property, with A3.3.8 (ie. $3\frac{3}{4}$ acres) of arable, divided among four tenants - a minimal holding of less than one acre apiece - to the Mains and Achivindergale, again grouped together, which contained A129.0.38 (ie. $129\frac{1}{4}$ acres) of arable. While the Mains farm encompassed the greatest amount of cultivated land, it did not contain the largest tract of pastureland, only A90.1.2 (ie. $90\frac{1}{4}$ acres) compared with Tongside's extent of A233.3.34 ($233\frac{3}{4}$ acres), another sign of the relative disregard for pasture prevalent with the traditional system of agriculture.

A similar situation existed at Lythmore (see fig. 3) in the eighteenth century (SRO RHP 2793). Again the Mains possessed the largest share of the arable land. The tenanted farms were four in number, two with single tenancies and two under double tenancies. In the latter holdings, Ballenarden and Overton, one tenant possessed greater quantity of arable and pasture than the other tenant while the single tenancies contained the greatest amount of leased land: at Ballenarden, W. Elder farmed 3 acres of infield and one acre of moor, while John Henderson leased 15 acres of arable, of which almost 10 acres consisted of outfield, and 20 acres of pasture. Overton's main tenant held 50 acres of arable containing 17 acres of outfield, while the other, Mrs. Kay, leased one acre of infield and a fraction of pasture - 2 roods or half an acre. The two minor holdings must have provided subsistence only and were probably rented by cottagers or cottars. This class of sub-tenants rented little land but, partly because of this fact "it was on the cottars who had little else to perform on his own land beyond raising a crop of oats to maintain his family, that the main burden of services fell" (Donaldson (1938) III)

either being daily servants or having to provide up to six month's service to the Mains farm (Donaldson (1938) III).

Lythmore was unusual in that 50% of the land pertaining to it was suited to arable cultivation of which 38% was infield and 12% outfield, a greater percentage than was common. Excluding this example the range was from 11% at Scots Calder to 30% on the Forss township. However on the later Lythmore plan a vast extent of pastureland was recorded, omitted from the earlier example: either it was a later extension of the township, possibly due to the splitting up of common land between different farmtowns or it was excluded from the earlier map, not being part of the farmtown where the initial Improvements were to be initiated.

By 1848, the land tenure at Lythmore had completely altered (see fig. 4). From seven tenancies, the farmtown was now composed of thirty-one holdings distinguished by numerals rather than by farm or tenants' names. This increase in the number of holdings might be due in part to the increased size of the estate. The composition of individual holdings had also changed: from possession of a degree of arable, pasture and waste in accordance with the traditional agricultural system, the holdings were now either predominantly arable or almost entirely pasture. There were great differences in the size of individual holdings, especially in those of pastoral nature: for example, Holding 9 possessed 169 acres of pasture and one acre of arable, compared with Holding 7 which contained just over 5 acres of pasture. Arable holdings tended to be smaller and less prone to fluctuation, with a maximum of 39 acres together with an acre each of pasture and waste on Holding 19, compared to the two acres encompassed by Holding 12 - a quantity similar to that farmed by cottars.

Fig. 4

LYTHMORE 1848

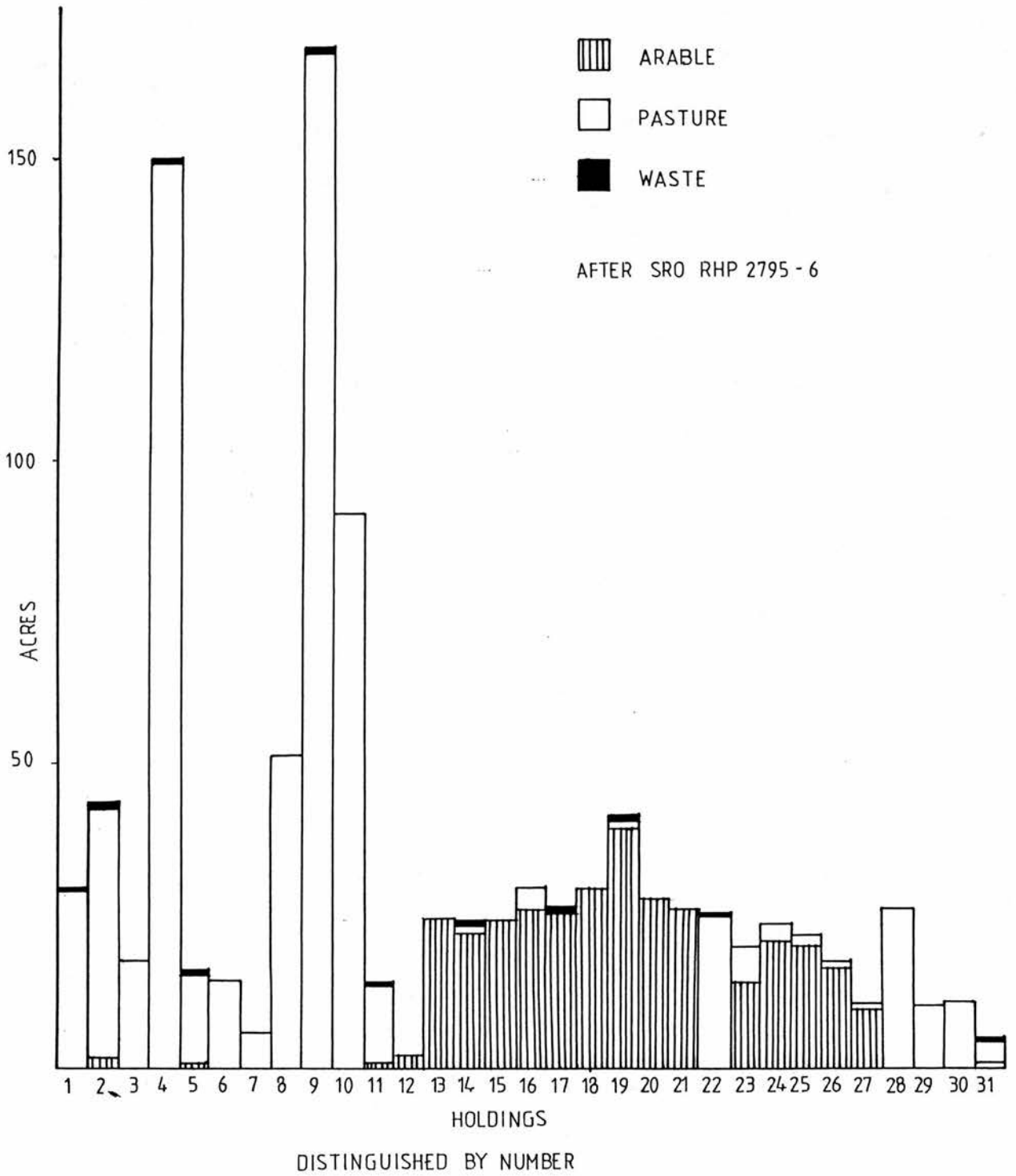
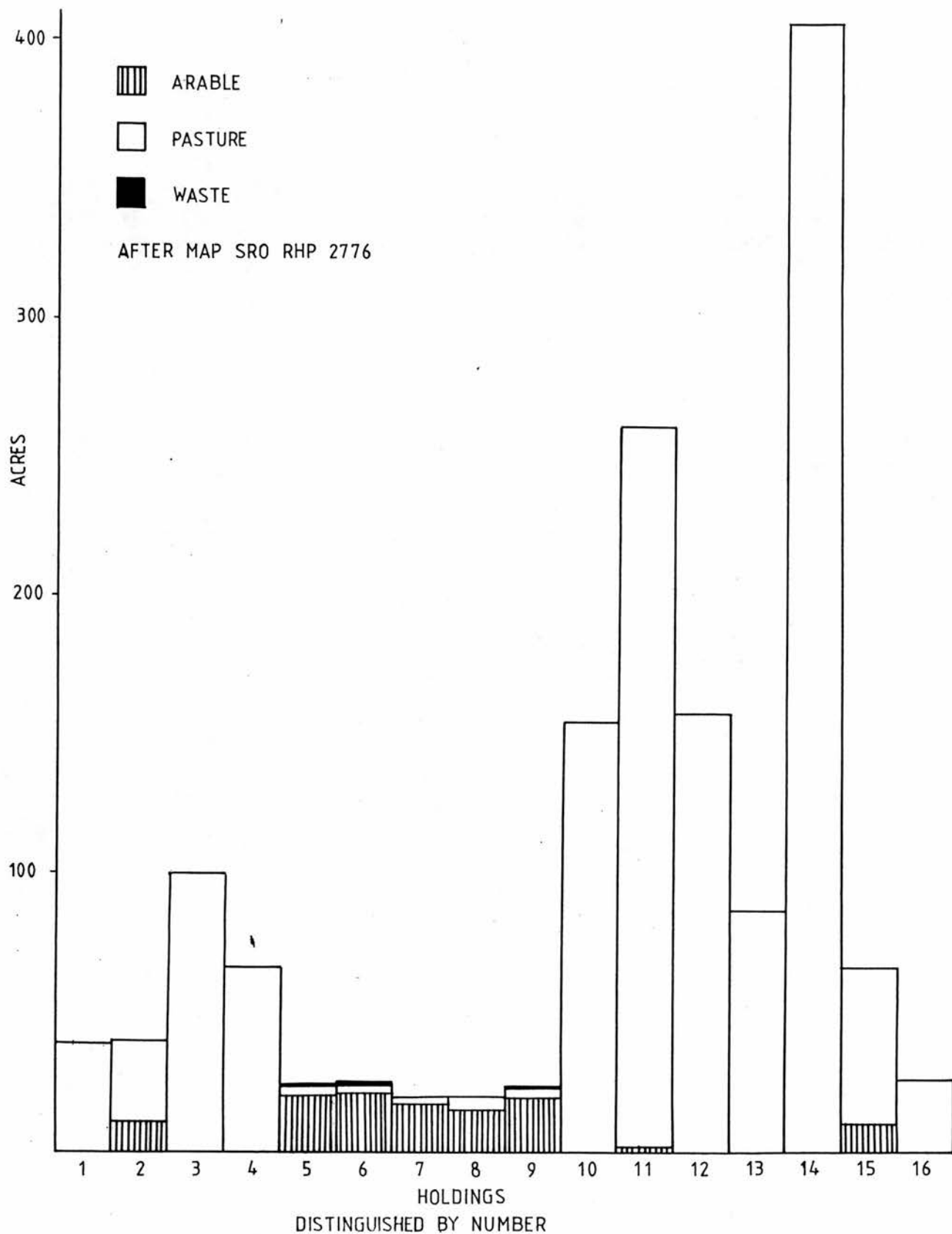


Fig. 5

CROWNLANDS OF DORRERY 1848



This contrast between arable and pastoral holdings can also be seen at the Crownlands of Dorrery in 1848 (see fig. 5). Again the estate was divided into numbered holdings, with large fluctuations in the amounts of pasture allocated to them, while arable holdings were of more standardised size. This differentiation between arable and pastoral holdings is due to the effects of enclosure and abolition of the runrig form of tenure, resulting in more spatially coherent tenancies, some on areas of pasture, others on areas of arable.

The estate maps provide a final cartographic view of the late pre-Improvement agriculture. On some maps, such as that of Shebster 1806 (SRO RHP 1226) there were signs that Improvements had already begun to be implemented, despite the fact that most of the farmtown was as yet not affected.

The Farmtown of Shebster

One estate plan alone cannot clarify the chronology and typology of the longhouses. However, the existence of the estate plan in conjunction with the evidence of the surveys carried out by Mercer (1985a) covering the area of the farmtown of Shebster in Reay parish has provided a fuller picture of the processes of Improvement that have occurred in this area. By 1807 a system of drainage channels had been excavated around the farms of Achimore and Bardnaheigh, but the arable land it surrounded was not yet enclosed and consisted of the traditional irregular patches (see fig. 6). The remainder of the estate was wholly unimproved, the landscape one of irregular areas of cultivation around which the longhouse farmsteads were scattered. On this estate plan, as on the others relating to Caithness, the steadings tend to

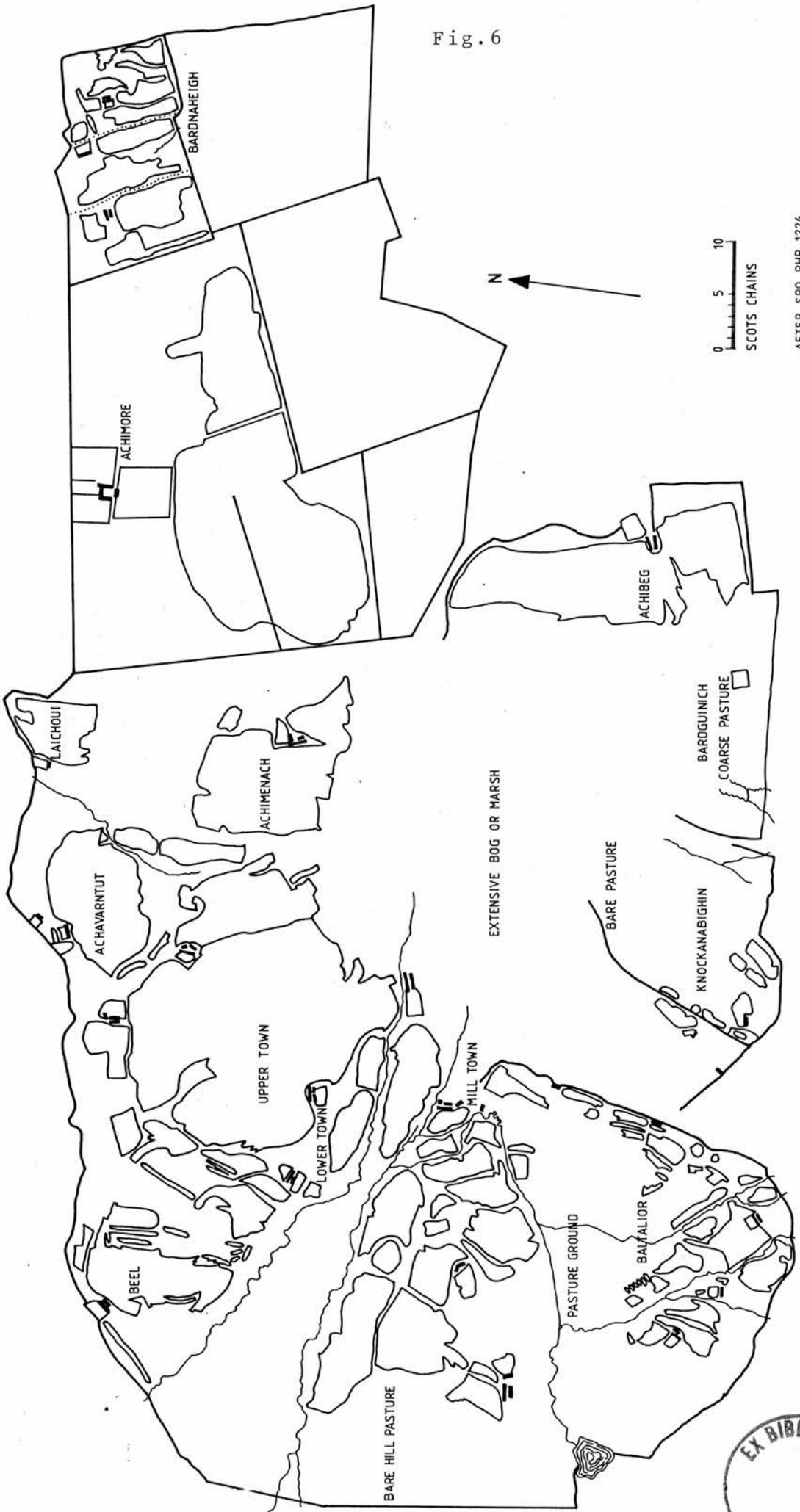


Fig. 6

AFTER SRO RHP 1226



Fig.7

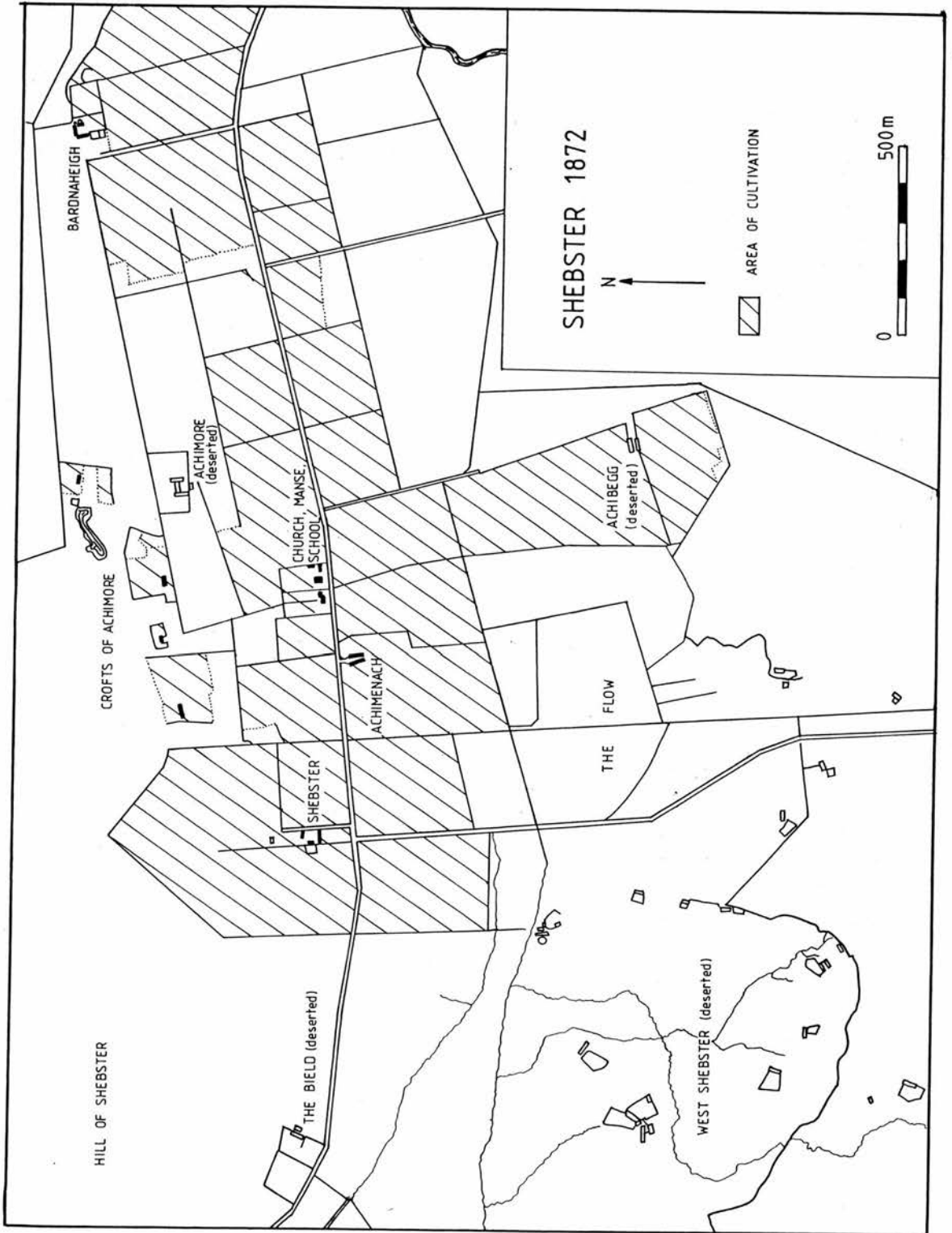
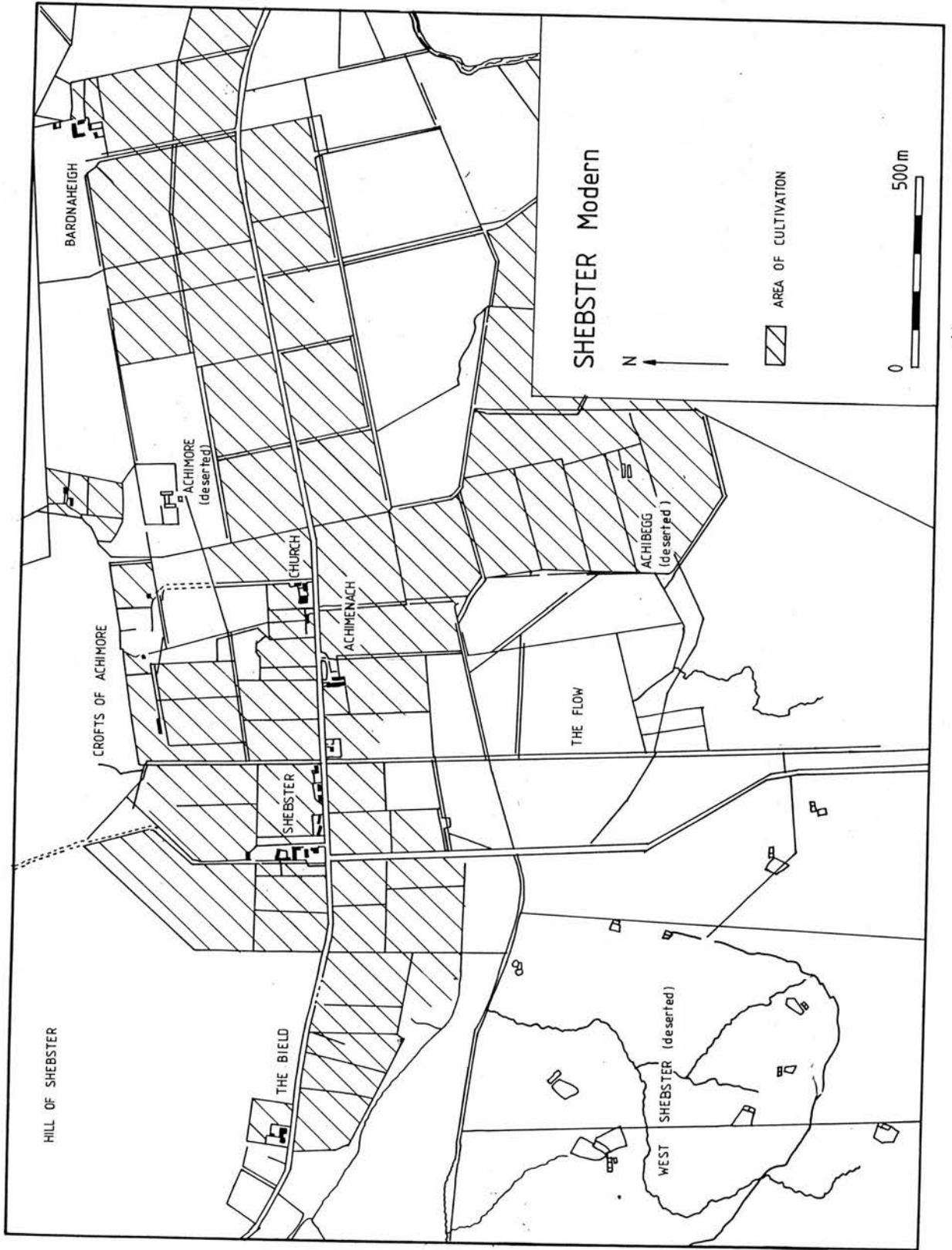


Fig. 8



conform to one type: longhouses, often set in pairs, one usually of greater length than the other, commonly associated with a kaleyard of sub-rectangular form and

often utilising one wall of the longhouse as one side of the enclosure.

A comparison of the deserted farmsteads of the 1872 Ordnance Survey with those of the 1806 map (see fig. 7), shows correlation with regard to the location and form of the longhouses. This is most clearly evident in the field system on the Hill of West Shebster. Here, the head-dyke is mainly extant, as are all the farmsteads marked on the estate plan, although they are unroofed by this date. Elsewhere the farms of Achimore and Achibeg were deserted and others were no longer marked. Of them, the steading of Laichoui may have been recognised by survey (Mercer (1985a) FOR Mon. 191). The longhouses associated with the 1806 Upper and Lower Town due to the continued cultivation of the area have not survived and the site and materials of the Mill Town appear to have been converted into a sheep shelter.

FOR Mons. 188 and 193 cannot be reconciled with the 1806 plan: they lie within the area improved by drainage and it is likely that they were cleared or abandoned to facilitate this development.

On the Hill of West Shebster, it is clear that the implementation of the process of drainage and enclosure was not immediately related to the abandonment of the farmsteads by 1872. The structures are in the same location and presumably are the same steadings as those shown on the plan of 1806. However they are associated with enclosures of a different form than those of 1806. They are often of irregular rhomboid shape and appear to be larger than the earlier kaleyards, although due to the uncertain accuracy of the scale of the estate plan, it is not definite. Due to their irregular shape it would appear unlikely that they used for

cultivation and they are more likely to be stock enclosures, implying that stock raising was increasingly important in post-Improvement farming.

It is likely that the tenants still farmed arably although there is no evidence for this. They are associated with rig-and-furrow as discovered by survey, but as it correlates with that shown on the 1806 plan, it does not necessarily mean that there was cultivation after the stock raising enclosures were built, although it seems likely that crops were still raised by the residents. More direct evidence lies in the fact that in at least four examples the farmsteads possessed corn-drying kilns. These were primarily used to prepare the grain for grinding, for drying malt and stopping the germination of the seeds for ale-making. Also, where the growing season was short and the corn did not ripen fully the grain for next year's seed had to be dried, although this would not be likely in Caithness (Fenton (1978) 375). In three of the four recorded cases, the kiln was attached to one of the ends of the longhouse or to a subsidiary building; in the other it was attached to the East corner of the longhouse (FOR Mon. 128a). It could be argued that the kilns went out of use before the stock raising enclosures were constructed, but there is no signs that they were abandoned earlier than the remainder of the farmsteads.

The longhouses themselves are variations on a theme: of varying lengths, with up to two ancillary buildings such as barns, byres and winnowing barns, with varying constructional details. All appear to have been stone-built in their entirety, which argues against Mercer's theory that they represent a later tradition than those of turf, relating to the mid-nineteenth century as these are clearly earlier in date. They are all of byre dwelling type (see below, Longhouse Chapter), another feature suggesting an early date, and vary in size and complexity despite their

relative synchronicity. This lack of similarity is no doubt an indication of the relative wealth, industry and/or personality of the occupants: it would be more surprising if all were the same in all but essential layout.

The only recurrent feature is their association with the stock enclosures. The few which were not so associated may have been abandoned with the change in land-use. Supporting evidence lies in the fact that these longhouses have only survived to a height of c. 0.5m, whereas those with the new form of enclosure have survived to a greater wall height.

The farmsteads are scattered over the Hill of West Shebster in an apparently random manner, but the underlying reason is revealed by the 1806 plan where they are situated at the edges of the patches of cultivation. These fall into three main sections on different contours, the orientation of the longhouses either following the edges of the arable or the topography:

1. The Mill Town: between 65-80m OD
2. Baltalior: between 90-95m OD
3. Knockanabighin: between 90-95m OD

In addition, there are further longhouses built beyond the head-dyke in what would have formerly been the common-grazing between 100-110m OD. These longhouses are not associated with rig-and-furrow and may relate to a purely pastoral economy, probably to a post-1806/ pre-1872 date. Longhouses which are not associated with corn-drying kilns or rig-and-furrow are located on the higher fringes of the hill and it is likely that they were pastoral farms. As they are not recorded on the 1806 map it is possible that they are of later construction.

By the time of the 1872 OS map, the settlement of West Shebster was abandoned and the land was enclosed and drained. That this occurred at

an earlier date is shown by the report in the N.S.A. account to the effect that by 1845 the farm of Shebster had been converted to a sheep farm (N.S.A. (Parish of Reay) 19). The only pre-Improvement farms to survive were Bardnaheigh and Achimenach, while between 1806 and 1872 the Mains of Shebster was built. A great deal of land under cultivation in 1806 was allowed to revert to rough grazing, including the Hill of West Shebster, which accounts for the good preservation of the longhouses there. This was probably due to its conversion to sheep farming as sheep shelters were built by 1872. Two crofts at Achimore were built after 1806 and may be related to the sheep farming, possibly being built to accommodate displaced tenants retained for its management.

By 1872, the system of drainage at Bardnaheigh was completed and further sub-divided and enclosed and was extended to cover the Upper and Lower Town.

Between 1872 and the current OS, the change in landscape has been minimal (see fig. 8). The farms occupied in 1872 are still in use. The area of cultivation has been increased in the South West to the East of Achibeg; to the East of Achimore crofts; the Bield (probably "Beel" of 1806) has been reclaimed from rough grassland and the fields have been further sub-divided.

At Shebster it was anomalous that the Mains was not the first area to be improved, as generally it was land directly farmed by the proprietor that provided the primary focus of Improvement. The farm of Achimore was tenanted though Bardnaheigh was not, these being the farms around which the system of drainage was initiated and it may have been on these farms that the initial Improvements were experimented, only extended to the Mains when they had proved successful. The farmtown of Castlehill was a more typical example (SRO RHP 1220). Here the Mains farm of

Stangergill was the focus of the Improvements, while the remainder of the estate was farmed under the old system.

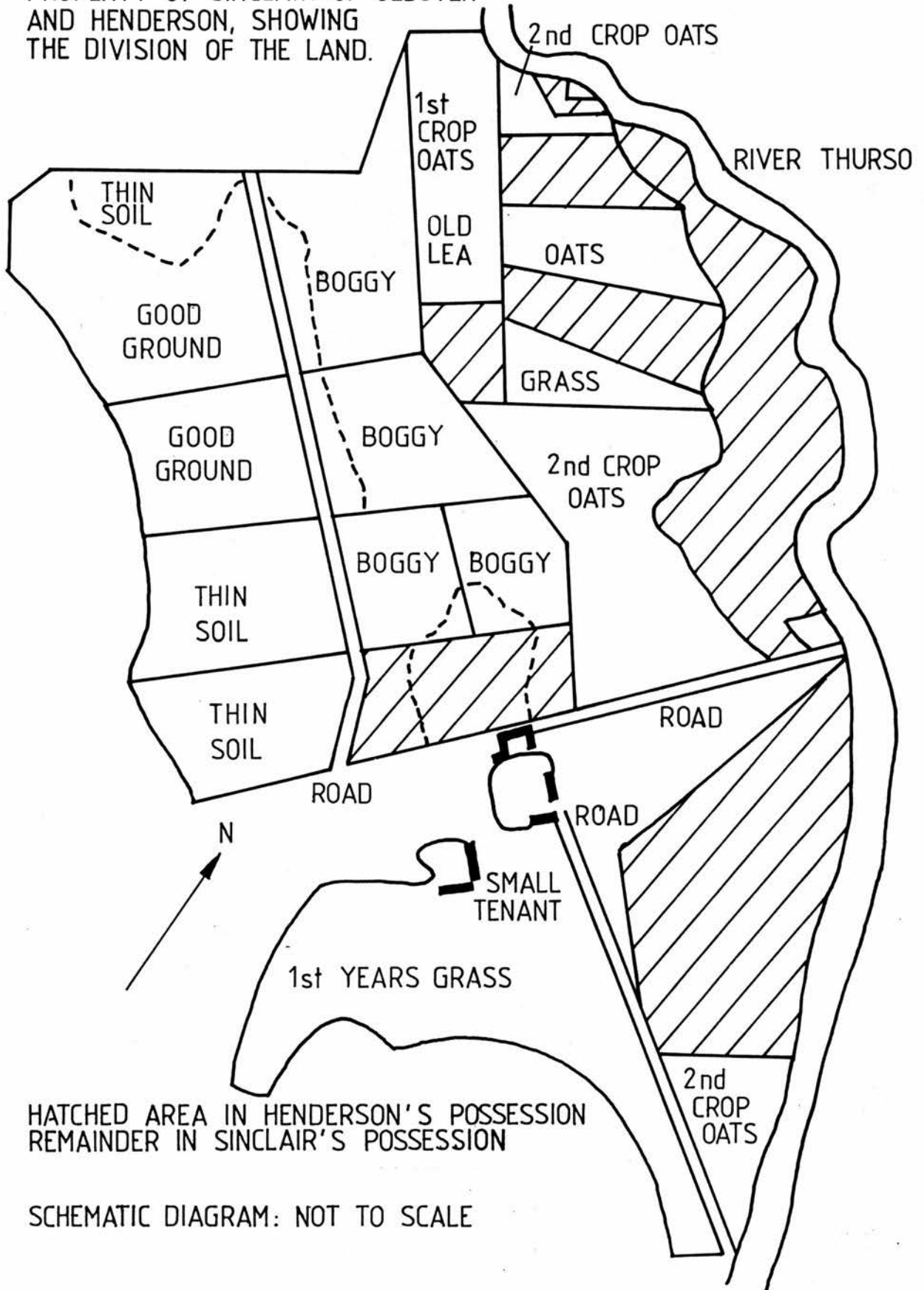
The Evidence of Estate Plans: Implementation of the Improvements

The process of building boundary ditches, subsequently infilled by secondary drainage channels to form a more recognisable system of fields as attested at Shebster was also evidenced on the maps of the Ulbster estates. In 1820 a map showed the farm of Hoy prior to any Improvements, with patches of arable land and a scattering of longhouse farmsteads. Enclosures were marked on this plan in pencil, which by the time of a map of 1835 had been effected, the ditches outlining the limits of the farmtown and the boundaries of individual tenants' holdings, several longhouses being in occupation as well as the Mains. The arable land within the ditch systems was still cultivated in irregular patches, again seen on the 1806 Shebster plan, and therefore the Improvements had not been fully achieved. By 1853, a further map showed that the farm was fully enclosed and the drainage system further subdivided, with only the Mains farm in existence.

An interesting example of land division occurred at Westerdale, depicted in an estate plan of 1824, pertaining to the Ulbster records (see fig. 9). One of the results of enclosure was automatically to abolish the system of runrig whereby each tenant held one strip of land in each field, so that a relatively equitable division of the property occurred with regard to the quality of the land. This traditional method of land division was deplored by the improving proprietors and authors, as characterised by the following: "Were there twenty tenants, and as many fields, each tenant would think himself unjustly treated, unless he had a

WESTERDALE

PROPERTY OF SINCLAIR OF ULBSTER
AND HENDERSON, SHOWING
THE DIVISION OF THE LAND.



HATCHED AREA IN HENDERSON'S POSSESSION
REMAINDER IN SINCLAIR'S POSSESSION

SCHEMATIC DIAGRAM: NOT TO SCALE

proportionate share in each. This causes treble labour, and as they are perpetually crossing each other, they must be in a state of constant quarrelling and bad neighbourhood" (Sinclair (1795) 207). Westerdale was partly owned by Sinclair of Ulbster, the author of the above statement, and Captain Henderson, another leading Caithness Improver and the estate plan showed their method of apportioning the enclosed land. The quality of the soil varied throughout the farmtown and therefore the fields allotted to each owner were scattered over the entire township so that they each held a fair proportion of good land and boggy area - a method and philosophy not dissimilar to that inherent in the runrig system that they disparaged.

From the estate plans there is evidence of the physical realisation of the Improvements, with an indication of the formation processes which have led to the present day agricultural landscape: first the excavation of large ditches to drain the land and also to form boundaries between separate holdings. Then there was a subsequent process of infilling of this initial grid by draining, ditching and fencing the land. The Mains was normally the primary area of Improvement although there is evidence that this was not always the rule in the case of Shebster, the tenanted areas of the farmtown being improved piecemeal at a later date. That such developments were not necessarily successful is implied in the case of Shebster where much of the township was converted to sheep-farming, either because it was more profitable commercially or because the Improvements to the land could not be sustained.

In summary, the cartographic records pertaining to Caithness clarify the image of the agriculture of the county as attested by the secondary sources. Roy's Military Survey may be used on a general basis to indicate

those areas of the county cultivated at around 1755, which were the coastal plain, river valleys and loch margins, as one would expect, cultivation becoming patchier and more dispersed in more marginal areas. The land cultivated would not appear to have been that of the greatest capability but also that of lesser potential, possibly a sign of the pressure on land resources exerted by a rising population immediately prior to the Improvements.

Estate plans showing the physical layout and sometimes the composition of land types of the farmtowns and the extent of their holdings can produce more detailed evidence, with indications of the processes by which the farmtowns evolved by splitting and also those by which the Improvements were implemented. Differences between the pre- and post-Improvement land-use could be seen in the change from the traditional allotment of land of varying quality by which each tenant possessed a share of arable and pasture to one in which the individual holdings were of either arable or pastoral nature, a result of the act of enclosure as well as that of the Improvement philosophy of effective management of the estate.

The processes of Improvement were best viewed at Shebster, Reay parish, as here the evidence of the estate plan was supplemented by that of field survey (Mercer (1985a)). Here, three phases of land-use since the period immediately prior to the Improvements were detected:

Phase 1: Early nineteenth century. Rig-and-furrow farming was still in practice, but Improvements were beginning to be implemented, mainly in the excavation of a grid of drainage channels around the main farms of the township, probably associated with some clearance of the tenants.

Phase 2: Early to late nineteenth century. Tenant farms continue to exist in upland areas, but their economy changes to one with a predominantly pastoral emphasis, implied by their association with stock enclosures. The Mains farm and crofts have been constructed, and there is conversion to sheep-farming, resulting in the abandonment of the farmsteads associated with stock enclosures. Drainage systems have been extended and further divided and the land is enclosed.

Phase 3: Late nineteenth century to present. Tenant farms abandoned or cleared, only the Mains and crofts still in occupation. Limits of cultivation extended and field-systems further subdivided.

Such a process of Improvement could be seen elsewhere with initially a widely spaced grid of ditches and drains appearing around the Mains farm, later extended to the entire farmtown and further subdivided by ditches and drains. Such a process was accompanied by a decline in tenant numbers. Initially the grid may have been to delineate individual holdings but subsequently the tenants were removed from the land.

The estate plans reveal the physical development of the estate - the adaption, abandonment and building of structures relating to agriculture and the way in which the land was used. For an examination of the management, society and economy of the traditional and Improvement farming systems, it is necessary to turn to the primary documentary sources.

CHAPTER 4: PRIMARY SOURCES: DOCUMENTARY

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The primary documentary sources relating to Caithness are the Sinclair of Mey Papers [GD 96], the Breadalbane Papers [GD 112], the Sinclair of Freswick Papers [GD 136], the Sutherland of Forse Papers [GD 139] and the Sinclair of Dunbeath Papers [GD 280] held in the Scottish Record Office and whose reference numbers are in brackets and the Sinclair of Ulbster Papers, the documents relevant to land-use being stored in the farm of Thurso East Mains. They span a period from the late seventeenth century to the end of the nineteenth century and cover a diverse range of subjects relating to estate management, agricultural practice, Improvements and the tenantry.

They are not prone to the same degree of bias as the secondary sources and can be more valuable as their intended accuracy can be assumed. However, only a small percentage of the estate records have survived and therefore there is rarely a chronologically coherent record, preservation increasing in proportion to relative proximity to the present day and to perceived relevance. Also, as different aspects of estate management have tended to be preserved from different estates, there is a lack of comparative data. Often aspects of the agricultural economy must have been taken for granted and so went unrecorded eg. only one example of a list of services has survived whereas rentals tended to be kept so that a definite record of payments and arrears could be made. As these documents mainly relate to estate management, the majority of the information is concerned with the Mains - its agricultural practice and the payments to it of rents and services and therefore little evidence for the farming practice of the tenants has been included, except in as much as it affected the Mains.

Pre-Improvement Records

Few examples of documents relating to estate management and farming practice prior to the Improvements were to be found in the papers examined, probably due to lack of preservation rather than absence of recording, the majority consisting of rentals prior to full conversion to a money rent. The earliest rentals, dated to the late seventeenth century, formed part of the Breadalbane Papers. They consisted of lists of farmtowns, with tenant numbers, the extent of their holdings, the rents payable for these holdings and the monetary value of the latter. The rents were mainly composed of a victual payment and money rent and any additional payments in kind were indicative of the predominant aspects of the tenants' economy: Stroma paid malt, fish, oil and poultry as well as money and victual, as one would expect from an island whose main supports were corn and fishing (Bayne (1735)). Elsewhere, the pastoral element of the economy could be seen to have greater significance: in Latheron Parish, Shinval and Acharaskill paid amounts of butter and cheese while in Watten Parish, the tenants of Halsary paid cheese, butter, a cow, a stirk, and a measure of feed. Rumsdale, in Halkirk Parish was expected to pay a lamb, a cow, 3 stone of butter and cheese in 1682-3 [GD 112/ 9/ 4/ 4] which had risen by 1694 to 43 stone of butter and 45 stone of cheese when the farm was noted as keeping 30 milk cows and 30 year old cows [GD 112/ 58/ 9]. This increase in rent was not due to inflation: in a storehouse book of 1688 [GD 112/ 58/ 7] it was recorded that two tenants at Rumsdale paid 30 stone of butter, 30 stone of cheese and 10 stirks for steelbow cattle and this would account for the increase in rent, with new tenants entering the holding between

1682 and 1688. Steelbow tenure was "an arrangement by which the proprietor provided grain, implements and often a sum of money for the incoming tenant who was in return expected to pay a higher rent" (Shaw (1980) 56) and to repay the goods at the expiry of the lease or at the tenant's departure as written leases were often not provided (Fenton (1978) 447). This system was common in Orkney, where it enabled a tenant to begin to farm without capital, stock or equipment (Shaw (1980) 56) and would appear to have been practised in Caithness, though extant references are relatively rare: another example as recorded in the rental of the Ulbster estate in 1767 for two tenants, one at Roster and the other at Benalisky. However there is no record of its being used for any goods other than cattle unlike in the Northern Isles where a list of steelbow goods in North Strynzie itemised a number of ploughs and other arable equipment (Fenton (1978) 293).

A difference between the rents of predominantly arable and mainly pastoral farms was revealed in the Ulbster rental of 1767. This itemised the rents paid in kind with their monetary equivalent. In the lowland farms of this estate the rent was a combination of the following: money rent, farm crop, wintering (ie. keeping and feeding the cattle of the Mains farm over winter), vicarage (ie. crops paid to the minister), one meat lamb, rent and farm of x Bolls sowing and service money. On highland farms only a money rent was exacted, on occasion with the addition of a fed veal and a measure of butter and cheese. That on these upland farms, stockraising was of importance was demonstrated by the fact that often the money rent was paid by numbers of cattle, just as on lowland farms it was occasionally paid by victual. The reason for the money rent only being required on highland farms was probably due to their distance from the Mains as it was impractical to carry out any

services there and to their situation which would produce poorer quality crops, possibly of insufficient quantity to make a victual payment.

Another difference between the lowland and upland farms was that the latter tended to be occupied by fewer tenants. They were often single or double tenancies, although Roster, for example, was farmed by five tenants. This was due to greater fragmentation, a result of the hillier nature of their location and the fact that a greater amount of land was needed to support the tenant and his family, caused by the poorer quality of the land and its resultant emphasis on pastoral farming.

The Ulbster rental of 1767 was partly converted to a money rent while the Mey estate rentals surviving from 1798 [GD 96/ 679] were fully converted as only money and victual payments were demanded.

However, payments continued to be made by services and farm products: quantities of geese, hens, eggs, lambs, swine, ale, whisky, salt, tallow and peats; sowing bear and oats; fealing dykes (ie re-turfing the head-dyke); threshing; proofing corn; spinning; burning lime; quarrying; flooring stables; skinning; repairing farm buildings; smith work; mason work; tailor work; shoe making; providing mill gauls (holes in the mill dam to allow the water through to the lade, blocked by a variety of means - eg. wooden or iron grills or wedges of turf or straw (Gauldie (1981) 110)). Thus, although only money and victual were demanded, the rents were paid in the traditional way which would have been easier for the tenants as access to money was restricted.

Lists of services did not survive to the same extent as rentals, possibly being less well recorded, and only one example from the Sinclair of Freswick Papers was preserved, that of the services payable by the tenants of Lochend in 1786 [GD 136/ 800]:

1. Cutting and carrying a dyke of feal 80' long, 4' high.
2. Leading divots and repairing roofs of houses.
3. Weeding corns for two days of three hands.
4. Cutting hay for three days of two men.
5. Leading and building hay of four horses and two men.
6. Shearing corn for five days of four hands.
7. Putting on and building corns for six days of four horses and four hands.
8. Kilning and milling 60 Bolls oats.
9. Carrying meal and bear to Thurso with six horses for six horses for six days and two hands.
10. Threshing on the first of winter for three days.
11. Dressing bear at the Mains.
12. Mulking (mulching) with seven horses for four days and four hands.
13. Ploughing 2 Bolls bear sowing.
14. Harrowing with four horses for five days and two hands.
15. Sowing oats for five days.
16. Feal and horse carriage when called for.

Cottars' services.

Thus each stage of the agricultural year was revealed as the tenants were fully involved in every aspect of cultivation at the Mains as well as the provision of turf and peat for dykes, roofs and fuel. This also supports Donaldson's statement that the cottars bore the brunt of the services (Donaldson (1938) III) as from this document it can be seen that

they were required to perform additional service to the Mains. A slightly earlier rental of 1779 [GD 136/ 786] showed rents and services converted into money, with only some cottars carrying out unconverted services. However it would appear that, as on the Mey estate, a recorded conversion of rents to money did not necessarily become immediately effective. It would appear that services were the first part of the payments to be converted, at least nominally, into a money payment as was shown by the 1767 Ulbster rental where service money was listed, while goods in kind continued to be demanded. The earlier date of conversion of services would also decrease the likelihood of the survival of lists of unconverted services.

Apart from the rentals, there was little information relating to farming practice. The Sutherland of Forse Papers contained a series of documents relating to the early eighteenth century sowing of bear. The most detailed, dated 1717, concerned the quantity of bear sown each day on the arable land of the farmtown of Brabster between 6 and 28 May [GD 139/ 197]. This was the most common time for bear sowing, as it was reported to occur in May with oats being sown earlier, in April (O.S.A. (Parish of Canisbay) 14; (Parish of Reay) 154). The names of some of the "fields" or patches of cultivation - Knollshade, Hallshade, Flowshade and Craiggysshade - may refer to some form of sun-division, an early practice used as a means of allocating the runrig whereby "a landholder is said to possess either the sunny (solarem) or shadow (umbralem) portion of a toun" (Dodgshon (1975); (1981) 156-7). The manuring of the Knollshade was recorded: the 8th from the gate with sheep dung; the 14th with rubbish and mortar; and the 15th with cow dung. Kelp was not used as Brabster lay inland away from this coastal resource. A note was made of the rigs that were sown - 6th, 7th, 8th and the 16th, 17th, 18th. It would

therefore appear that the Knollshade was a outfield with a number of rigs left fallow, part of which was manured and the remainder sown. Probably oats were also grown, but as this document concerns only the bear planting it is not mentioned. The rotational system of outfield would have necessitated the recording of the sowing and manuring, so that the system was not mismanaged. That of the infield was constant and therefore needed no recording.

The quantity of bear and oats produced by the Mains and that given by the tenants and its distribution - by making it into meal, sowing it, delivering it to various people such as hired servants, teachers and ministers or to storehouses, feeding it to the farmstock and selling it to tenants, other proprietors and corn merchants - were all recorded. If the crop was to be sold commercially it was proofed, a practice alluded to in the list of services from Lochend (see above; [GD 136/ 800]). Proofing was the method by which the quantity of grain in the stacks was measured by the threshing of a sample amount by a proof man who was acceptable to both seller and buyer (Fenton (1976) 79). Accounts were also kept of the annual amount of oat and bear meal which was obtained from the Mains crop yield and from the victual rents of the tenants. A note was made of its delivery and sale to farm servants, tenants and dealers. One example related to the crop of the Mains of Thuster 1796-7 [GD 139/ 264], measured in Bolls, firlots, pecks and lippies:

OATS

Charge: B f p l

To 5B-3f-2p- $\frac{1}{2}$ l of proof

should be proof and stock. 147 1 0 $\frac{1}{2}$

To 2p 2l of proof on a waste possession in

Wetherclett should be proof and stock..13 1 0 2
 Oats threshen at Martinmas, unproofed.....5 0 0 0
TOTAL 165 2 0 2¹/₂

Discharge:

Made into meal.....110 0 0 0
 Sown in the Mains.....44 1 3 0
 Sold John ? in Thuster.....2 0 0 0
 Sold George Cogill.....0 1 2 0
 Small oats.....7 0 0 0
 By D^r to the dry.....0 3 2 0
 By inbrakes.....0 3 1 2¹/₂
TOTAL 165 2 0 2¹/₂

OATMEAL

Charge: B f p l

To 110B oats made into meal.....54 2 0 2
 Farm meal received from tenants.....179 2 1 ¹/₄
¹/₂ stone on each Boll of above.....13 3 3 4³/₄
TOTAL 247 3 3 4³/₄

Discharge:

Delivered to various people and servants...247 3 3 4³/₄
TOTAL 247 3 3 4³/₄

BEAR

Charge: B f p l

To 2B-1f-3p-3¹/₂l proof should be
 proof and stock.....62 1 0 3¹/₂
 To 2p-2l proof on a waste possession on

Wetherclett should be proof and stock.....3 3 2 2
 Bear farm from tenants.....55 0 2 2¹/₂
TOTAL 121 1 2 0

Discharge:

Made into meal.....22 2 2 0
 Sown in the Mains.....18 2 0 0
 Delivered to Mr. Sutherland for stipend.....4 3 0 3
 Sold to various people.....39 0 1 2
 Delivered to the storehouses at Staxigoe....33 0 0 0
 Inbreaks.....3 1 1 3
TOTAL 121 1 2 0

BEARMEAL B f p l

Charge:

To 22B-2f-2p bear made into meal.....22 3 2 1
TOTAL 22 3 2 1

Discharge:

Sold to servants and balance.....22 3 2 1
TOTAL 22 3 2 1

[GD 139/ 264]

There was also an account for 1797, the only example of a chronologically consecutive series of pre-Improvement date. It revealed that of the 44B-1f-3p of oats sown in 1796, 177B-2f was yielded, a ratio of 1:4 and from the 18B-2f of bear sown a yield of 57B-3f-1p was obtained, a ratio of 1:3. This is below the average yields or "returns" noted in the O.S.A. where averages of 1:5 and 1:7 were reported for oats and bear respectively (O.S.A. (Parish of Canisbay) 14) or 1:4 to 1:8 for bear

(O.S.A. (Parish of Halkirk) 90). Assuming that the recorded amount of grain sown in Thuster Mains was accurate, it is possible that the ministers who wrote the accounts for the O.S.A. were attempting to show their parishes in a good light by exaggerating the yield or by giving the best recorded crop yields produced by the best land. The yield at Thuster may have been anomalous - certainly it was more common for bear to produce a greater yield than oats, unlike the Thuster example - but there is no evidence for an unfavourable weather pattern in 1796-7 (Lamb (1978) *passim*) although one local storm might have affected the crops in the fields and have gone unrecorded. As was the case with the secondary sources, these yields are very low indeed. In the case of the primary sources, an explanation other than an unfavourable weather pattern is not immediately apparent, particularly as this is also the yield of the Mains which one would expect to encompass the prime agricultural land of the farmtown and therefore to be the most productive area.

Little information with regard to stock raising survives in the primary sources. The existence of horses, sheep, swine and poultry was implicit in the rentals as the tenants paid meat lambs, hens and eggs, the inference being that each tenant possessed a small number of these animals, but that except in payments of rent in kind, the keeping of stock did not sufficiently affect the Mains for their number or raising to be recorded with any regularity, especially in lowland areas where arable cultivation was the predominant aspect of the agricultural economy.

The cattle were mainly dairy cows and there is no evidence to suggest that they were purposely raised for slaughter. The account of money made from the Mains of Dunbeath [GD 136/ 847] recorded that two animals were sold for slaughter but one was a cow, too old for milking

and the other was a bull "that had fallen" which presumably either died or had to be put down as a result so its carcass was sold. Thus slaughtering was reserved for animals which had come to the end of their use for dairy farming or which had suffered an accident. Surplus stock, either from the Mains herd or given as part of the rent, were sold but there is no record of the markets or dealers.

Prior to the Improvements, the farmsteads of the tenantry were disparaged by many authors. Although there was little evidence of their constructional techniques, the various elements which made up the farmsteads were listed in the appreciations of tenants' houses. In these documents, the timber elements - mainly wooden couples (crucks) - and the iron used in their construction, valuable because of their scarcity, were appraised. They reveal a wide range of house types - examples from the Sutherland of Forse Papers included [GD 139/ 250]:

1. <u>House of Alex. Couper</u>	L / s / d
a little room and fire house	- / 2 / -
entry door	- / - / 4
<u>Total</u>	<u>£ - / 2 / 4</u>
2. <u>Possessed by James Ross</u>	L / s / d
a couple roof of barn and kiln roof	- / 7 / 4
a door and jams and iron bands	- / 1 / 6
a cellar roof and door	- / 3 / 10
couple roof of firehouse	- / 4 / 8
entry door and jams	- / 2 / -
back room	- / 2 / 4

byre	- / 2 / -
stable	- / 2 / 6
second stable	- / 2 / -
third stable	- / 2 / -
sheep cott	- / 1 / -
<u>Total</u>	<u>£ 1 / 3 / 6</u>

3. <u>William McBeath</u>	L / s / d
chamber roof and door and broken jams	- / 10 / 9
cellar roof, door and jams	- / 17 / -
back room, door and jams	- / 9 / 3
firehouse roof	- / 9 / 6
byre roof and entry door	- / 15 / 10
shop roof, door and jams	- / 8 / 8
stable roof	- / 2 / 2
stable roof	- / 1 / 4
couple room roof	- / 4 / 6
barn roof, kiln roof, three doors	- / 4 / 6
<u>Total</u>	<u>£ 5 / 3 / 6</u>

The first example, which was closest to Henderson's description of a cottar's cottage (Henderson (1812) 34) was the only one of its kind recorded on this estate, as was William McBeath's costly and complex steading. McBeath must have been a relatively wealthy man, for as well as being a farmer, he was a craftsman of some sort as the presence of a shop room or work room testified. The most common type of dwelling was typified by that owned by James Ross, the average value being £1. A

similar valuation survived for the Lochend estate [GD 136/ 778] which recorded a similar range of steadings, the majority of more complex form, as is the case in the Sutherland of Forse examples above, few being of simple byre dwelling form.

From the primary sources relating to pre-Improvement times, some aspects of land-use have been clarified in as much as they affected the Mains farm and the management of the estate. Of the actual farming practice of the townships, particularly that of the tenantry, little has been recorded or has survived, although rare documents relating to services, manuring rotation and distribution of farm produce cast some light on the agricultural year.

The most problematic facet of this study is that of the yields recorded as being obtained from a Mains farm in one of the most agriculturally secure counties of Scotland (Dodgshon (1981) 301). The low nature of the yields, however, may be an accurate reflection of the productivity of the land as they are recorded as such in both primary and secondary sources.

It may also be seen that some of the earliest recorded Improvements were introduced more gradually than was indicated in the contemporary secondary sources, as in the case of the conversion of rents and services: even when a money rent only was demanded, payment continued in farm produce and services. Also, although many "Improving" authors reported the state of the dwellings of the tenantry as being poor and basic, it can be seen that this is an exaggeration, many being complex in form rather than being simple byre dwellings, a fact also attested by the physical remains (see below, Longhouse Chapter). Thus the traditional view of the start of the Improvements and the state of the farmtowns

immediately prior to the Agrarian Revolution, as reported by contemporary authors can be seen as inaccurate in some areas.

The Improvements

A larger body of material has been preserved concerning estate management during the Improvements. However there is seldom any mention of their implementation: the most comprehensive body of information relating to this aspect of the Improvements is contained in the factory rentals and accounts of the Ulbster estates in the Parishes of Thurso and Halkirk which have survived from a date of 1812 and were examined up to 1880. Here the first recorded date of any Improvements was 1815, contained in the account book spanning 1812 - 1820. Thus it would appear that in this area of the Ulbster property no money from the estate was used to finance Improvements and even in 1815, the only recorded examples were of repairs to and rebuilding of houses and farmbuildings. From 1816 ditches and dykes were constructed, all of these boundaries delimiting existing properties rather than to enclose the farmtowns within regular systems of fields and ditches. It was only by the time of the next extant rental dated 1831 - 1833 that drains, ditches, hedges and enclosures were being constructed to further subdivide properties. Such a process of the construction of a large grid of ditches, followed by subsequent infilling by further ditches and drains, tallies with the evidence of the estate plans (see above, Primary Sources: Cartographic).

Also by the time of the 1831-3 account book, new settlers were being introduced to areas outwith the original extent of cultivation: the Hill of Hilliclay, Swardale, Sibster, Hill of Harpsdale, Duncanshill, Moss of

Geise, Moss of Halkirk, Balnaclavan, Janetstown and in 1835-6 the Hill of Forss. That some of these new holdings were of marginal nature is evident by their names, particularly those described as mosses. New tenants were also given some land already under cultivation, as if to compensate for the poorer quality of the new intakes of cultivated land, as the former tenants of these areas were given compensation for loss of land by a rent rebate. The new tenants were also given financial assistance for building houses. Improvements were stipulated in the new leases and the tenants were given an allowance for their implementation. However the nature of these requisite Improvements was not detailed in the records.

The cultivation of new strains of crops was documented: rye and grass seeds (1812-20), turnips, potatoes, beans and early Angus and Hopetown oats (1831-3). Lime shells were purchased from Sunderland to be used as a fertiliser, its use being both on the Mains and tenants' holdings. The new crops, however, were only recorded as being grown on the Mains and there was no evidence to suggest their cultivation by tenant farmers.

The ditching, draining and enclosing continued throughout the series of account books and although much of the expenditure concerned the maintenance of existing Improvements, there was still a considerable amount of new works being implemented eg. at Strathmore, where from 1863-6, Improvements were made to prepare the land for sheep-farming.

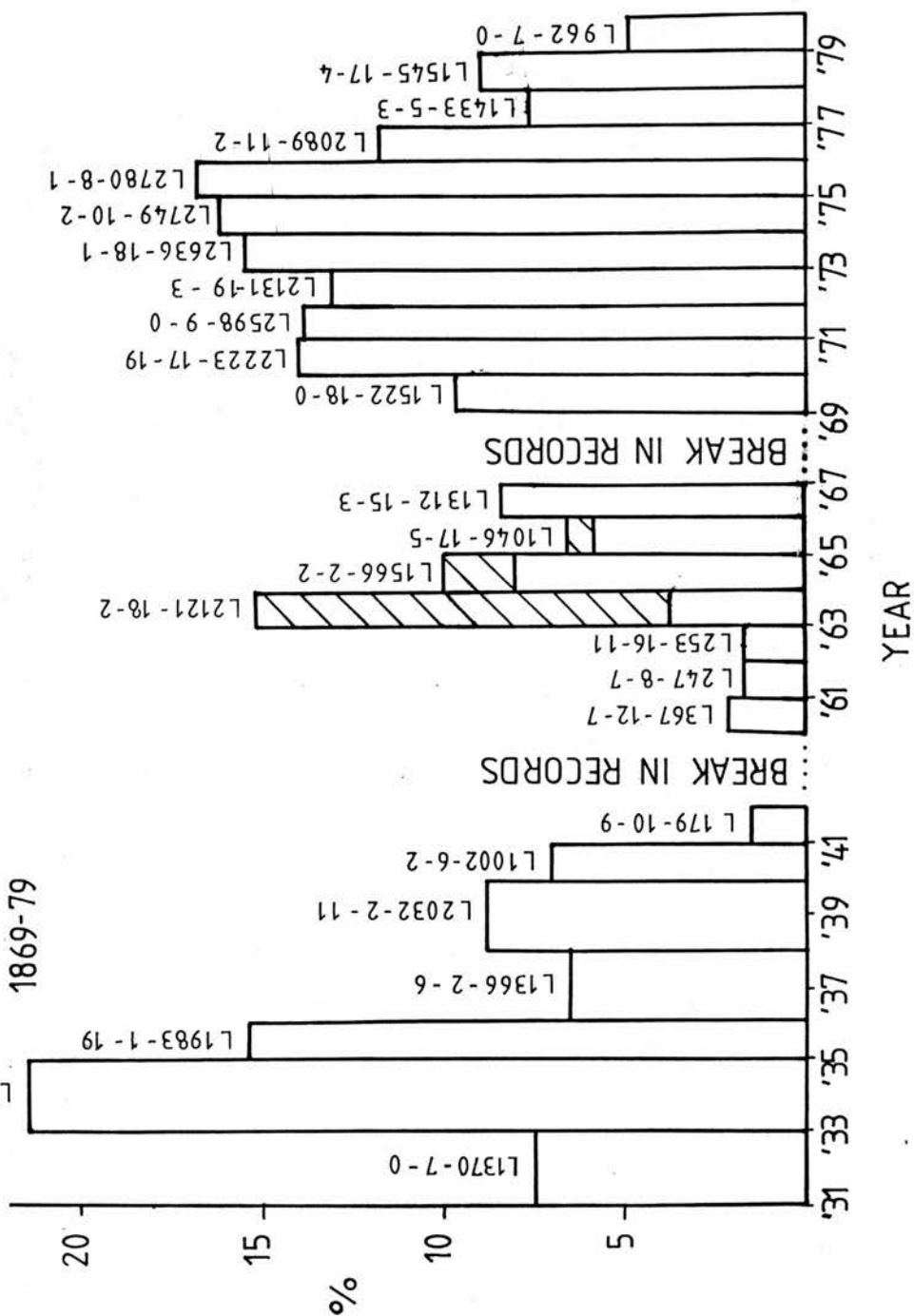
It was difficult to assess the amounts of money used to finance the Improvements, partly due to the difficulty of taking into account the rates of inflation and deflation and also because the earlier accounts span two years unlike the later annual reports. To compensate for this, the outlay on the Improvements has been given as a percentage of the total expenditure, a method also prone to bias, such as a single large

Fig. 10

PERCENTAGE OF EXPENDITURE USED TO FINANCE
IMPROVEMENTS ON THE ULBSTER ESTATE

1831-41
1860-66
1869-79

STRATHMORE IMPROVEMENTS



payment, but more accurate than any other form of presentation (see fig. 10). The quantity of money spent between 1831 and 1842 fluctuated greatly, ranging from 21.3% total expenditure (£3,884/6/4) between 1833-5 to 1.5% (£179/10/9) in 1842. There was a break from 1843 to 1859 in surviving accounts. Between 1860 and 1863 a relatively small amount was set aside for the Improvements, although in the latter year, the conversion of the Strathmore estate into a sheep farm raised the total to 15.2% (£2,121/18/2). The total used rose, until between 1870 between 14% to 16% (£2,000 and £3,000) was spent on the Ulbster estates, after which there was a gradual decline. Initially there seems to have been little method in the apportioning of money towards the Improvements, although after 1870 there would seem to have been some system of expenditure. Between 1876 and 1880 there would appear to have been a decline in the amount of money spent on Improvements, although as the records come to an end in 1880, it is impossible to be certain as to whether this trend continued.

The population of the Ulbster estate during the early and mid nineteenth century was derived from the rentals which accompanied the factory accounts (see figs. 11-15). From 1812-20 there was a rise in population, to a peak in 1838-40. This was partially a result of the tracts of land that were being brought into cultivation but there was also an increase in tenant numbers on existing farmtowns. Especially within the vicinity of the town of Thurso there were greater numbers of tenants but as each

Fig.11

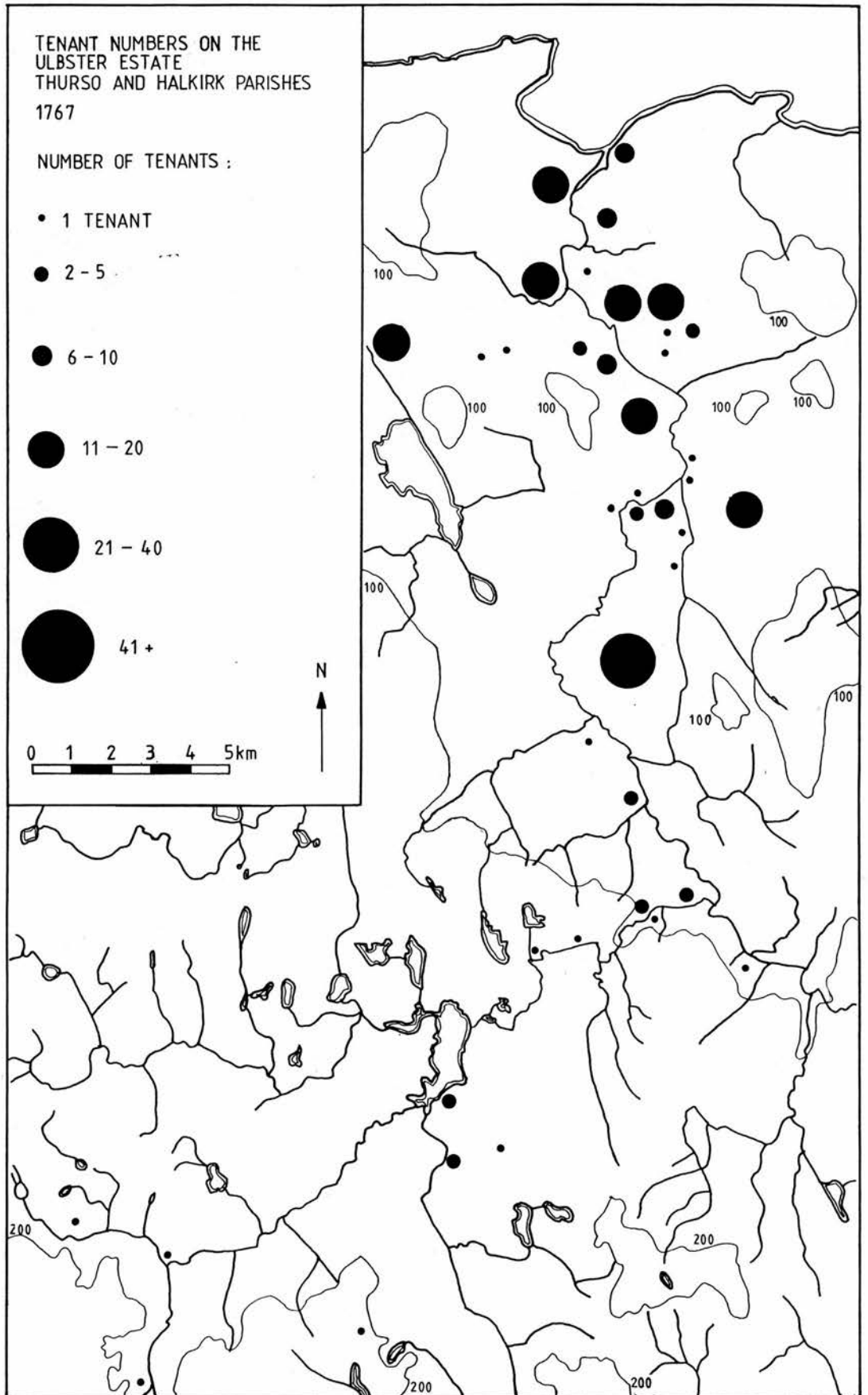


Fig.12

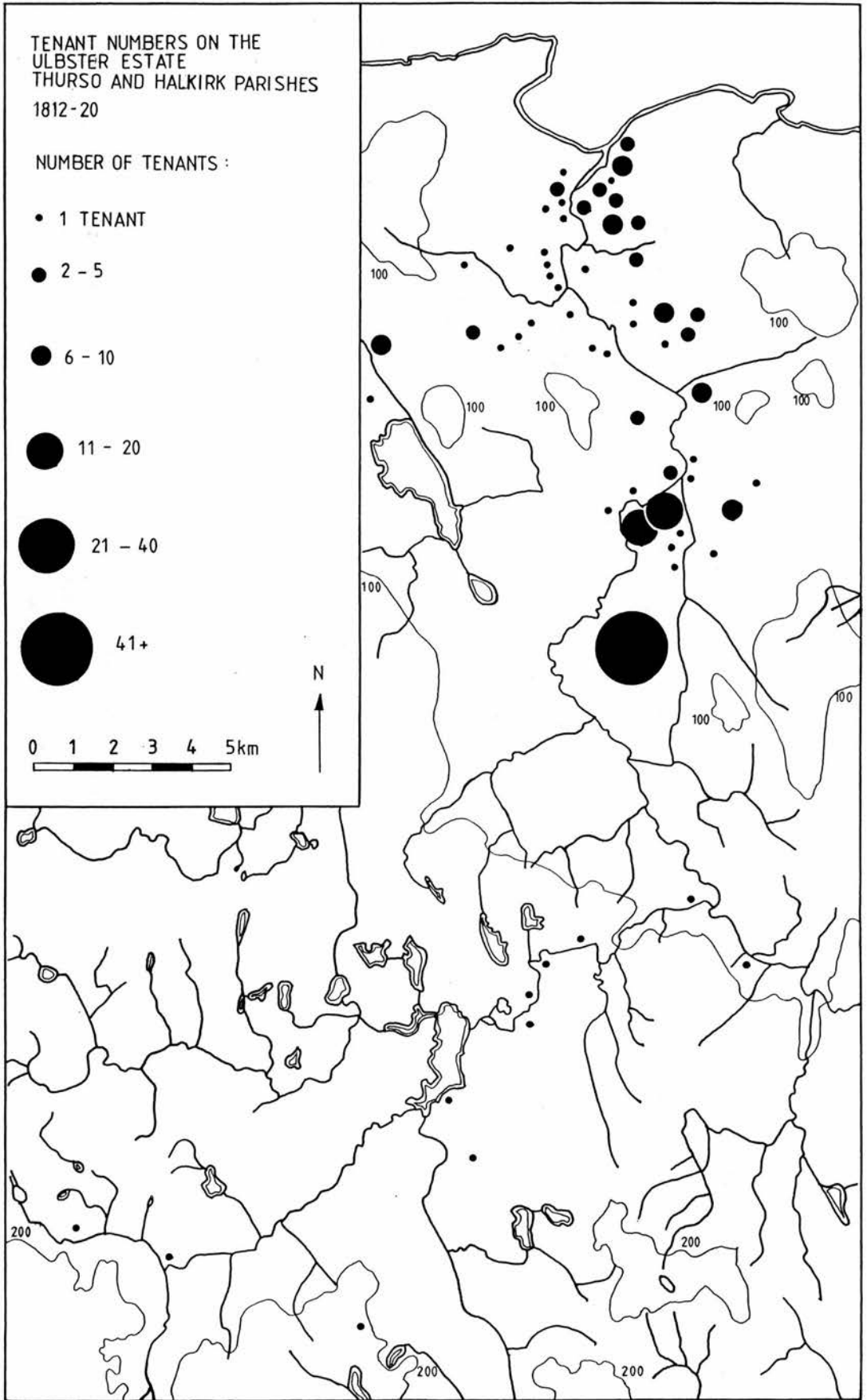


Fig. 13

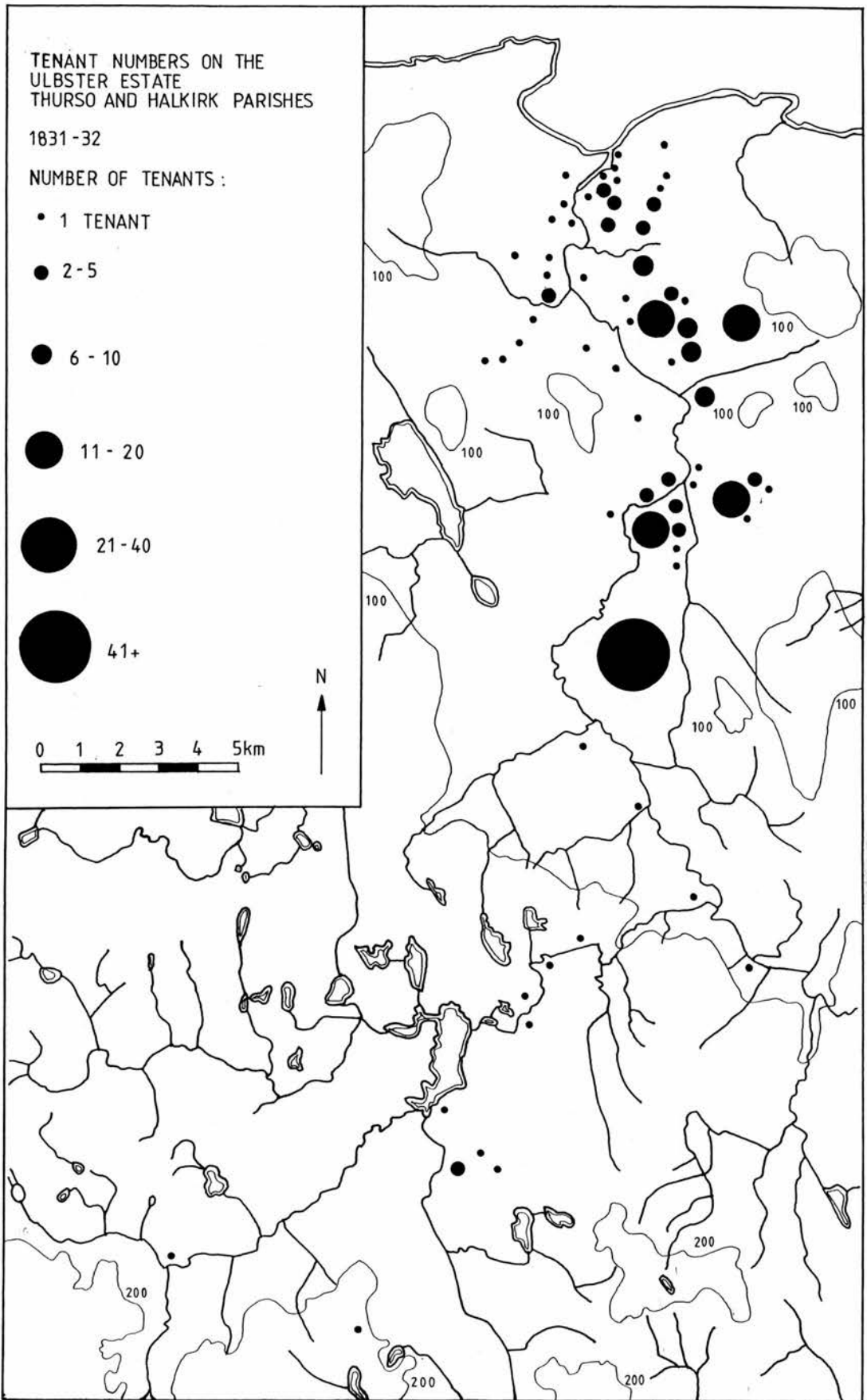


Fig. 14

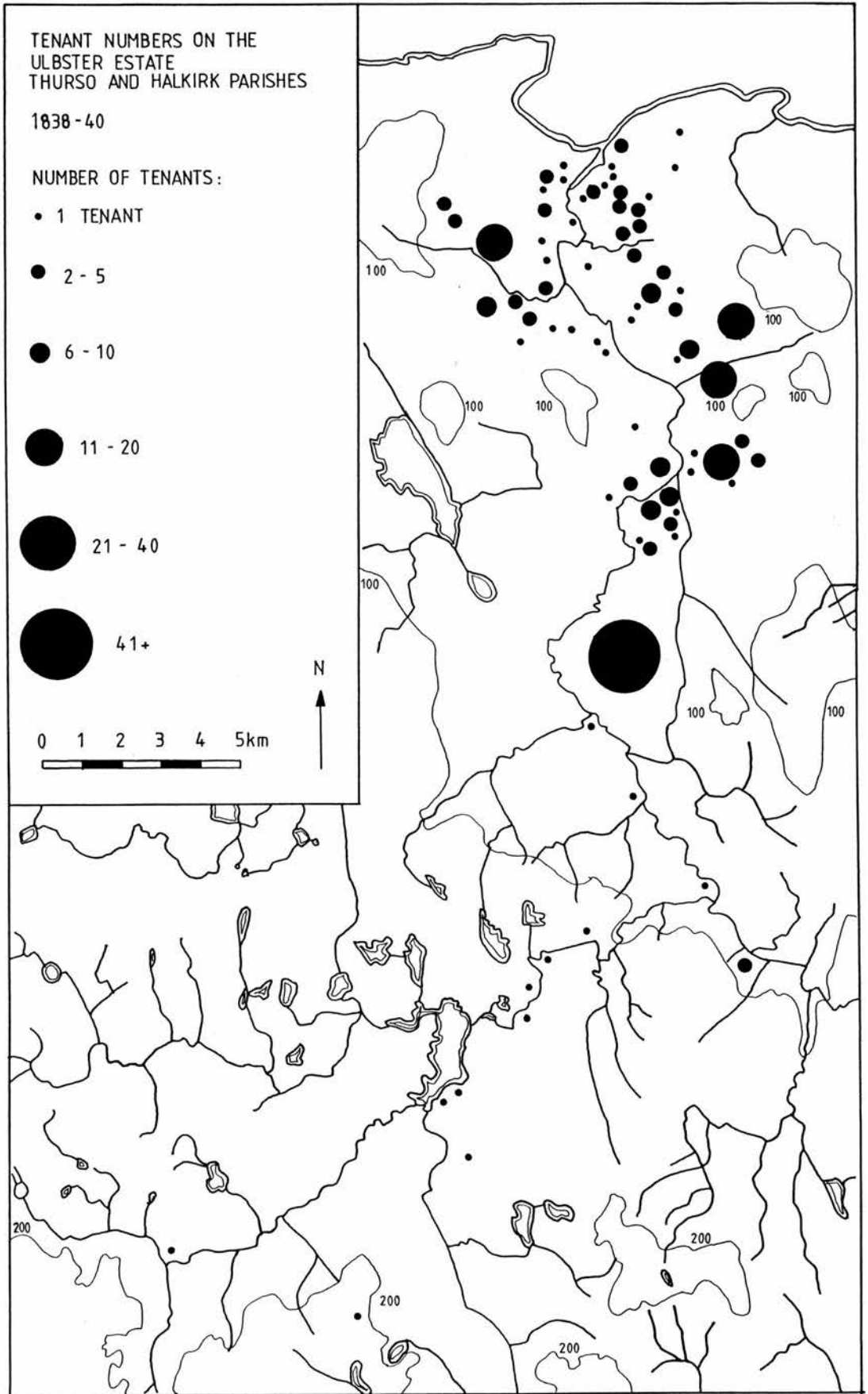
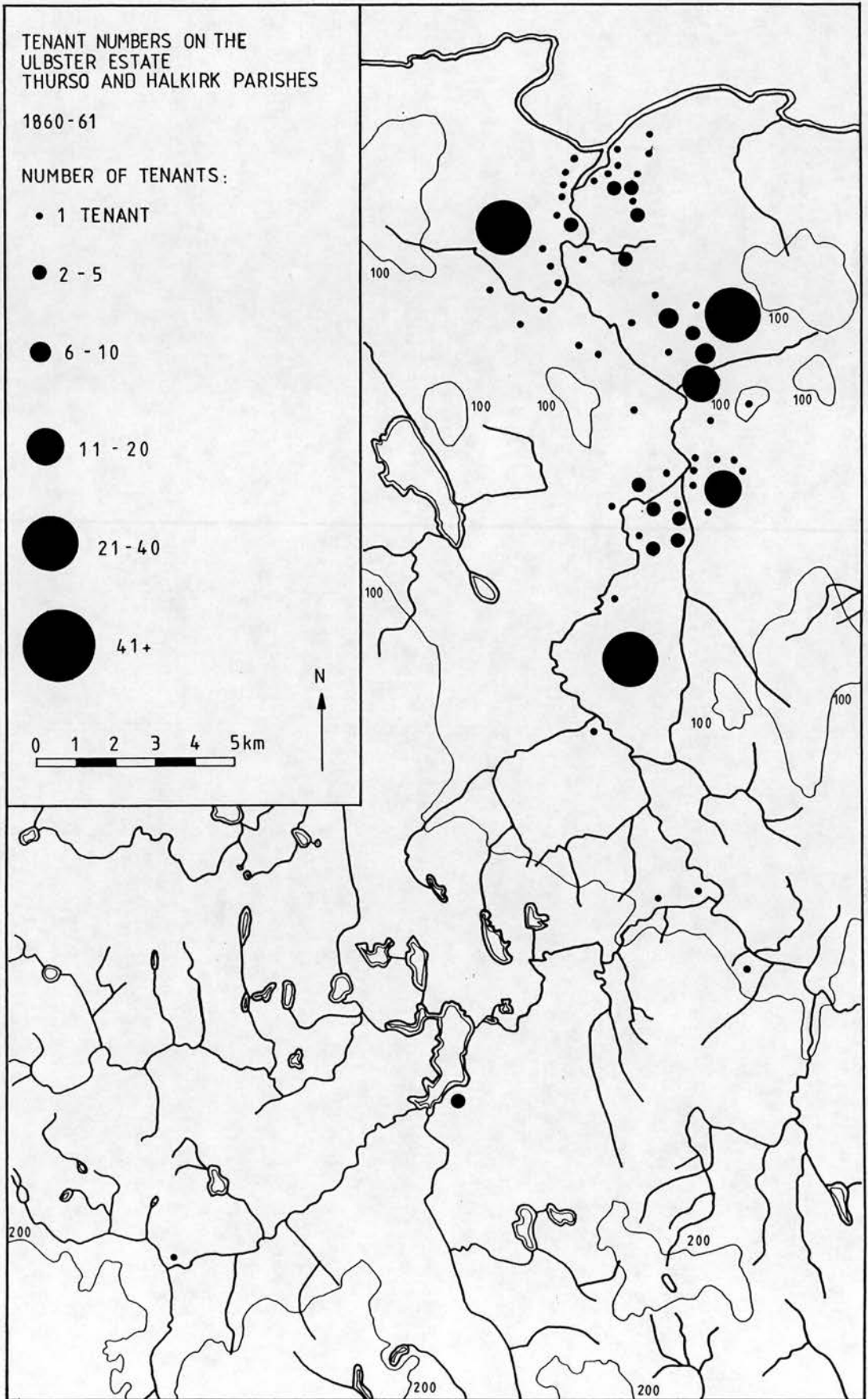


Fig.15



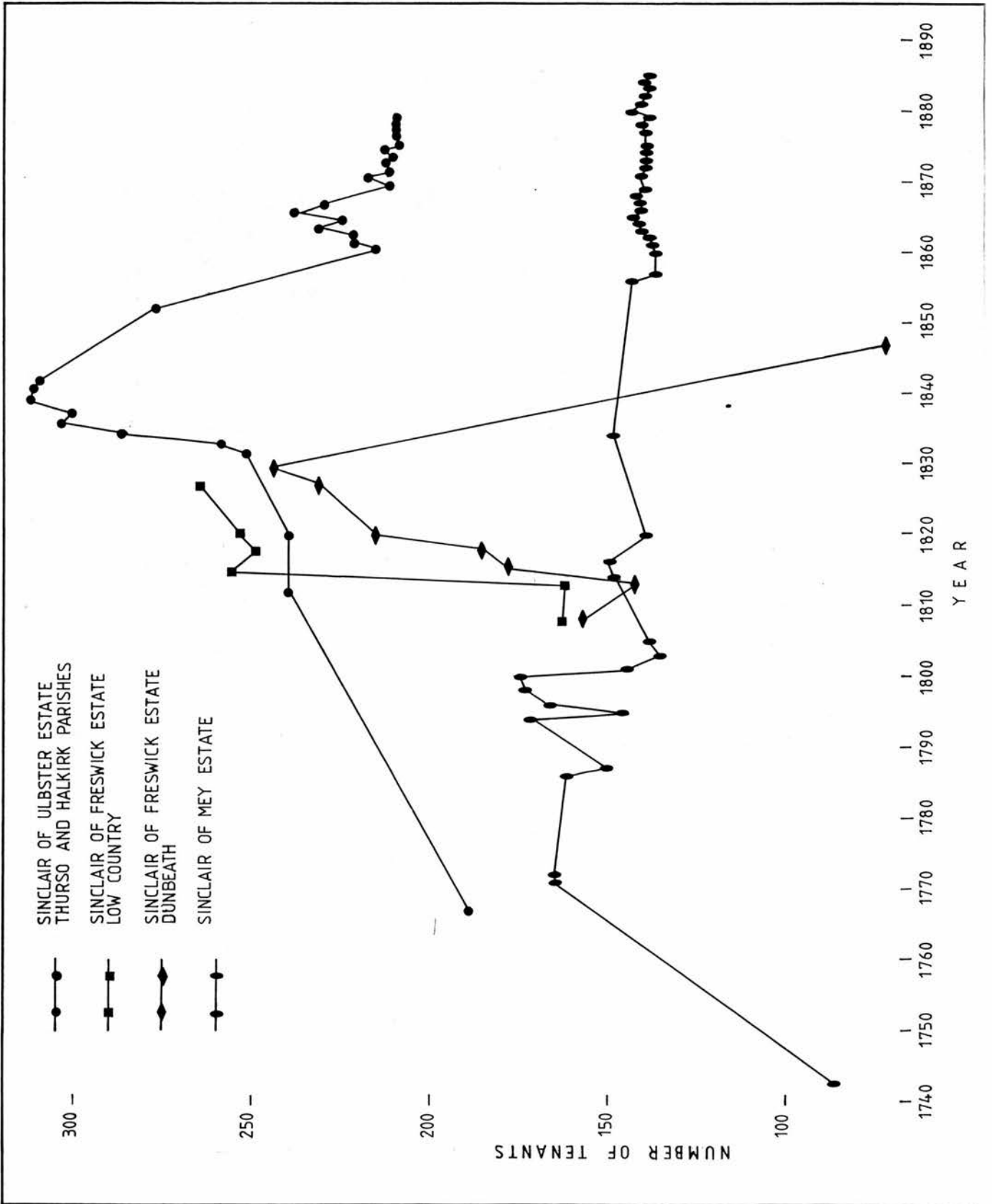
holding was of small size and referred to as parks, they were probably farmed by the townspeople as a supplement to other employments.

After 1838, there was a steady decline to 1860. However the newly settled lands were not strongly affected by this trend due to the existence of quarries, part of the flagstone industry, at Viewfield, Achscrabster and Weydale rather than to the success of the extension in cultivation. Nevertheless, some agricultural holdings, such as Harpsdale, continued to support a large number of tenants.

In the upper reaches of the River Thurso, the location of more isolated farmsteads, there was no population increase, barring a short lived example, when Backlass, formerly a single tenancy, supported five tenants in 1831. This had, however, dropped to two tenants by 1832. Some of the separate farmsteads were combined into a single tenancy eg. Backlass, Bulmore and Ishnamutt in 1840 and others disappeared from the record altogether. The general trend in the highland area was one of abandonment throughout this period of time.

The population graph of the Ulbster estates in the parishes of Thurso and Halkirk was similar to that of the entire county (Omand (1973) 221; fig. 22) although the population peak for the latter occurred around ten years later in 1851, a discrepancy possibly due to the relatively early activity by the pioneering Sinclair of Ulbster. However on other proprietors' lands a different

Fig. 16



situation occurred (see fig. 16): on the Mey estate, there were fluctuations in the tenant population, although with a suggestion of a very early population peak at around 1800, until 1860 when, as on the Ulbster estate, there was an evening-out, the population remaining relatively constant till the end of the records in 1890. It is of interest to note that if a line was drawn to connect the pre-Improvement levels of tenant numbers on the Ulbster and Mey estates, ie. at 1780 and 1770 respectively with the resultant level of population after the Improvements at 1810 and 1880 apiece, the lines for each of the estates would be virtually parallel, although there was always a greater number of tenants on the Ulbster estate, showing a similar slight decline in tenant numbers after the Improvement period. The Freswick estate was considered as two entities: a low country estate, whose main emphasis was on arable cultivation and where a remarkably large population rise occurred between 1818 and 1820, with a continued, more gentle increase until 1827, when the records ended, although from the evidence of the Mey and Ulbster estates, a similar decrease to a level slightly lower than the pre-Improvement figures might be adduced. On the Dunbeath part of the Freswick estate, where the pastoral element of the economy was of greater importance, there was a population peak in 1830, followed by a dramatic decline of 70.5%, occasioned by the conversion of the estate to sheep-farming. This was the only surviving record of the conversion to sheep-farming in Caithness and was documented in a series of petitions and letters dated 16 February to 24 September 1835 [GD 136/ 956].

The earliest paper consisted of a petition by the tenants to protest against William Sinclair of Freswick's, (ie. the proprietor's) proposal to convert the commons, contiguous to the existing sheep-walk at Achnacly, to sheep-farming. A letter was then sent from the Dunbeath tenants to

ask that no further tenants should be removed from their land, with the suggestion that three men, one each from Ross, Sutherland and Caithness, should decide on a fair rent for the land as they could no longer use the commons for rough grazing and so were unable to pay their full rent because of this. Another letter referred to agitation by the tenantry - the burning of a peat stack at Achnacly.

John Sinclair of Barrock and Mr. Paterson were to go to the Dunbeath estate to inspect the ground intended for sheep-farming, but their venture was unsuccessful. The Dunbeath factor, Mr. Manson Snody, upon receipt of an informing letter from one of the tenants, wrote to John Henderson, Procurator Fiscal at Wick about "the riotous and threatening conduct" of the tenants at Dunbeath, described by him as a "committee of insurgents". He also reported that one Angus Henderson had been asked by Alexander Cunningham, a tenant at Balnabrioch, to make some lead balls for a gun to be used on Barrock and Paterson: the veracity of this statement was uncertain as it was marked "not true", presumably by the Procurator Fiscal. Snody would appear to have been an unpopular factor as a previous letter of complaint of October 1833, to Sinclair of Freswick from the tenants criticised him for permitting the new tenants at the Mains of Duncansby to sublet their holding, which was against Freswick's orders and (the more serious charge) allowing them to kill sheep "in great number and most cruelly" on the Sabbath [GD 136/ 949]. However, at a time when many tenants were being removed from the land, it was unlikely that any factor would have been favoured by a tenantry in fear of clearance.

The main causes of the agitation at Dunbeath were the clearance of tenants from their land and the lack of compensation for the tenants whose common-grazings had been removed but who were expected to pay

the same rents. The resultant inability to pay the rent was used as a pretext for their removal as was the disturbances caused by some tenants. The removed tenants probably in part at least went to the fisheries which were being established on the coast. However, the distress and trouble on the part of the tenantry was far removed from the idealistic opinions of Sinclair of Ulbster, who considered that no unrest would occur during conversion to sheep-farming if villages were built for the displaced people and fishing or manufacturing industries were provided for their employment (Sinclair (1795) 186-9).

There was little reference to new farming methods in the primary sources. In various documents, new crops were mentioned - such as grass and clover seed and the potato, red and dun strains of oats grown on the Mains of Lochend in 1815 [GD 136/ 866/ 31-2] and early "Anguish" (Angus) oats sown on the Mains of Barrock in 1820 [GD 136/ 889/ 3]. Such crops and farming techniques were not used by small tenants: in 1846 Mr. K. Macleay sent a printed letter to the tenantry on the estate of Keiss recommending a system of rotation and the introduction of sown grass [GD 136/ 983]. He advised that the land should be divided into four fields, the first to be "fallowed" with turnips; the second to be sown with bear or oats together with clover and grass seeds; the third with grass; and the fourth with oats or bear. He insisted that on no account should two grain crops be grown successively and advised that kelp should no longer be left on the beach where its fertilising capacity would be drained away, but should be mixed with earth or shell sand or dung. He also recommended that ploughing should be in straight ridges and that leading drains should be cut to drain their holdings under penalty of removal if this was not effected. Thus it is clear that even the most basic

and often the first Improvements had not been extended to the tenants by the time of the mid nineteenth century in some parts of the country, as leading drains were those which delineated the holdings and were often cut as a preliminary to enclosure and further drainage systems. Also, the necessity of straight, deep ploughing would imply that tenants still adhered to the traditional system of S-shaped rig-and-furrow.

One property whose progress in improvement could be charted in greater depth than any other was Philips Mains farm, part of the Sinclair of Mey estate. This was advertised as being available for lease in October 1862 along with Barrogill Mains, St. John's Head, Castle Park and Hollandmey. It was stated that the proprietor would advance money to increase the amount of arable cultivation and to build houses and farm offices [GD 96/ 696/ 1]. Philips Mains at that time possessed 32 acres 1 rod 30 perches arable in cultivation; 86 acres 3 rods 4 perches of old arable, presumably no longer in cultivation; and 344 acres 1 rod 5 perches of pasture or moor, a total of 463 acres 1 rod 39 perches. Following the letting of this farm, the tenant sent a series of reports to the proprietor concerning the Improvements he was making, inventories of equipment and livestock and victual accounts.

The earliest of these was a report about Improvements achieved and proposed, dated 1863. By then, over half the farm had been drained and ditched and was to be put into cultivation, the cost of which was 1,800. The tenant proposed to carry out the Improvements more rapidly the following year, on the lower half of the farm which was "mainly moss" to prepare it for cultivation by mid-summer. He proposed the following estimate of expenditure:

Drainage of lower half of the farm.....£1,200

Dyking and fencing.....£450

New farm steading, servants' houses and stables to be finished in the autumn.....£1,200

Thrashing (threshing) mill.....£100

Working expenses and manure.....£500

TOTAL £3,450

[GD 96/ 696/ 1]

The construction of a threshing mill was not surprising: first produced in 1786, they arrived in Orkney in the 1820s (Fenton (1978) 366) and probably reached Caithness at around the same time. One document dated December 1821 recorded an offer made to Capt. Sinclair of Barrock to set up threshing machinery, with all materials except for the building to be provided, costing £80 [GD 136/ 896]. The new tenant sublet part of the property: in 1876, tacks were issued for tenants on condition that 15 chains of ditches were built annually during the first ten years of the lease at their own expense, that the entire hill pasture was brought under proper cultivation at the minimum rate of 2 acres per annum and that they used the stipulated rotation. Five tenants were given a tack of 14 years, one of 19 years and one of 10 years, the latter only having to construct 10 chains of drains each year.

The inventory of equipment for Philips Mains in 1864 revealed that the farm kept a large number of carts and ploughs of different types for different uses:

8 box carts with frains (reins)

2 long carts

1 subsile (rip or subsoil) plough

3 plows and 3 large plows
1 duple mulder plow (mould beam plough)
4 pairs harrows
1 pair top dressing harrows
1 grubber (for harrowing)
1 scuffler (drill harrow used for turnips etc)
1 roller
1 pearing plow (paring plough)
1 turnip sower (sower)
1 hay cutter (hay cutter)
1 oilcake crusher (oilcake crusher)
1 pulley (puller)
1 wheelbarrow (wheelbarrow)
1 meal ginner (store for oat and bear meal)
4 sets cart harness(s)
1 bushel and bow (measuring equipment)
4 shuffels (shovels)
1 boiler (boiler)
1 large peat beam and weights
55 corn bags
[GD 96/ 696/ 1]

The subsoil and paring ploughs reflected the nature of the Improvements that were being implemented, used to prepare the peat-covered soil for cultivation. They did not appear in the next extant inventory of 1866, presumably having completed their function and been removed for use elsewhere. In this inventory [GD 96/ 696/ 2] there was an indication of new technology, with a note about the introduction of a

steam plough, fuelled by coals and oil. From 1868, an account of its actual use was made:

12 acres of lea with big plough

Harrougt 15 acres 2 turns covering oats

Ploughed 20 acres turnip

Laid on clay and lime on 5 acres moss, used for turnip and laid them down

Number of days including lifting it to different fields, cleaning it and all working - 90 days

Total expense £40/ 13/ 8 ½ 2

[GD 96/ 696/ 2]

Inventories of stock were also made, eg. for 1871:

5 pairs of horses

2 short-horned bulls - breeding stock

11 cows - breeding stock

17 stots - feeding stock

10 quoyes - feeding stock

9 cattle

10 stirks

36 hens

6 ducks

4 pigs

[GD 96/ 696/ 2]

Some of the cattle were sold at markets such as Aberdeen, but this did not necessarily produce a large profit. From 23 November 1868, there was a note from a cattle salesman to apologise for selling the cattle at a lower price, but that it would have been more expensive to keep them until another market occurred. He added that many cattle had been forcibly sold by these tactics. Also, quantities of dairy and poultry products were sent to Barrogill Castle - eg. in 1881 butter, cream, eggs, chickens, ducks, milk, potatoes, meal for the house and dog, oatmeal and oats for the stables were sent from Philips Mains [GD 96/ 696/ 2].

Cultivated crops were oats; bear; alsylle, red and white clover; Curven's and Laing's purple top swede; turnips; potatoes and hay. In 1871 at least 204 acres were under cultivation which showed expansion in the extent of arable since its lease in 1862. Much of the arable was sown with oats - between 124 - 140 acres during the years 1868 and 1877. Accounts of the oats crop were kept, presumably because it was the staple crop of the farm measured in quarters and bushels:

1868: Oats on Philips Mains Farm	Qr.	B.
Milled at the Mill of Mey	50	-
Horses, 5 pair for 39 weeks	146	2
Cattle	15	4
Barrogill Stables	10	4
Sowed 124 acres	85	2
West Canisbay Seed	15	-
Mr. Paterson, Schoolmaster	2	-
Geddes, Wick (Corn Merchant)	20	-
<u>TOTAL</u>	344	-

[GD 96/ 696/ 2]

It was possible to estimate the yield of the farm as there were several consecutive corn accounts:

Year	Sown	Produced	Yield
Harvest 1869	85q	424q4b	1:5
Harvest 1870	93q	385q1b	1:4
Harvest 1871	89q3b	453q2b	1:5
Harvest 1877	96q	329q	1:3

[GD 96/ 696/ 2]

These yields are higher than those recorded at Thuster in 1796-7, but not much higher than those noted in O.S.A. reports. The mean yield at Philips Mains was around 1:4, lower than the estimated average in the O.S.A.. While the latter may have been an overestimate, for reasons given above, it is still not much more than the recorded yield of Thuster, which in itself may be anomalous, as there is no comparative pre-Improvement evidence from the primary sources. The situation, as stated above in regard to the pre-Improvement yields, is uncertain and further data is required to clarify the problem.

The distribution of the arable products was similar to that of pre-Improvement times - some of the oat crop being kept as seed, the rest given to the horses, to Barrogill Castle, milled at the Mill of Mey, delivered to corn merchants and given to farm labourers and the local school teacher. The oatmeal was given to the labourers, harvest servants, poultry and on occasion to other farms eg. in 1873-4 to the farms of West Canisbay and Barrogill Castle. The products sent to Barrogill Castle were noted and were of considerable quantity:

Philips Mains to Barrogill Castle 1881	L	s	d
Butter: 98 lbs @ c. 1/2 per lb	5	14	4
Cream: 95 bottles @ 1/- per bottle	4	15	-
Eggs: 60 dozen @ 8 ¹ / ₂ d per dozen	2	2	6
Chickens: 64 brace @ 1/- each	6	4	-
Ducks: 25 brace @ 2/- each	5	-	-
Milk: 180 pints @ 3 ¹ / ₂ d each	2	12	6
Potatoes: 3 ¹ / ₂ bolls @ 18/- per boll	3	3	-
Meal: for house ¹ / ₂ boll; for dog ¹ / ₂			
bolls: 2 bolls @ 17/- per boll	1	14	-
Cow at Castle 110 days @ 1/- per day	5	10	-
TOTAL _____	£36	15	4

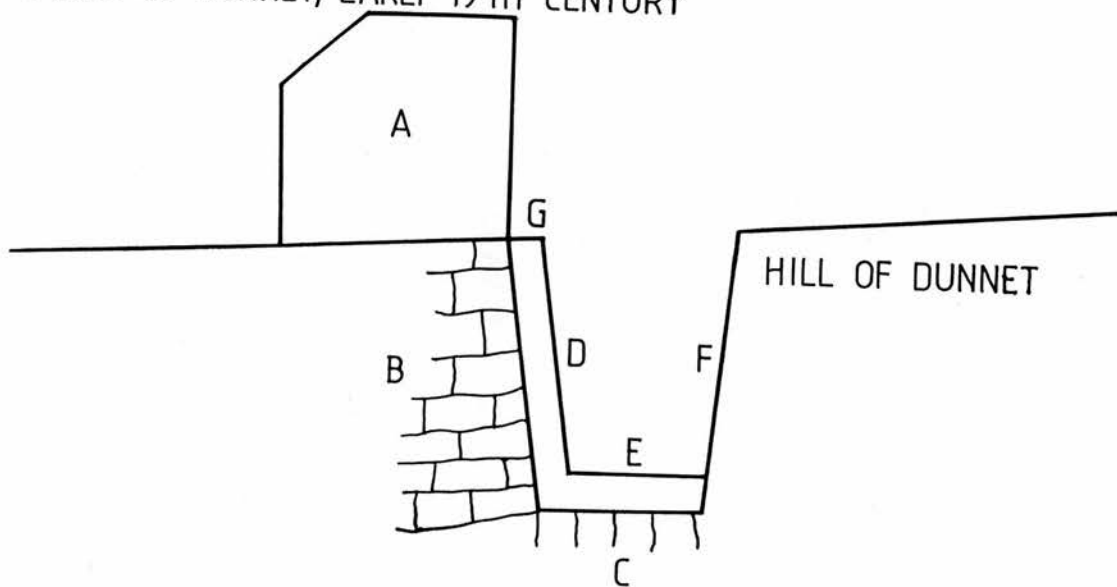
[GD 96/ 696/ 2]

Philips Mains farm was making a profit: the abstract of accounts of 1877-8 revealed that a gain of £407/ 6/ 0 was realised. However this was not the case with all Improved farms: in the same year, West Canisbay farm, also on the Sinclair of Mey estate, made a loss of £360/ 2/ 4. Thus such Improved agriculture did not necessarily result in a profit.

The processes involved with improving the quality of land were not well documented. Ditches, dykes and drains were frequently recorded as being built, but it was rare for their form and measurements to be included. Two examples occurred within the Sinclair of Freswick papers for which the purpose of their construction was documented (see fig. 17). That on the Hill of Dunnet was the repair of an existing boundary ditch

DITCH AND DYKE FORMS: SINCLAIR OF FRESWICK PAPERS

1. HILL OF DUNNET, EARLY 19TH CENTURY

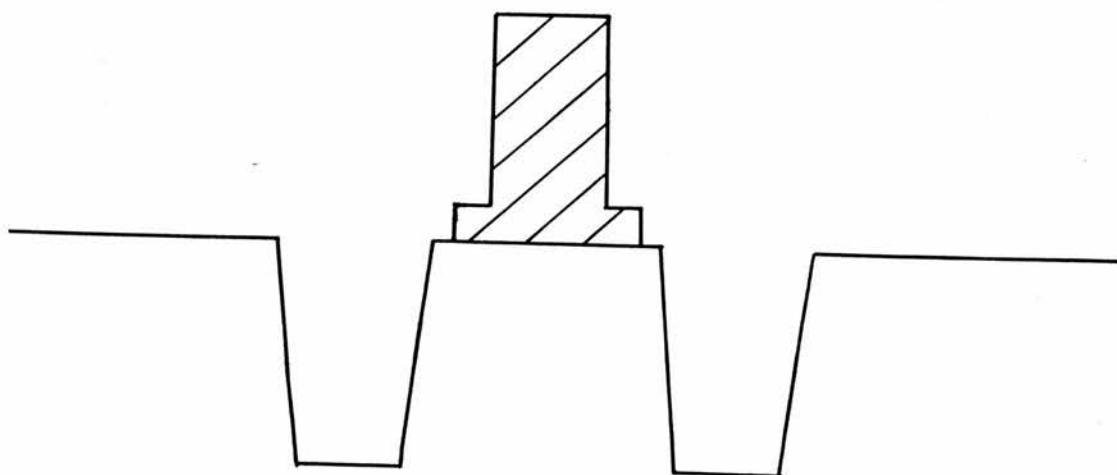


- A. EMBANKMENT OF EARTH FACED WITH TURF
- B. INTENDED FACING OF STONES
- C. CAUSEWAY OF STONES
- D, E, F. ORIGINAL FORM OF DITCH
- G. SCARCEMENT OF DYKE, MUCH ERODED

[GD 136/827]

NO MEASUREMENTS GIVEN, NOT TO SCALE

2. THURA, 1818



NO MEASUREMENTS GIVEN FOR DITCHES
DYKE DRAWN TO SCALE

[GD 136/884]

0 1 2 3 4 5 6 FT.

near the East end of Dunnet Loch, which was collapsing because of frost damage and flooding from the Hill of Dunnet. The original dyke was of earth and feal and the proposal was to protect and consolidate it by lining the edge and bottom of the ditch with stone. The other example at Thura, was a simple ditch to drain the land for tenants taking home their custom peats, as it had become too marshy to cross. The other examples, for which no function was recorded, conformed best to the ideal ditch/dyke forms proposed by the various farmers and proprietors in Henderson's work about Improvements (Henderson (1812) Appendix 119-124). Other methods of fencing were by thorn hedges, frequently mentioned as being planted and cleared eg. in the Sinclair of Ulbster papers. By 1871, wire fences were also used to enclose the land as recorded in the papers relating to the Sinclair of Dunbeath estate [GD 280/ 4].

Drains, like ditches and dykes, were frequently noted in the accounts from various estates, but similarly were rarely described. From the Sinclair of Barrock papers 1849-50, a document revealed the range of drain types available at that time [GD 280/ 4]: furrow drains, the simplest form of open drain; broken stone drains where the bottom of the ditch was filled with stone broken to a certain size; mug tile drains - tile factories were first built in Ayrshire in 1846 and the use of the horse-shoe shaped tiles reached Orkney in the late 1840s (Fenton (1978) 107) and probably Caithness at a similar date; pipe and collar tiles, completely circular and sealed with a collar; those with a built conduit. In 1851, the average price of drains with a built conduit and stones broken to 3" was 3-4 per acre. Drainage of the Barrock estate, implemented 1851-7 was achieved by drains 10' apart, 3'-3'3" deep and filled to around 1' with stones. However there is a lack of comparative

data, both with other schemes on the Barrock estate and with other estates in Caithness. It did differ from that described in Shapinsay, Orkney, in the late 1840s where the drains were 18' apart, of 2" diameter tiles laid 2'9" to 3' deep if minor or around 3'6" if main drains, costing 7/ 10/ 0 per acre (Fenton (1978) 106), though this difference is more likely to reflect differences in the terrain and dampness of the soil.

One of the most ambitious drainage projects was the reclamation of Loch Syster near Loch Heilen and part of the Lochend estate. this was a loch of 250 acres 2 roods 8 poles which the the tacksman of the Lochend lands wished to drain to provide pasture and the improvement of conditions on his land as "the humidity caused by the loch prevented the due ripening of his crops and occasioned great consequent loss" [GD 136/ 1052/ 2]. In winter it was 7' deep and in summer was at a lower level. It could not have had any feeder streams but must have developed from a glacial depression or else its drainage would have been impossible. The only use for the loch had been to power a mill, but this was no longer in use.

The plan was proposed and started in 1864, but was delayed by the Earl of Caithness who contested its legality on the grounds that he watered his animals at the loch and had fishing rights there. This petition foundered on the claim that the water's edge was not his, but rather Sinclair of Freswick's property and so the operation recommenced, at an estimated cost of £1,174/ 10/ 6 which included thorough draining into the Burn of Rattar to make it cultivable. Purves, the tacksman, reported that it was seldom that "such fine alluvial soil was reclaimed for that amount". However, his idea of cultivating the reclaimed land does not appear to have been practicable as it was left as rough pasture. The scheme would appear to have been considered a limited success: in a

later source, it was stated that "mists are not nearly so frequent and the crops are ready for the reaper earlier than they used to be" (Macdonald (1875) 176). This is an inaccuracy, however, in as much as while the drainage of the loch would have lessened the risk of mildewed crops, there would have been no effect on the micro-climate and therefore a shorter growing season would not be a result.

During the Improvements and in books concerning the Improvements some emphasis was laid on better farm buildings, offices and general living conditions. There were few extant records of the form of the farmsteads, but it would appear that they were more complex with more specialised farm buildings and were more commonly of stone and mortar construction. An inventory of houses and gates was made on the Dunbeath estate, part of the Freswick lands, on 6 December 1844. These were shepherds' cottages and therefore difficult to compare with earlier examples on which a mixed economy was practised, but it would appear that there was a similar range of houses from byre dwellings to more complex examples:

Leodebest House: room, kitchen, byre, barn and stable

Achnacly House: 2 rooms, kitchen, shearing house, carthouse, milk house, 2 rail gates and wood bridge on the river

Huchary House: 2 rooms and byre

Flontich House: room and byre

Achuhorn House: room, kitchen, shearing house, barn and carthouse, 1 room and byre at the burn side, 1 frame gate

Recroich House: room, kitchen and byre

Manager's House: 3 rooms, kitchen, milk house, byre and hen house; on
Mains farm

Office Buildings: thrashing barn, proof barn, kiln barn, 2 stables, 3 byres,
milk house, 2 rooms for servants, 8 iron gates, 1 frame gate, 4 rail gates
[GD 136/ 975]

The new types of farm buildings reflected the new methods of farming eg. the carhouses probably existed because of the increased numbers of carts in Caithness (N.S.A. (County of Caithness) passim); the shearing and milking houses etc. may have existed in pre-Improvement times, but it is more likely that they represent the conversion of the estate to sheep-farming. The mention of gates was due to the act of enclosing the land and to the fact that animals were not allowed to roam freely. Thus the changes in farm structures can be seen as a result of the changes in the pattern of agriculture rather than as Improvements per se. It is also of interest that only on the Mains was there any indication of continued arable farming, with its threshing, proof and kiln barns. This would be due to the fact that it was situated on the best arable land whereas the remainder of the estate would be more suited for the more profitable sheep-farming.

At Lochend, another similar example was the introduction of turnip stores, a result of the new cultivars [GD 136/ 982]. However this document revealed the Improvements in building materials, as it specified the construction of the servants' dwellings, houses, barns, stable, byre, turnip store, cattle sheds and carhouses. They were to have a proper foundation with the stones flatbedded: in the excavations at Lix and Rosal, the pre-Improvement longhouses had only a slight foundation trench (Fairhurst (1967) 144) and the construction of a deeper

foundation trench may be a diagnostic feature of post-Improvement farmsteads. Further stipulations were that the barns and servants' houses were to be slated, the slates "to be securely fixed with not less than twenty-six nails" and the others to be flag-roofed - another possible indicator of Improved structures as opposed to the heather and turf thatched houses. The barns were to be lofted with spey wood "not naturally grown except for some purposes".

By 1870, the Lochend farm was even more complex, as revealed by a fire insurance certificate [GD 136/ 1054] which listed: Lochend dwelling and kitchen adjoining; farmsteading; women's bothy; bothy; foreman's house; 2 turnip houses; 2 cattle byres; cow byre; calves' house; 2 straw sheds; thrashing barn; engine house; 2 boiler houses; coal house; straw barn; workhorse stable; meal house; riding stable; gig house. This increase in the complexity of the farmstead reflected the change in the pattern of agriculture with new technology and the change from small farms dependent on the Mains to large self-supporting farming units.

Thus from the primary documentary sources, a more detailed account of the pre- and post-Improvement farming practice can be obtained, despite the disadvantages in this form of historical source. The gradual change between traditional and Improvement forms of agriculture are documented, implying a later date than is commonly considered for the extension of the Improvement practices to the tenantry. The differences - and the continuity of some aspects - of the systems can also be seen. However the evidence is partial and almost appears as a series of vignettes, highlighting some aspects of the economic and social organisation on the farmtowns, while others, such as the long term

success of the Improvements such as land reclamation projects, remain unclarified.

CHAPTER 5: LONGHOUSES

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Longhouse farmsteads form an integral part of the Caithness landscape. Their form being of presumed Viking origin, they are broadly related to the farmsteads of the Northern and Western Isles and the Scottish Highlands. In this study, the longhouses selected for examination were those surveyed by Mercer in 1984-5 inland between Latheron and Bruan (Mercer (forthcoming a)), referred throughout by their survey numbers indicating year/ area number/ monument number, by which they are recorded at the National Monument Record. They were recorded in such a way that schematic, formalised plans could be made of their form, internal fittings and associated features, such as outbuildings, kailyards and enclosures.

It has become increasingly clear that little of the field systems and especially the longhouse farmsteads of a date prior to the Improvements have been detected in Scotland, apart from irregular traces of head-dykes and scattered examples of S-shaped, pre-Improvement rig-and-furrow ploughing. The dearth of farmsteads can be ascribed to the building methods and materials used in their construction: in the excavations at Lix and Rosal, the longhouses had only a slight foundation trench, while an earth floor and turf walls would be easily obliterated. The stone footings of the farmsteads would be readily removed for other structures (Fairhurst (1967) 144). Post-Improvement agriculture would also remove the majority of the earlier system.

Contemporary documentary sources are scarcely more enlightening, and are typified by Sinclair of Ulbster's account: "the miserable cottages, built of turf or sod, which are in some districts rapidly, and in others slowly disappearing, do not require any particular description. Besides

the low and uncomfortable walls of turf, the rounded form of the roof, with the fireplace in the middle, characterises a considerable number of the habitations of the lower classes in the Highlands and Islands" (Sinclair (1814) 127).

Two problems exist with such descriptions: the first and major difficulty is that the majority of such accounts were written in the late eighteenth or early nineteenth centuries by dedicated Improvers and are therefore critical and condemnatory of non-Improved living conditions. Indeed it is likely, especially in the light of the evidence of the primary documentary sources which show that most of the longhouse steadings were more complex than simple byre dwellings, that there was a tendency to ignore less primitive structures and to stress the poorer steadings. Also, it is unclear to what extent the descriptions can be applied to a period earlier than that of the Improvements, as the time to which the authors refer was one of overpopulation and crisis in the Scottish Highlands, when living conditions may have deteriorated. This objection does not apply, however, to such a great extent to Caithness, which was generally exempt from the problems of the rest of the Highlands.

With regard to the extant longhouses, Mercer's surveys of Caithness from 1974 to present, have amassed a large body of information concerning the form of longhouse farmsteads. These have fallen into three main groups:

Group I: Large farmsteads with massive longhouses

Group II: Farmsteads with small rectilinear structures in peripheral areas.

Group III: Amorphous patches of apparently improved land associated with the remains of possible structures.

(Mercer (1980) 51-58).

Mercer also notes that the structures fall into two categories: those in which turf was mainly used in their construction and those which were more substantial, with stone as the major building material, although this is more likely to represent the differential availability of turf and stone rather than the distinction between traditional building methods in the turf-built examples and Improved constructional materials associated with the stone structures (Mercer (1985) 120).

The School of Scottish Studies has recorded the conversations of Caithness people, generally aged 70-80 in 1971, thus linking their evidence to the early years of the twentieth century, a time when many of the longhouses examined were in occupation. There is a tendency for the recorders to concentrate more on folk lore and ballads but there is some recording of information regarding their material culture, although very often this was noted rather than fully recorded. The descriptions of the constructional techniques used for longhouses is similar to those of Orkney and Shetland (Fenton (1978)) and to earlier accounts of the methods of building such structures (Henderson (1812) 33-4). David Swanson (Harpsdale Hill, Halkirk) stated that the roof consisted of heather simmons or ropes, weighted with benlin stones, which could last for forty years without rotting, to hold on the thatch of rushes - or according to Jean Dunnet (John o' Groats) of bear straw, oat straw being kept as fodder - fishing nets also being used to keep the thatch in place. The thatch was changed every four years and below it were heathery divots, pear-shaped and measuring 8" by 2' by 15", overlapped like slates with the large end down. These were dried before being laid and were left without a covering thatch for a year to locate any leaks. They would last for thirty to forty years. At the bottom of the roof there was a row of flags rather than divots to help the rain drip off. The purlins, the main

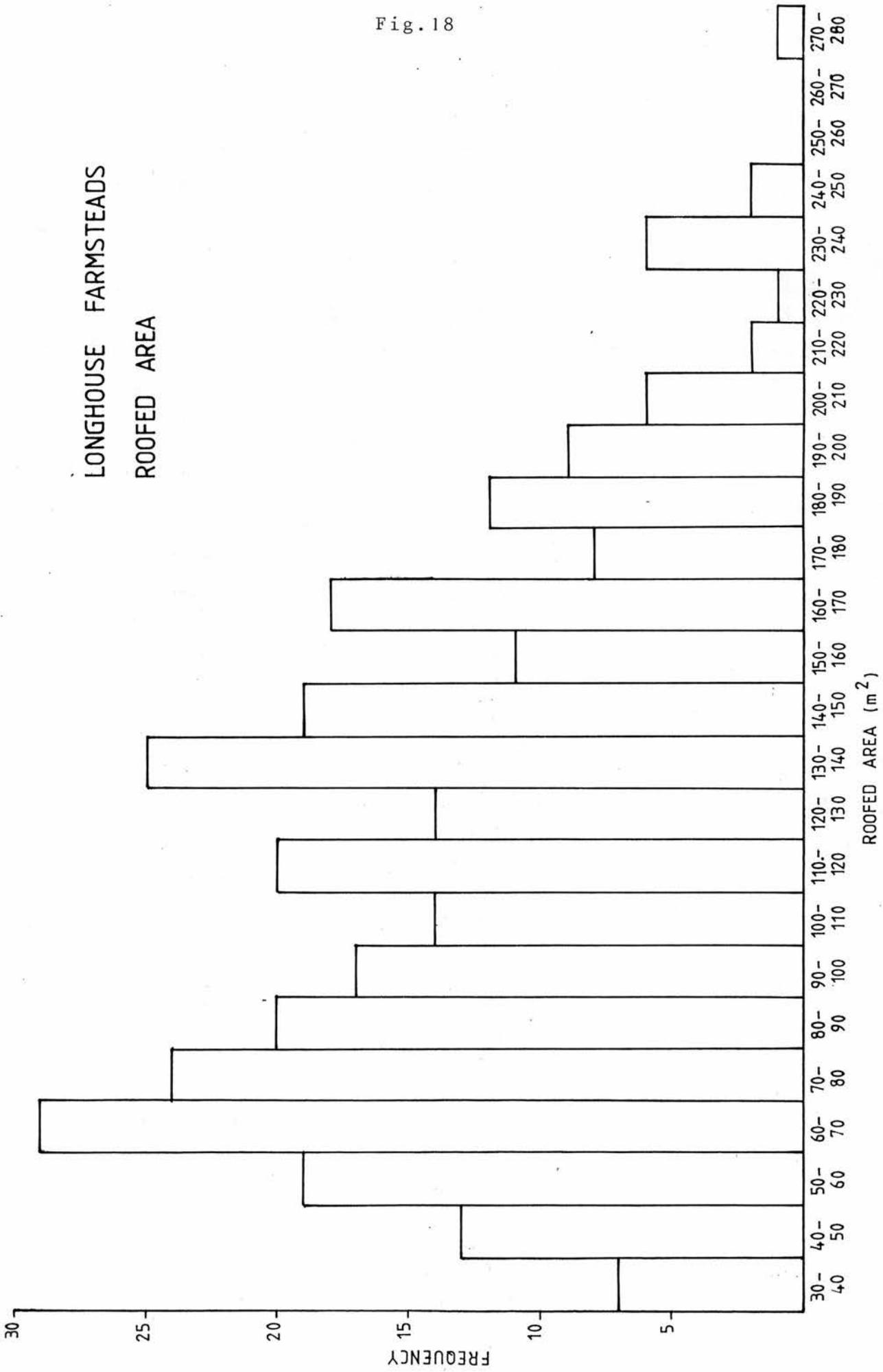
cross-pieces of the roof (Fenton (1978) 175), were tied on with heather simmons and round sticks were laid on them up and down. Older crucks or couples stood on the ground or nearly reached it, being set on a flag and recessed into the wall. Large flagstones, according to William Alexander (Canisbay), were considered only suitable for byres and outbuildings, inappropriate for other structures.

The longhouse farms can be divided into two main groups:

1. **Byre dwellings**, where the original unit was a living area and byre.
2. **Crofthouses**, where the original unit was a living area only.

This division is an oversimplification: for example, many crofthouses had byres attached at a later time or were associated with a range of farmbuildings, but there is a difference between the crofthouses and byre dwellings in the degree of separation between farmbuildings and accommodation which implies a changed relationship between farmer and livestock. The distinction is also chronological: byre dwellings are described in the early sources unlike crofthouses which appear to be later in date. One monument also supports this view (Caithness 84 Area 6 Mon.38), one of the rare examples where there was a succession of farmsteads in a restricted area. The earliest of these was a three unit byre dwelling, already deserted by 1875 according to the first Ordnance Survey of that date. In its place a five unit byre dwelling was in occupation, but it was deserted by the time of the following survey of 1907 and was replaced by a small crofthouse associated with a kaleyard, implying that by this date a crofthouse was the most appropriate form of settlement. In addition there is the negative evidence from the farmtown of Shebster, abandoned in the mid-nineteenth century. Here, all the longhouses surveyed corresponded to byre dwellings,

Fig.18



ROOFED AREA OF CROFTHOUSE FARMSTEADS

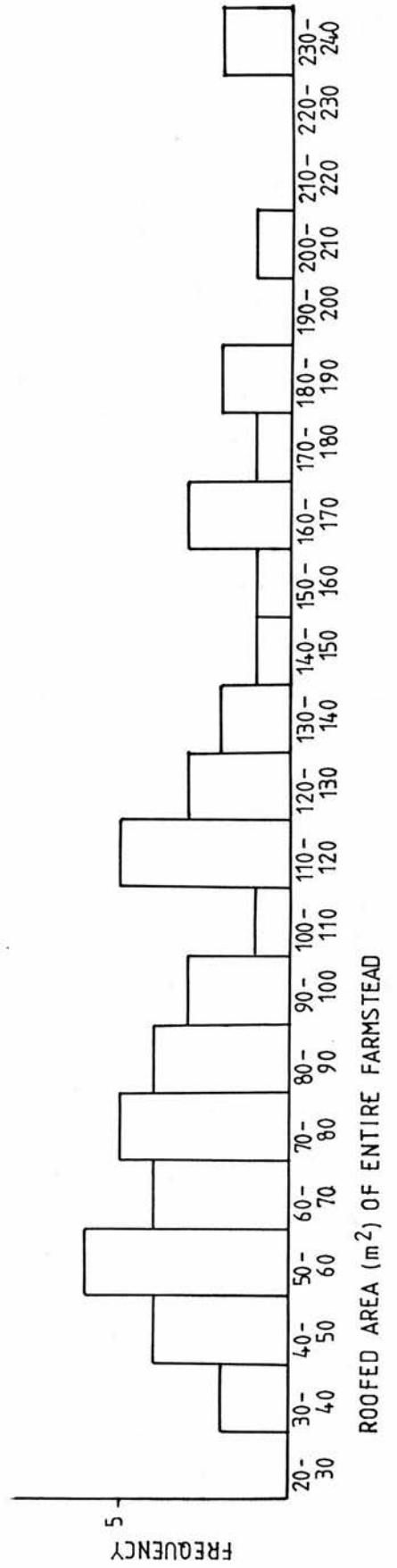
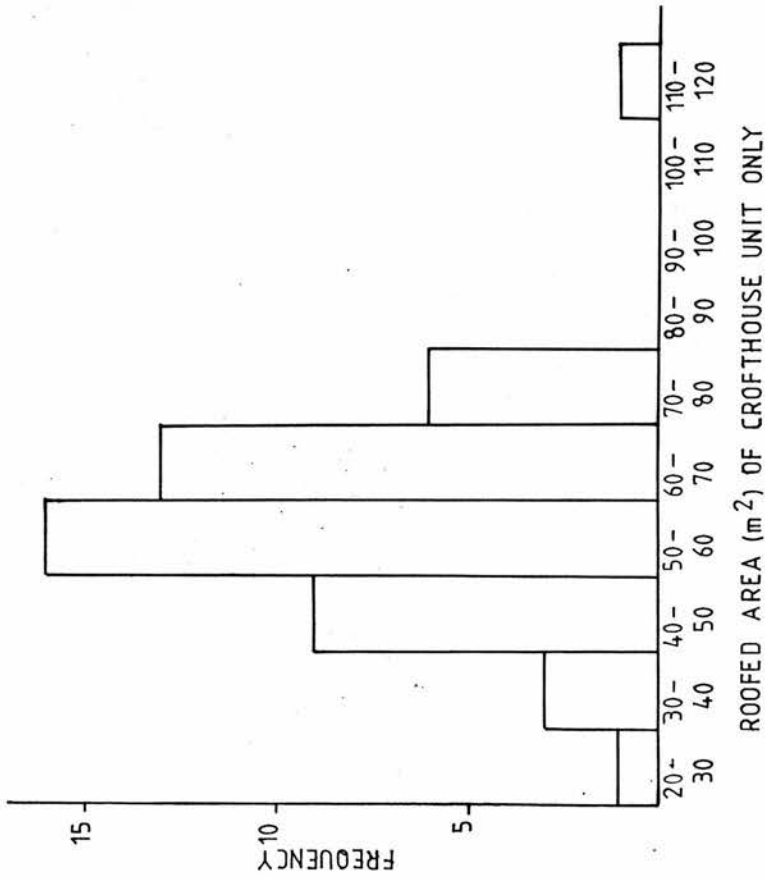


Fig.19

Fig. 20

ROOFED AREA OF BYREDWELLING FARMSTEADS

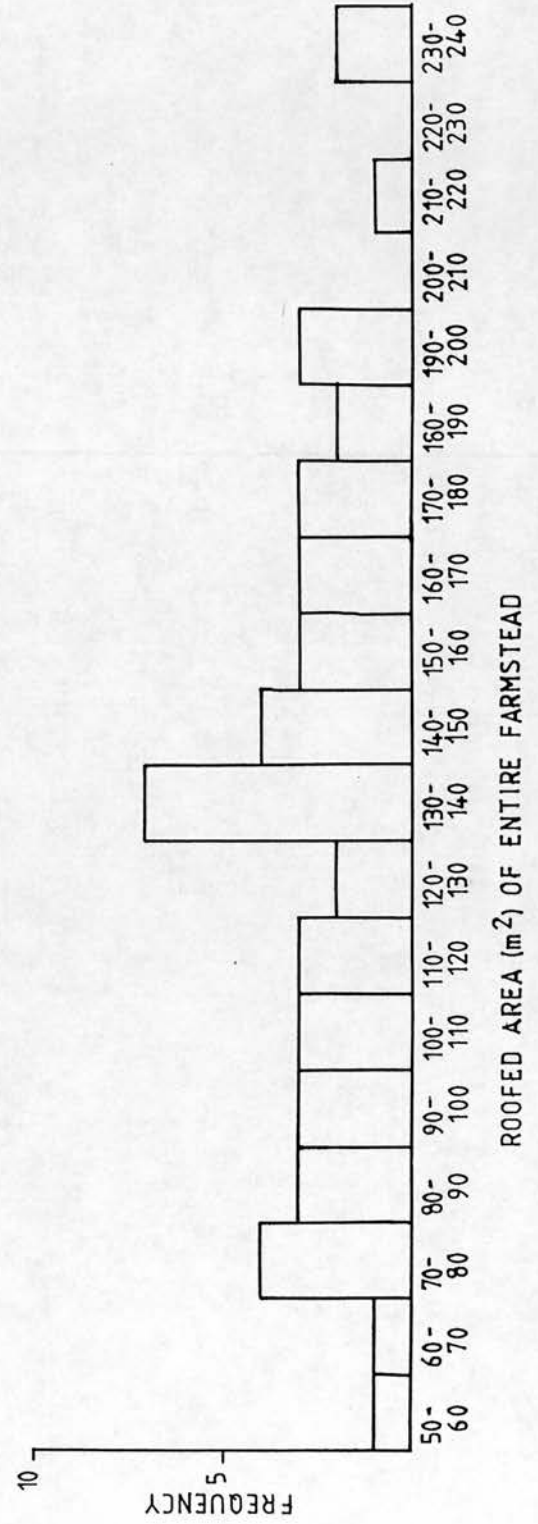
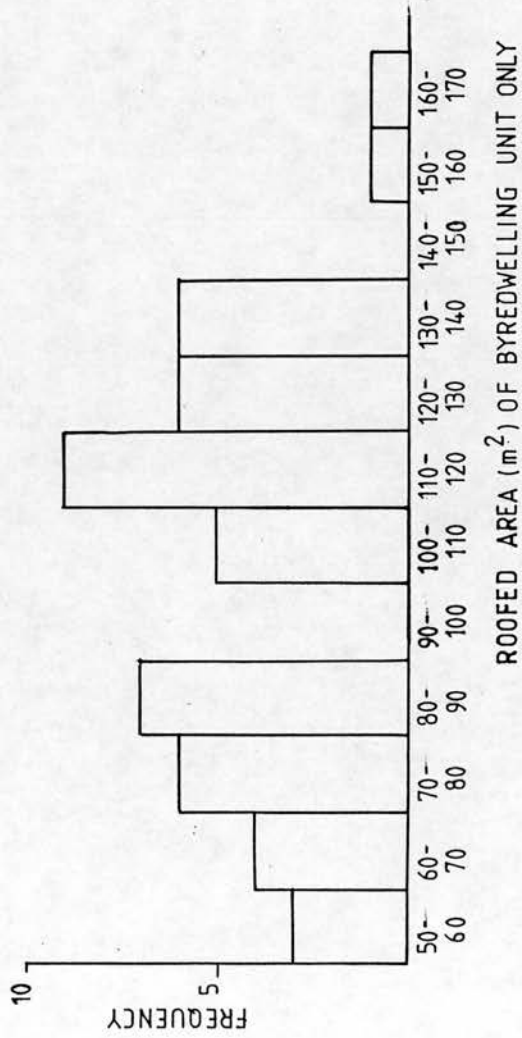


Fig. 21

LONGHOUSE WIDTH

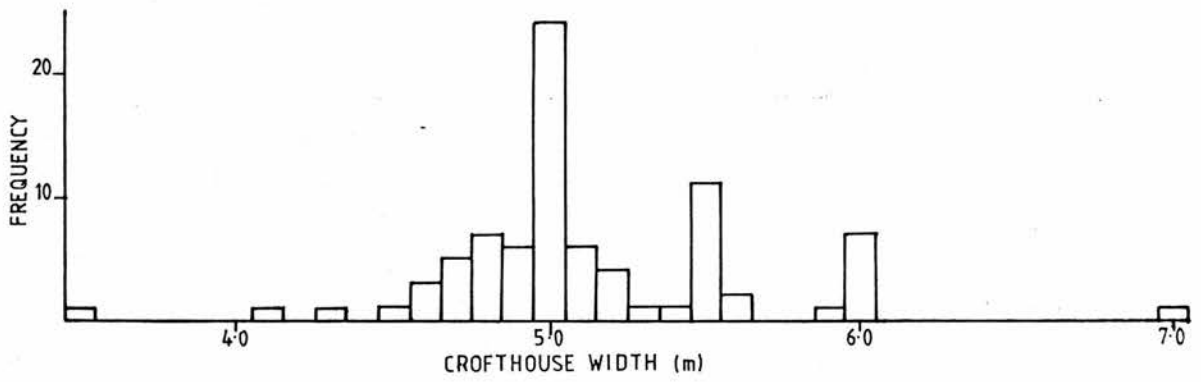
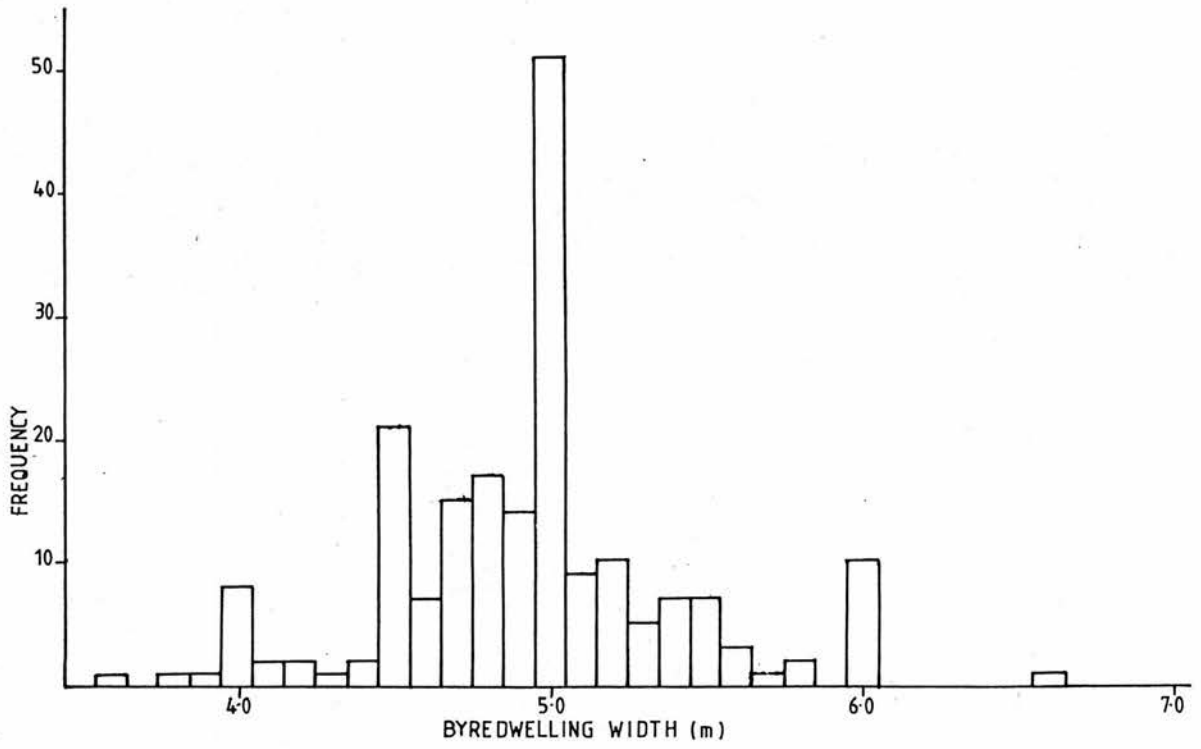
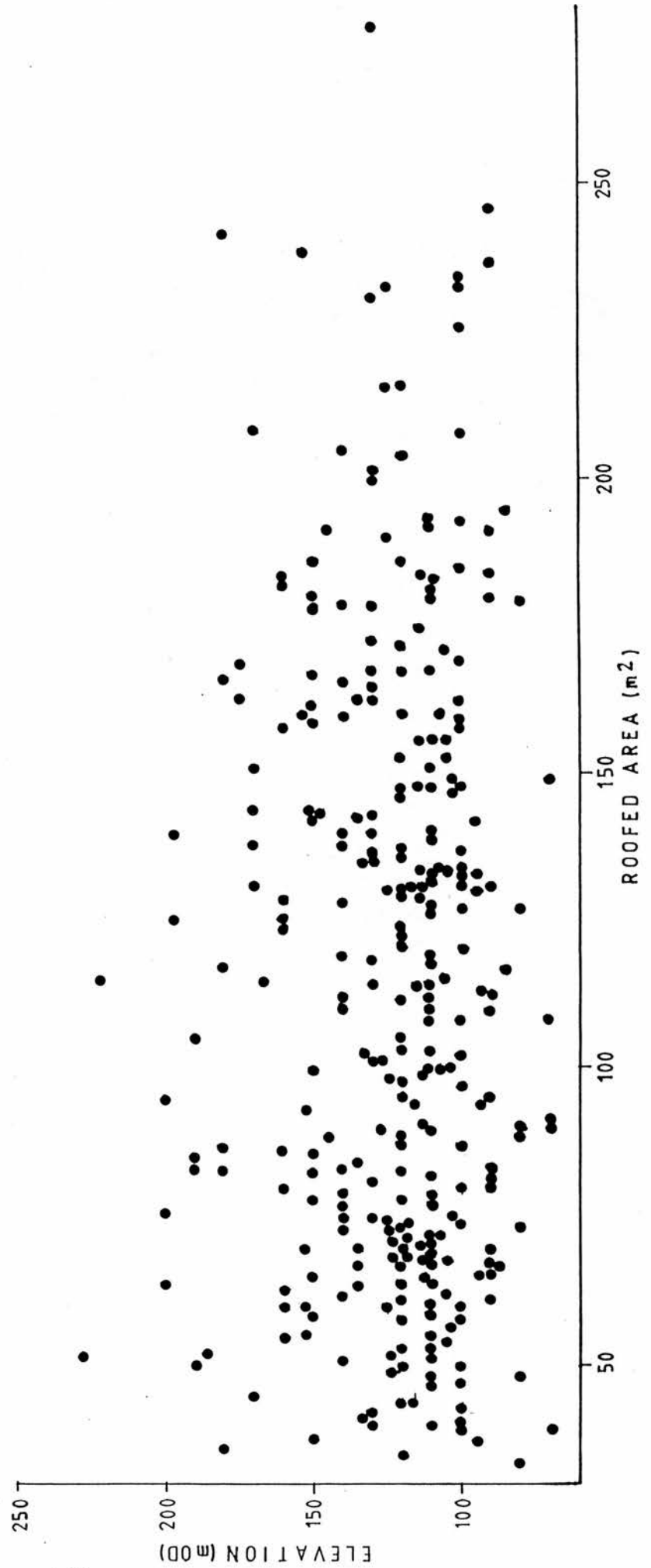


Fig.22

LONGHOUSES
ELEVATION : ROOFED AREA



suggesting that the introduction of crofthouses post-dates the abandonment of the farmtown and is related to the Crofting Act of 1886.

The graph showing the roofed areas of the farmsteads including annexes and outbuildings (see fig. 18) has three peaks: at 60-70m²; 130-140m² and 230-240m², the first two being major, the third minor. When byre dwellings and crofthouses were analysed separately (see figs. 19-20), the former group corresponded to these peaks while the latter displayed a preference for 50-60m² and 110-120m². That these were not so highly represented in the overall analysis is probably due to the relatively small number of crofthouses in the sample. When the original core of the crofts was examined, the peak of 50-60m² was revealed as the average size of the living area.

The width of the longhouses was roughly standardised (see fig. 21). It was thought that later buildings, such as crofthouses, when of A-frame rather than cruck construction, might be wider than byre dwellings with crucks or couples, as this form was constrained by lack of suitable lengths of timber. However, the range for each type was similar - between 3.6m and 6.6m for byre dwellings and 3.5m and 7.0m for crofts - although the table shows that in the case of crofts, there were fewer narrow structures (ie. 3.5m - 4.5m). The peaks at 4.0m, 4.5m, 5.0m, 5.5m and 6.0m are artificial, a reflection of the surveyors' desire for round numbers. The situation would seem to imply that although the later builders were able to construct wider buildings, the traditional width was maintained.

The elevation of the area studied ranged from 70m OD to 240m OD, the majority of longhouses being built between 90m OD and 110m OD, with a range between 70m OD and 230m OD (see fig. 22). Few longhouses were recorded between 70m OD and 90m OD as, being

situated in river valleys, they were built on higher ground to prevent flooding, to avoid land well suited for arable or meadow and to be built close to roads. Also those built on lower ground would be more prone to complete destruction by later ploughing. The clusters on the graph comparing the roofed areas of the longhouses with elevation are reflections of the most popular areas of the farms, although there is a tendency for larger farms to be situated at a lower altitude.

The functions of longhouse units were analysed, their designation being made on the basis of various traits. The living area was defined by fireplaces built into the gable walls, often opposing and flanked by presses, shelved cupboards or niches. In more recently occupied examples wooden partitions survived, denoting the position of box-beds. On occasion crucks were limited to the living area rather than the byre or other units, due to a shortage of suitable timber. However, these diagnostic features would not necessarily be present: Jean Dunnet recalled that the hearth was sometimes just a ring of stones which would be more likely to be destroyed or overgrown than those built into gable chimneys.

Byres could be recognised by the upright flagstones used to separate each animal in its stall, an easily removed feature. They were usually built at the lower end of the longhouse for drainage purposes and had a drain running down the length of the unit. They often had larger entrances to accommodate the cattle more easily and were usually paved. Stables were less easily recognised, as the wooden mangers were removable and perishable. In some cases there were niches to hold the feed: "in each of the four corners of the stable, about half way up the wall, there was a recess, in front of which a small flagstone was built in,

so narrowing the aperture that there was only enough space for the horse to get its head" (Firth (1974) 16). Animal housing was shown by a low rectangular hole in the wall at ground level. This may have been linked with drainage as it was reported that a gutter "drained off the liquid matter to the square culvert in the wall called the oddlie hole" (Firth (1974) 16; Plate 9 Diagram of an Orkney Farmhouse 19). Another explanation is that they were small doors to allow the entry of a dog at the opposite side to the main entrance to herd the animals out more easily.

Winnowing barns were defined by opposing doors which created a draught. "If the barn was of small dimensions, the second door was dispensed with, and a small hole, designated the winnowing hole, two or three feet square made at the level of the floor served the same purpose" (Firth (1974) 17), a description reminiscent of the low door or oddlie-hole. That the low door was associated with animal accommodation in this study is due to the farmstead (Caithness 85 Area 3 Mon. 11) where a winnowing barn as well as a unit with a low door was present, making it doubtful that both were related to winnowing. Also, in many cases, the low door is not opposite the main entrance which argues against its being a trait related to a winnowing barn.

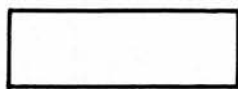
Threshing mills were characterised by two features, which depended on the mechanism used to power them: a circular, raised platform was indicative of the horse-walk and lades and machinery were features of water driven mills. The latter arrived in Orkney in the 1820s and the former was introduced by the 1870s, both being replaced in the 1920s by oil engines (Fenton (1978) 366-7) and the chronology was probably similar in Caithness, as other technical innovations reached Caithness at the same time as Orkney. Cart sheds were recognised by a very wide

door, normally almost the entire width of the longhouse, to permit access of the vehicle.

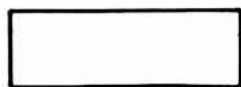
Often crofthouses and byre dwellings had added units attached which were clearly not an original part of the farmstead, as wall joints are visible. These are the only examples where it is possible to determine that added units were not original, unlike the farmsteads where outbuildings were built separately. Many of the added units were small annexes, often L-shaped, but in some cases it is possible to determine the function of an additional unit. In the case of crofthouses, it was most common to attach a byre or animal house to the dwelling, thus making it the equivalent of a byre dwelling, fourteen such cases being recorded. In two of the examples a barn was added at the same time and in another a winnowing barn was later attached to the byre. Only one additional unit of a different nature was recorded, where a second unit for accommodation was built. There were fewer occurrences of non-original units being added in the case of byre dwellings: one animal house, one living area converted to an animal house and two winnowing barns. It would appear that processing units, such as winnowing barns, were only added to a farmstead when animal accommodation was also present. The predominant feature of additional units was for crofts to gain animal accommodation, while byre dwellings tended not to be expanded, implying that the basic farming unit in this area was a residence and byre.

The longhouses can be ordered according to function or form. In form (see fig. 23), they comprise a linear formation of units of varying function. In no case is there a farmstead of more agglomerate form ie. with additional units being built along the long side of the structure, as is common in Orkney and Shetland farmsteads (eg. Fenton (1978)

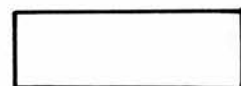
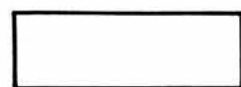
LONGHOUSE FARM LAYOUT



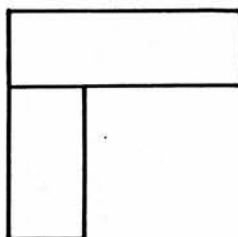
1. LINEAR UNIT



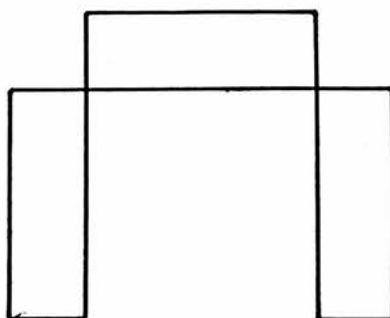
2. LINEAR UNIT AND
SMALL OUTBUILDING



3. PAIRED UNITS



4. UNITS BUILT AT RIGHT ANGLES



5. COMPLEX

fig.32, 126; fig.35, 128; fig.36, 129). Many consist of a line of units, but in other cases they are arranged in pairs, the secondary structure consisting of a single unit or a parallel longhouse of several units, the latter arrangement being frequently documented on estate plans. Another common arrangement was for outbuildings to be built at right angles to the longhouse, while in the case of more complex farmsteads, the structures formed three sides of a rectangle to create a courtyard in the middle. It is possible that the steadings were arranged in these ways for purely topographical reasons and therefore the function of the farms is a superior basis for their division: whether for residence or also for producing and/ or processing.

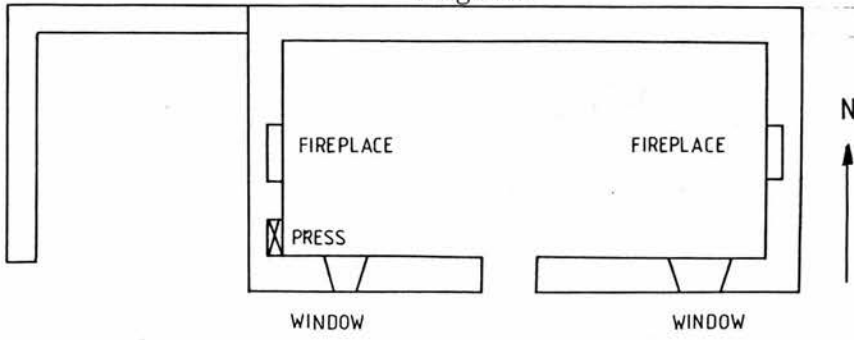
Those which are for residence only are the crofthouses (see fig. 24.1). The types of inhabitants of these structures may be exemplified by the account of one longhouse (Caithness 84/ Area 1/ Mon. 20) which was said to have been the residence of a cobbler who died in 1921. The croft was partitioned, dividing the living area from the paved work room. The last occupant was said to have been a retired farmworker. Occupants may also have been farmworkers on larger farms or participants in industries such as quarrying and fishing. It is likely that the occupants were producing vegetables etc. for their own use as the crofthouses are often associated with kailyards. Frequently small annexes were attached to either end of the house - possibly small sheds for tools, especially as some appear to be too small and their entrances too narrow for animal or human accommodation, although they would have been adequate for poultry. The School of Scottish Studies records that payment of farmworkers was often in kind, with a standard wage, as reported by David Swanson (Halkirk), being a pint of milk, 8 bolls meal, 3.5 tons of coal or peat and 60 chains of land for potatoes, the potato seed being

provided at a later date. Thus it is likely that these crofts were associated with small scale production. Distributionally, the crofts tend to be situated near to farmsteads that were farming on a larger scale and to be concentrated on lower-lying ground, although there are exceptions.

Production centres are more numerous and varied. Byre dwellings are typical of these, as are crofts to which byres were appended (see figs. 24.2; 26.1). They were probably occupied by crofters. Jean Dunnet (John o' Groats) stated that the average croft kept one pig, one or two cows, hens and one horse. For ploughing each crofter would pair his horse with a neighbour, although each would have his own plough. The eggs were taken by the local or by "Garden's floating shop" which could be visited when near John o' Groats for cattlefood, meal, crockery etc.. She also added that rabbits and hares for extra food and gull's eggs were gathered regularly. Supplementary work was common. John Banks (John o' Groats) stated that most crofters went to the herring fishery at Wick in late July - 6th September, getting a share of the catch or a wage and commission and also helped in 6 weeks harvest work for 3. William Alexander (Canisbay, born Watten) said that before World War I, most crofters "made ends meet" by working part-time in local flagstone quarries. This was a long established practice, also occurring in pre-Improvement times as mentioned in the N.S.A. accounts for Latheron and Canisbay parishes.

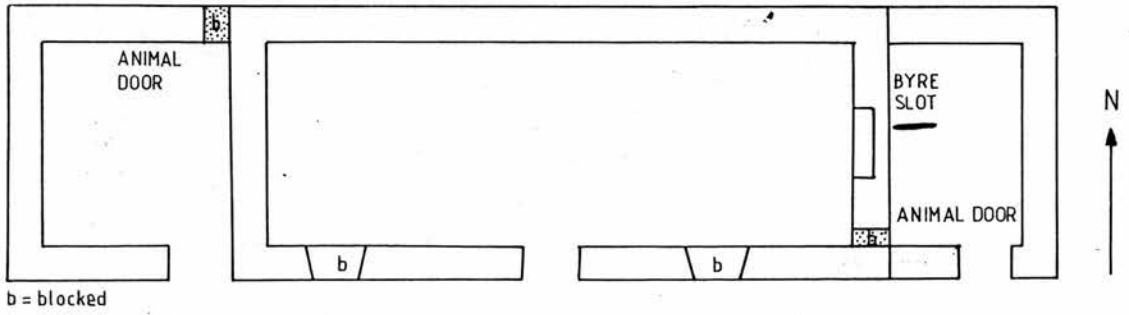
There is an increasing scale of additional units or outbuildings associated with the byre dwellings and crofthouses and the larger farmsteads must represent more commercially farmed properties and were probably associated with a larger extent of cultivated land. Crofthouses were often associated with a range of outbuildings set at right angles to the residence, generally comprising byre and barn

Fig. 24



1. CROFTHOUSE WITH SIMPLE ANNEXE

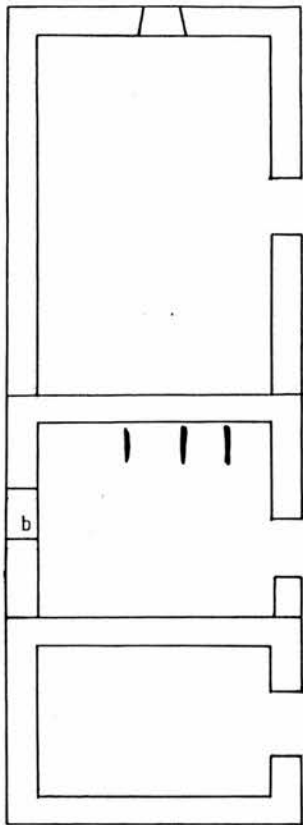
85 / 15 / 17



b = blocked

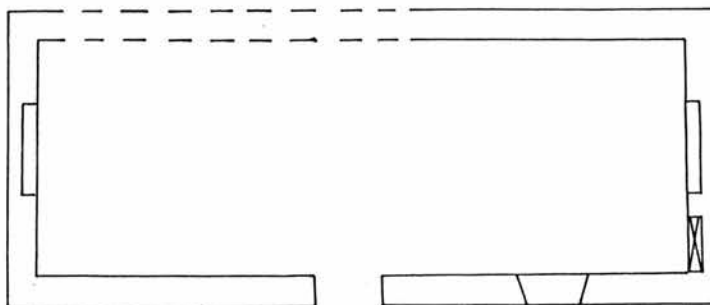
2. CROFTHOUSE WITH ADDED ANIMAL HOUSING

84 / 8 / 66



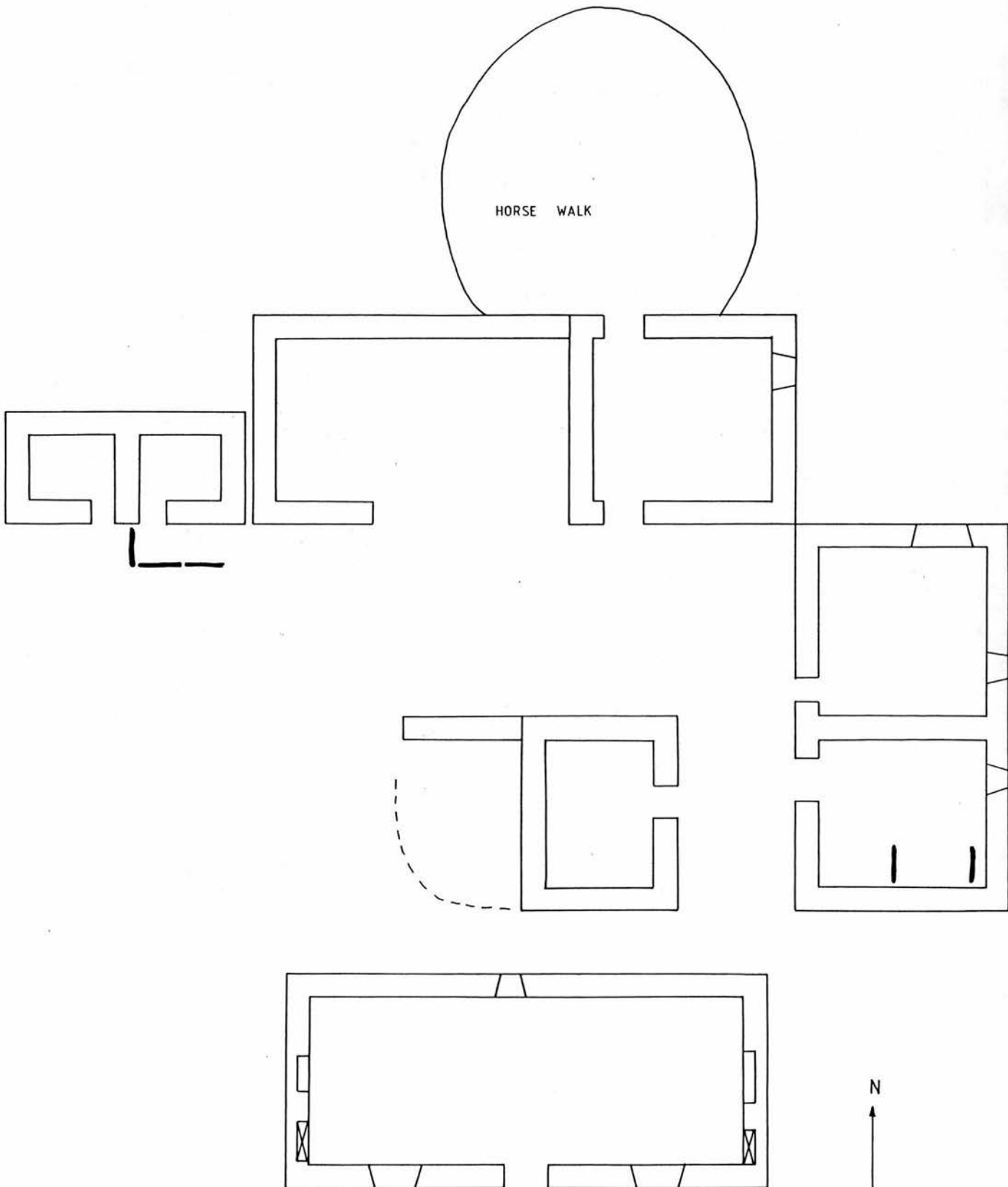
3. CROFTHOUSE WITH RANGE OF PRODUCING UNITS

85 / 6 / 3



0 5m

Fig. 25



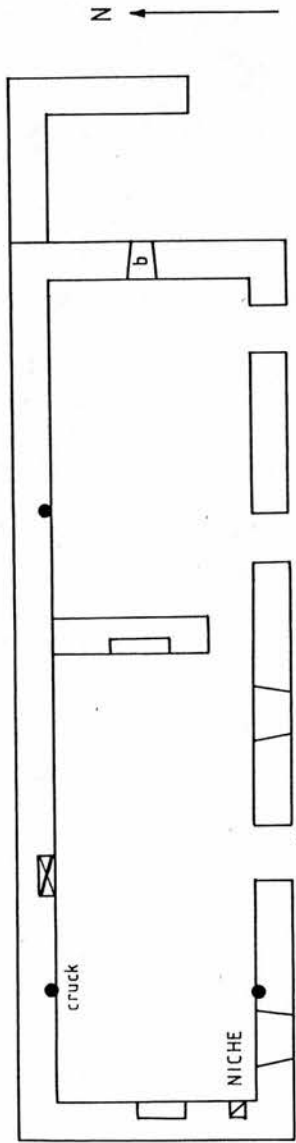
COMPLEX CROFTHOUSE FARM WITH PRODUCING AND PROCESSING UNITS



84 / 1 / 21

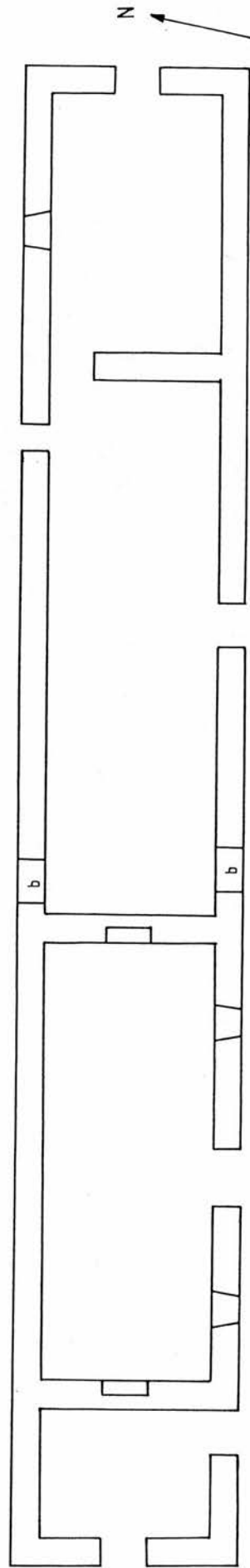


Fig. 26



84/8/11

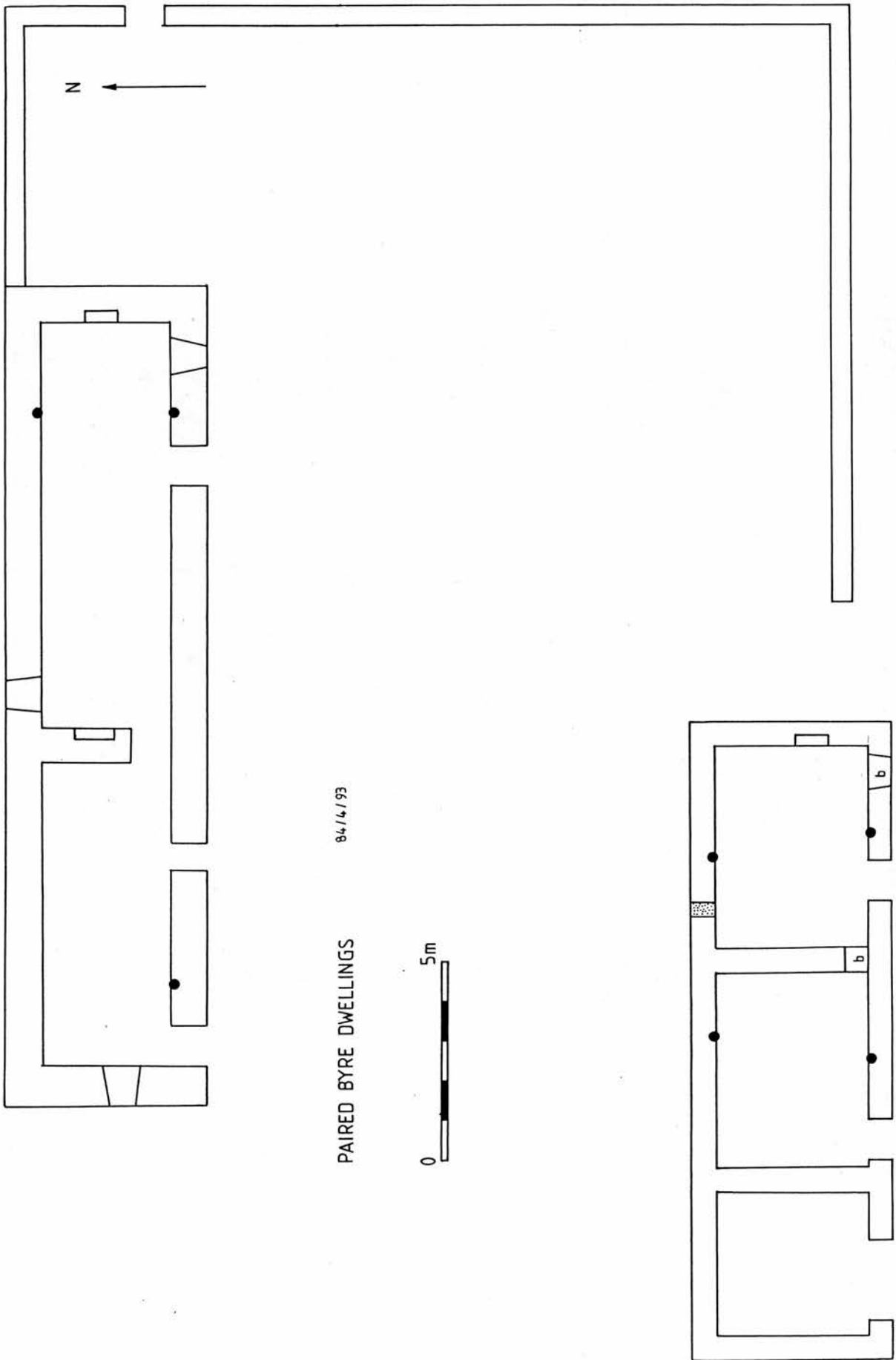
1. BYRE DWELLING WITH ANNEXE



84/2/9

2. LARGE BYRE DWELLING





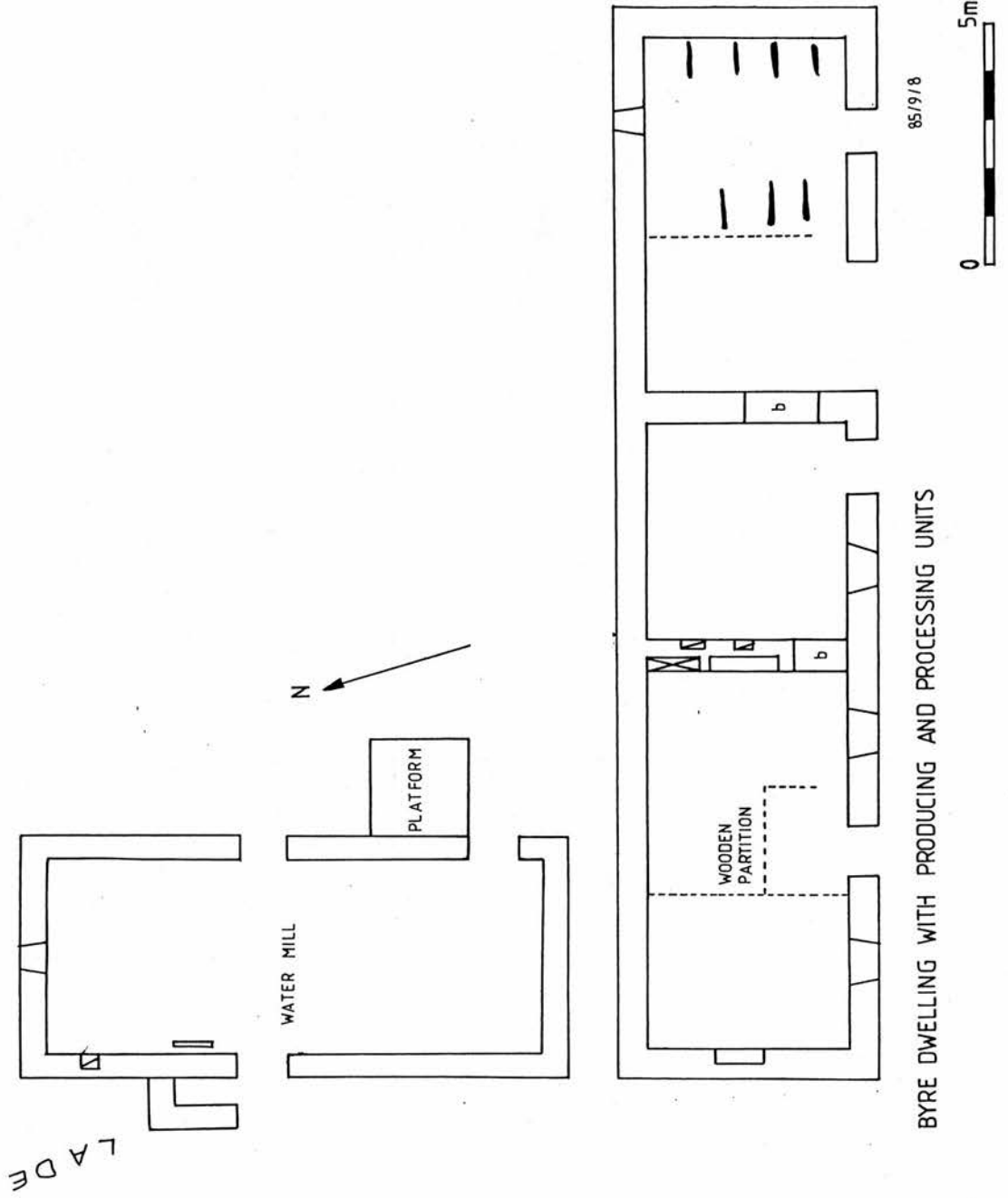
84/4/93

PAIRED BYRE DWELLINGS



Fig. 27

Fig.28



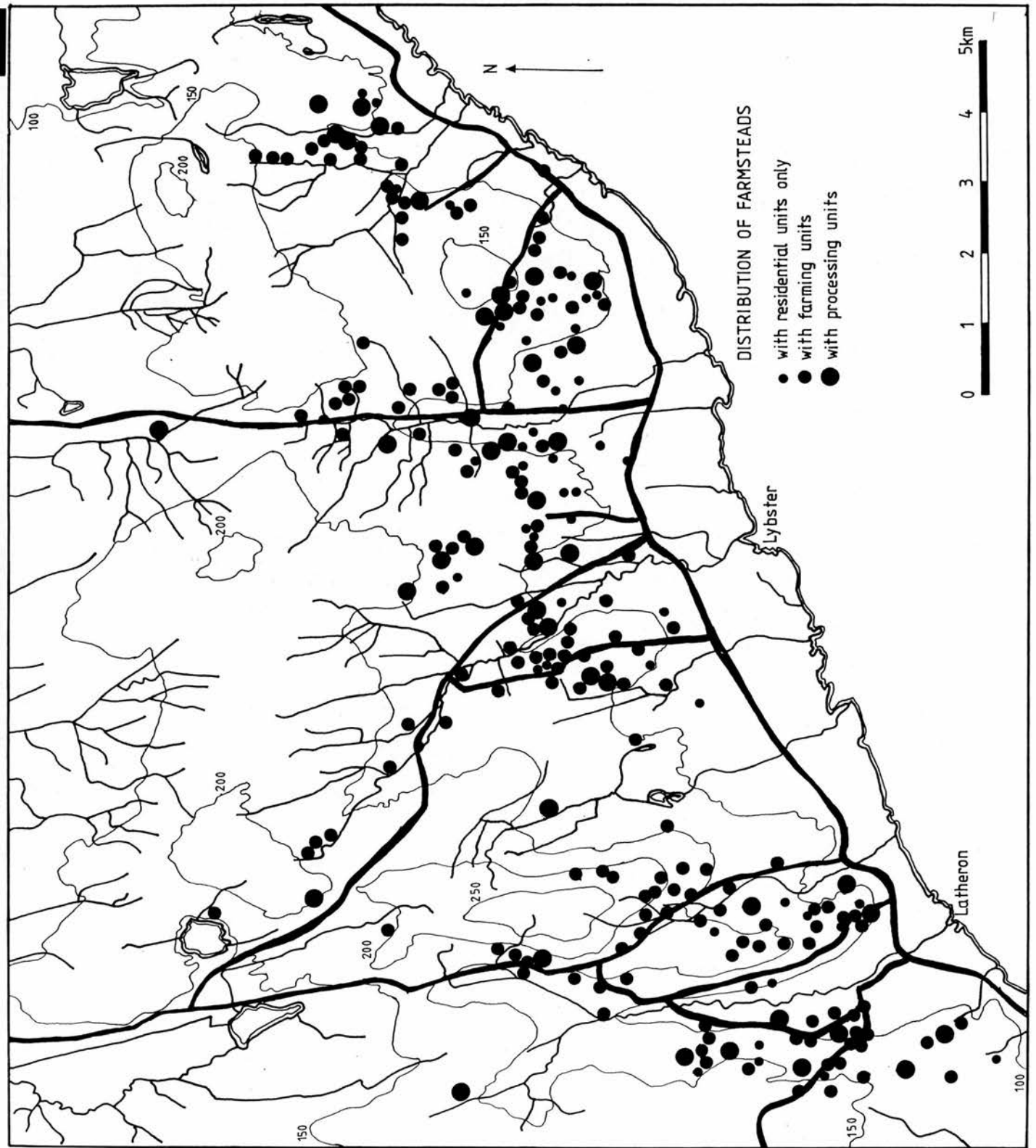
(see fig. 24.3). Such an arrangement was also found with byre dwellings, although parallel longhouses set in pairs were also frequent (see fig. 27). The latter form was not so well represented in association with croft-houses and it may be an earlier tradition, as it is often depicted in early estate plans, becoming less common by the time that croft-house farmsteads were built.

One major distinction in the byre dwellings is between those which were originally built as living area and byre, with any other units being added at a later date and those which had several other units as an integral part of the longhouse (see fig. 26.2). The difference may be a reflection of varying scales of farming, with larger or more prosperous holdings being associated with large longhouses. However, as they have a tendency to be situated in an upland location, the greater number of units may be associated with a greater dependence on pastoral farming in which case more animal housing would be necessary. The large longhouses were seldom associated with annexes, possibly an indication of the decline of agriculture in highland areas after the Improvements, whereby additional farm buildings were not needed.

The distribution of the producing longhouses is centred on river valleys and on the South facing slopes of hills (see fig.29). They tend to be clustered on lower-lying land and more diffuse in upland areas due to the poorer quality of the land which necessitated larger holdings.

Some farmsteads also had equipment for processing. Such centres tend to be larger than non-processing farms and it is possible that they processed grain from some smaller farms as they tend to be situated in the midst of clusters of producing farms, although there are exceptions. However the reports in the School of Scottish Studies reveal that other methods were used for threshing such as effecting it by means of a

Fig. 29



flail. Possibly the continued use of flails was one reason why relatively few horse or water powered threshing mills were present in this area. The more common winnowing barns were easier to build and did not require any machinery, although fanning machines could be used.

Processing farms tend to be the most complex form of steading, with a larger number of units and often a more complex layout (see figs. 25; 28). However many byre dwellings incorporated a winnowing barn, mainly as part of the original building though some were added at a later date. When built separately from the the byre dwelling they were often built on their own with no other unit attached and were most commonly built at right angles to the byre dwelling. This was to utilise the wind: longhouses were built with the short end facing the prevailing wind, whereas in winnowing barns the long walls containing the opposing doors would be built to face the wind to provide a better current of air.

Winnowing barns are less frequently found in association with crofthouses, numbering only six examples compared to twenty-six in relation with byre dwellings. It is probable that by the time that crofthouse farmsteads were being built, winnowing barns were less popular. The same patterns of layout, at right angles or parallel to the crofthouse were represented, but generally the winnowing barn was one component in a range of outbuildings including a byre and barn.

In seven examples, one door of the winnowing barn was blocked, thus altering its function, often to that of a byre, as is attested by flagstone slots. Presumably these farms survived to a later date than the others, by which time the winnowing barn was obsolete. Similarly, it is probable that those examples in which a winnowing barn was a later component were earlier than those in which they were an integral feature, although there is no sufficiently accurate means of verifying this.

Horse-walks were more frequently associated with crofts than with byre dwellings, respectively six and three examples - possibly a more significant difference than that relating to winnowing barns as byre dwellings were the most numerous form. When associated with byre dwellings, the farmsteads were not very complex: two had horse-walks as a separate feature and one large byre dwelling incorporated a horse-walk as an integral unit. In the crofthouse examples they were generally associated with complex farmsteads with a range of outbuildings set at right angles to the croft and, in four cases, with a second range of outbuildings to form three sides of a rectangle. In three examples the croft was a double living unit and in another a two storey structure, possibly hinting at a greater number of residents, although as the double living unit is represented in all other categories, including simple crofts, this is of uncertain significance.

Three examples of water driven threshing mills were recorded on the survey, two associated with crofts and one with a byre dwelling. It seems unlikely that it was less common because of lack of suitable water courses and it may be that horse-walks or flail threshing were preferred.

Processing farms would have employed farm servants, whose life was reported in the School of Scottish Studies records. It was said that many farms had six or seven hands and the average farm servants' day was as follows: rise at 5am to feed the horses and then breakfast; harness at 6am and go out to the field, returning at around 12.40pm for lunch and after grooming and feeding the horses, harness at 1pm and work till 6pm when had dinner; in the evening all the cows were milked, the cream skimmed off with a large shell and churned in a staff churn; after this there was free time, when the hand might help someone with threshing or thinning turnips; women did barn work and gathered turnips and

children herded, taking cattle to the hill in the morning and back at night, it being common for them to attend school in winter and herd all summer.

At Shebster, Reay Parish, and the Thurso River Valley, similar recording methods were used to survey the longhouse farms. At Shebster, as mentioned above, all were of byre dwelling form, often arranged in parallel pairs. Three out of four upstanding steadings were associated with corn-drying kilns - a rare feature in the Latheron Parish survey where only two such kilns were recorded. It is possible that at Shebster it was necessary to dry the corn before grinding it whereas in the 1984-5 area this was not required to such an extent. It is also possible that, as Shebster was abandoned in the mid-nineteenth century, the practice had disappeared by the time of the more recently occupied examples in Latheron. One of the more complex farmsteads at Shebster had processing equipment as there were possibly two winnowing barns, both partly blocked by the time of the farmtown's desertion. This is an indication that there may be no chronological significance in the blockage or addition of winnowing barns as the Shebster example is of early date.

In the Thurso River Valley the upstanding farmsteads - and therefore those examples whose function can be assessed - were of the crofthouse type. Only one byre dwelling survived to any height and as the living area, byre and winnowing barn were approached separately, it is likely that this was a later example. Other byre dwellings were not upstanding, presumably having been destroyed by later agriculture as this part of the county was subject to the intensive Improving activities of Sinclair of Ulbster. The dearth of byre dwellings was probably also indicative of its lowland, arable nature as destruction of longhouse farms was less

necessary in the uplands where land was converted to sheep-farming than in the lowlands where the process of enclosure and formation of a regular pattern of fields must have involved the abandonment and levelling of farmsteads. The full spectrum of croft-house types was evident in this area: from a simple croft, more probably associated with the flagstone industry than with agriculture; to one associated with a kaleyard; another with a small annexe; with a byre attached; with a byre, barn and winnowing barn; and a complex farmstead with a horse-walk, the same in layout as those recorded on the 1984-5 survey in Latheron Parish and also similar to The Corr, recorded by the Royal Commission (Stell (1982) 95; fig.6.9). Thus, similar forms of farmsteads are found throughout Caithness, although it would appear that it is in the Latheron area that the widest sample of farmstead types is found.

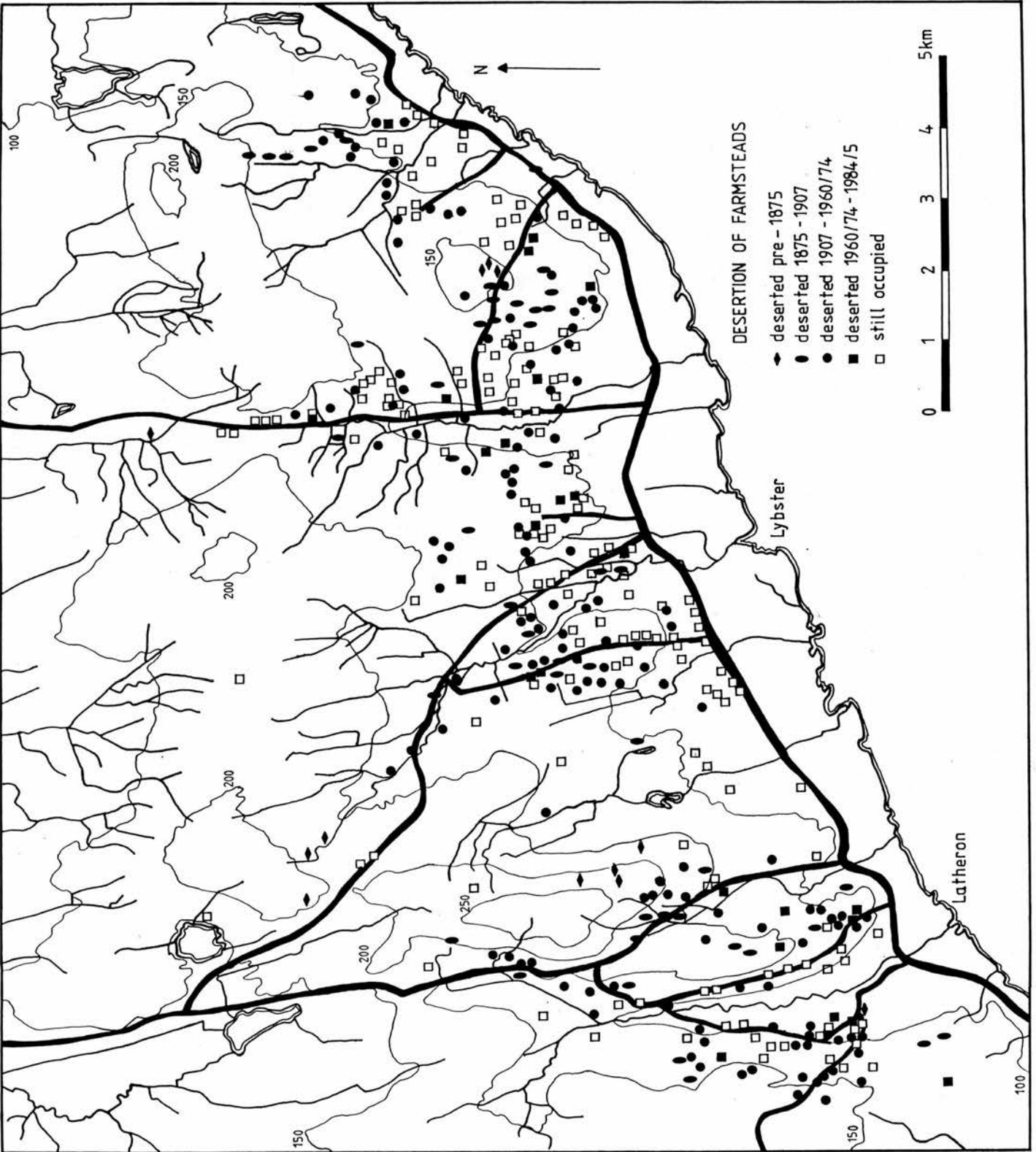
Dating the construction of the longhouses is virtually impossible with a lack of estate plans. One possible indicator of age is the degree of separation between the living area and the farm buildings, especially the byre, as indicated by Stell (Stell (1982) 92). It may be postulated that the earliest examples were those in which there was no stone separation between the byre and residence. Often the partitions in byre dwellings are additional in which case it might be argued that they were earlier in date and continued to be occupied for a longer time than those in which no partition was added. Those farms with an original partition but only one entrance to the living area and byre would be the next phase, followed by byre dwellings with separate entrances to byre and living area. Possibly the ultimate result of this process of segregation was the construction of separate longhouses for residence and for farm buildings ie. the croft-house farm.

Ordnance Survey maps, based on the surveys carried out in 1875, 1907 and 1960-74, were used to date the longhouses, but although the majority of farms found on the 1984-5 survey could be located, they were mainly in existence by or had been abandoned by 1875 and therefore any resultant chronology was concerned with the process of desertion from the late nineteenth century to the present day rather than with their construction (see fig. 30). Another problem was that, while the OS records whether the structure was roofed or unroofed, it is impossible to tell at which point there was a change in function. Such change was a common feature of the longhouses: crofthouses were converted into barns or cartsheds (eg. 84/1/6); the byre end of a byre dwelling was converted into a barn and horse-walk (eg. 85/11/6); living areas were converted to byres (eg. 85/10/2); the blocking of one door in winnowing barns was common (eg. 85/6/3).

Some farmsteads could not be located on the OS maps: these may have come into existence and been abandoned and destroyed between mapping or, more likely, before the first survey, especially as many were not upstanding and in poor condition.

By the first survey in 1875, some longhouses had been totally abandoned. These were large byre dwellings situated on upland moor on the periphery of the main concentration of farmsteads. It is possible that other byre dwellings on lower ground had been abandoned, but were omitted from the first survey because of destruction by cultivation. The desertion of the upland farms may be associated with the population decline of the mid-nineteenth century caused by the failure of the Improvements, but there is no concrete evidence to support this hypothesis.

Fig. 30



There was also partial desertion of longhouses, some of which might indicate that by this time there was a movement towards a style of farming in which farming units were not needed by all tenants. At one relatively complex steading (84/2/9) with byre, barn and stable, only the living area was roofed. Such desertion occurred elsewhere, leaving only the living area in occupation (85/19/18) and continued as a process between 1875 and 1907 by which time the byre unit of byre dwellings was frequently abandoned (85/3/8) and crofthouses remained in use while byres and barns were deserted (84/5/3; 84/5/10; 84/12/9; 85/9/1). However the living areas did not necessarily retain their function and may have been retained as animal shelters or temporary dwellings.

This was not the only trend of desertion; at Whilk (85/1/12) the farmstead was completely deserted except for an animal house, a fact supported by the survey as it was the best surviving unit. The same situation was apparent elsewhere (85/8/8) while at another example (85/6/18) both living areas were deserted leaving only farm buildings. In another case (85/2/17) a winnowing barn fell into disuse while living area and byre were still roofed. Some longhouses were wholly abandoned by 1907, generally located in the upper reaches of river systems and on higher ground, although others in similar situations continued in use.

Between 1875 and 1907 the majority of farmsteads continued in occupation and indeed many had additional features attached - annexes (84/10/16a); small outbuildings (84/10/30) and larger outbuildings. Of the latter, when the function could be ascertained, the additional units were: a threshing mill (85/9/8); a range of byres and barns (84/9/6; 84/9/7; 84/9/17; 84/2/22; 85/6/3; 85/11/3); a horse-walk and associated barn (84/10/35; 84/9/17; 85/7/11 - in this case it was already deserted by 1907); a byre or animal house (84/4/16; 85/5/2; 85/9/7); a

winnowing barn (85/7/2) and extra living areas (84/6/26; 84/10/35). Few new farmsteads were built at this time : a crofthouse farm with added barn, enclosure and outbuilding was constructed (85/14/3), the enclosure being built over the remains of an earlier structure. One complex farmstead comprising a crofthouse with kaleyard, horse-walk, barn and cartshed appeared for the first time in 1907.

The process of desertion continued between 1907 and 1960-74 during which time the majority of longhouse farms had been deserted. When units of farms remained in occupation, it was only the living area, the byres etc. being deserted (eg. 84/1/14; 85/2/9; 85/2/18; 85/10/4; 85/11/6; 85/15/3). In no case was any farm enlarged and no new farm was built. There was no particular form of longhouse which remained in use; farmstead complexes (84/1/19a; 84/9/3; 84/9/7; 85/9/8; 85/11/8; 85/17/2), byre dwellings (84/9/10; 84/9/13; 84/11/12e; 85/15/12), crofthouses (84/1/10; 84/8/60; 84/9/3; 85/15/7) and large byre dwellings (84/1/14; 84/6/44; 84/8/16a; 84/8/51; 85/9/2) were all represented. Nor was there any geographical basis for the process of desertion, although there was a continuation of the regression of farms from the uplands and those which survived tended to be located on lower ground. It is possible that it appears to be a somewhat random desertion because it was a human process, partly due to the casualties of both World Wars and also part of rural depopulation and movement towards cities which has been predominant in rural areas throughout the twentieth century. By 1984-5 all the longhouses recorded in the survey were deserted, leaving only a fraction of the original number of longhouses, mainly distributed along the roads and on low-lying ground, continuing the pattern of retreat from the upper levels.

CHAPTER 6: NORSE SETTLEMENT AND LAND-USE

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The Norse presence in Caithness is attested by three main sources of evidence: historical, toponymic and archaeological. These remain separate strands of information, with great difficulties inherent in any attempt to fuse their amassed content. This has led to a fragmentary view of Norse colonisation and often one source is contradictory of another. The majority of study has been focussed on other areas where the evidence is more plentiful ie. in the places where later Gaelic- and Scots-speakers made less of an impact than in Caithness - mainly the Northern Isles and especially Orkney, seat of the Earldom of Orkney which pertained to the Norwegian rather than Scottish kingdom and where Norse influence remained long after the Treaty of Perth in 1266. Caithness and the rest of mainland Scotland is often viewed as peripheral to Norse rule despite the traditional boundary of Norse territory being the River Oykeell with the suggestion of further control to the South of this feature (Crawford (1987) 57) as its Norse characteristics were submerged by subsequent settlement by Gaelic- and Scots-speakers. This concentration of attention on the Northern Isles means that in this examination, Caithness must be viewed in the light of the information derived from Orkney and Shetland.

The Orkneyinga Saga, the prime source of historical evidence pertaining to the Norse in the North of Scotland, tells, as its title suggests, of the history of the Earls of Orkney. As with all early literary evidence, it cannot be taken as a straightforward statement of historical fact. It has been suggested that even its title is a misnomer, as much of its action occurs in Caithness rather than Orkney (Cowan (1982) 27). In

addition, it was written by an Icelander around 1200 (Palsson and Edwards (1978) Intro. 9) and although Iceland and Orkney were in contact at this time, its reliability is in doubt for this reason also. It is indeed unclear to what extent it was ever intended to be an accurate history and it has been suggested (Cowan (1973) 20) that it may be read as a "treatise on a good ruler", a theme common to the Heimskringla Saga written by Snorri Sturluson. Caithness was therefore the centre of action because the author's view of a good ruler was one who extended the geographical area of his control and Caithness being so close geographically and culturally to Orkney was an obvious target for an ambitious earl. Another theme of the saga may have been the threat to Norse custom inherent in the gradual encroachment of Scottish feudalism from the South (Cowan (1973) 21).

However unreliable the Orkneyinga Saga may be, from it a definite image of the political situation of Caithness emerges, one which changes over time. At first it would appear to have been a place of refuge, where Norse rule was unable to reach: Earl Einar, having killed King Harald of Norway's son Halfdan, fled to Caithness to escape Harald's vengeance (Orkneyinga Saga: Chap.9). Later King Duncan of Scotland ceded the Earldom of Caithness to Thorfinn, Earl of Orkney because of kinship by marriage and this grant was the basis of the Norse political claim to Caithness (Orkneyinga Saga: Chap.13). However the toponymic evidence indicates that Norse influence was present before this event dated to the 10th century. There was an attempt by Karl Hundasson, commonly identified as Macbeth, to oust Thorfinn from the Caithness earldom but it was unsuccessful (Orkneyinga Saga: Chap. 20).

Thereafter much of the saga is concerned with internal Norse feuds and the struggle between the Norse earls and Scottish king, often located in

Caithness and in which the people who came off worst were the inhabitants of Caithness (Cowan (1982) 42).

Toponymic evidence forms the bulk of information regarding the Norse colonisation of Caithness. The chief problem in its analysis is that of to what extent a place-name of Norse origin reflects actual Norse settlement. However with the relative lack of information from other sources, toponymic evidence must be considered, although the problem of interpretation must be borne in mind. Of the research in the field of place-name nomenclature, Nicolaisen's work forms the basis of much further study (Nicolaisen (1969, 1976, 1979)). He analysed the place-names from Scotland as a whole, and demonstrated the spread of Norse place-names by using chronologically differentiated farm-name generics. One of the earliest examiners of Norse place-names was Marwick, who concentrated on Orkney, but whose work can be extended to other areas such as Caithness (Marwick (1952)). The format of his study consisted of a list of place-names with their Norse derivation and an account of references to these names from maps and other early documentation, revealing the evolution of the Norse original to the modern form. His analysis of the place-names and the information derived was shorter, relegated to a series of addenda at the end of his work. Such a layout would appear to have been commonly adopted by other students of place-names: Waugh's PhD thesis on the place-names of six parishes in Caithness is mainly in the form of a gazetteer, with little attention given to its analysis (Waugh (1985)). Also, as the extent of her study was limited to the North and East coastal parishes ie. with the omission of Halkirk, Watten, Bower and Latheron parishes the possible implications of her distribution maps are limited due to the artificial boundary

imposed. A study of the interior and the South East coast of Latheron parish could have cast light on the boundary of maximum Norse settlement and its interaction with the inhabitants of the "wags" or homesteads of Pictish date.

The earliest names of Norse origin in Caithness are considered to have been of topographic character, as it is thought that these would have been used to define a nameless and otherwise featureless landscape, settlement generics being related to a later, more complex system of naming (Nicolaisen (1979) 112). Baer names are also associated with early settlement, generally accepted as referring to areas of primary settlement (Marwick (1952) 247; Wainwright (1962) 139). Of the latter group in Caithness, recognised by the endings -by and -bay, Duncansby and Canisbay are the only surviving examples. On Roy's Military Survey of 1755 a farm named Leadby? is marked between Geise and Thurso, the last two letters being best defined. It is possible that this may have been derived from the Norse generic baer and belong to a farm which had been abandoned or was incorporated into the expansion of Thurso during the first half of the nineteenth century. However Roy's Military Survey is not devoid of error and therefore is not necessarily accurate in the location and naming of farmtowns. In the cases of Duncansby and Canisbay, the Norse generics (ie. the baer elements) are associated with Celtic personal names as specifics (ie. the Duncan and Canis elements). Waugh suggests that by the time that the Norse settled in Caithness, baer had come to mean an already established farm and could be used to define a pre-Norse farmstead ie. one which was not farmed by Norse-speakers (Waugh (1985) 2). However for these place-names to survive they must have been farmed either by Norse-speakers or have been subject to the Norse in some way. Waugh is rightly puzzled by the dearth

of pre-Norse place-names, although admitting that they would be hard to classify, especially as they would be prone to distortion by later Norse or Gaelic speakers. She indicates Dunnet as a possible example of a pre-Norse name. Topographic names are distributed along the North and East coast, as one would expect of colonisation from Orkney. However, as the coastal strip of Latheron was not examined, it is not possible to demonstrate with equal certainty that such names were not in use there. She notes that the topographic names are absent around Duncansby Head and Dunnet, where she proposes that pre-Norse settlement was located and therefore was avoided by the settlers. The corollary would appear to be that the first Norse colonists settled in areas without pre-existing settlement - an argument entirely contradicted by the wide distribution of brochs in Caithness, many of which are situated near farms with names of Norse origin. As much pre-Norse settlement was located at brochs in Orkney, in post-broch occupation levels, there is no reason to believe that this is not true of Caithness, where occupation was also focussed on "Pictish" wags or homesteads. The latter however are situated in the area of study avoided by Waugh. There may be another explanation for primary occupation to have avoided Duncansby and Dunnet Head - possibly kinship or diplomatic ties with the Norse existed here, especially as there was presumably prior contact with the Norse either from Orkney or from Norway before Caithness was settled. However such speculations can never be proven.

Nicolaisen's study of Norse colonisation depends on the chronological distinctions of the generics stathir, setr and bolstathr, all meaning "farm", with stathir the earliest and bolstathr the latest forms (see fig. 31). Stathir, although a relatively common generic in Orkney has only one counterpart in Caithness (Nicolaisen (1976) 88, fig. 5).

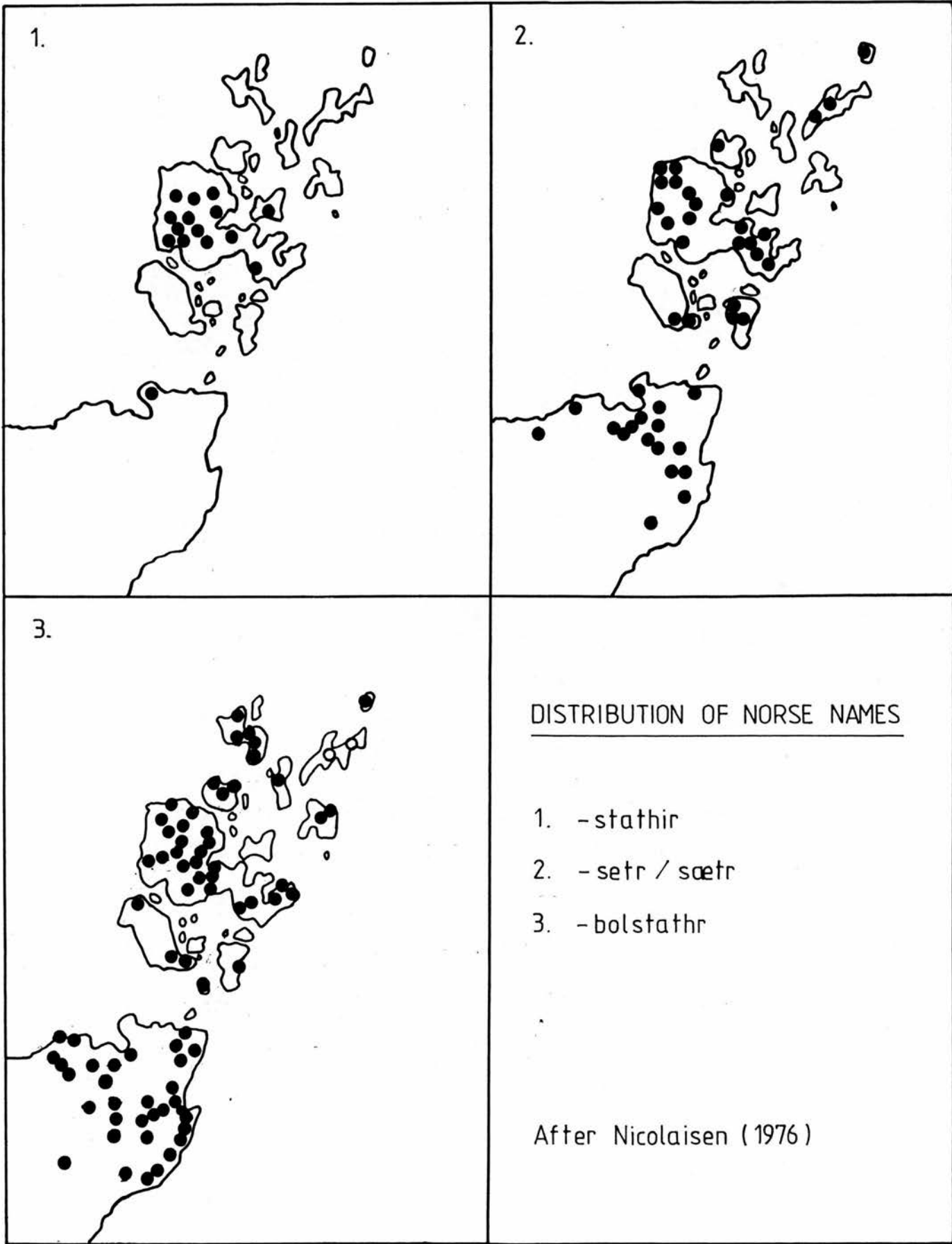


Fig.31

Unfortunately neither he nor Waugh states the derived place-name, situated on the Eastern side of Dunnet Head and it could not be identified on the modern map (see fig. 31.1). This lack of stathir names in Caithness has been taken to mean that the colonisation of Caithness was later than that of Orkney, at a time when stathir was a less popular farm generic (Waugh (1985) 5).

Setr, the origin of words ending in -stry and -ster in Caithness (see fig. 31.2) is considered by Waugh to have been relatively rare, with only ten examples, nine as a generic and one as a simplex (Waugh (1985) 5). The simplex, the present farm of Seater, lies in Canisbay Parish behind Duncansby Head and again Waugh argues for a reason for the differentiation between Norse names here and those in the remainder of Caithness. According to Nicolaisen, however, the setr generic is common with fifty-six in existence and although he admits that this is probably an overestimate it is in contradiction to Waugh's ten examples (Nicolaisen (1976) 91). Nicolaisen's diagram marks seventeen such names, fifteen of which appear to fall into Waugh's study area but the lack of marked examples on Nicolaisen's map may indicate that the distribution overlapped considerably. Either Waugh's more profound, because more geographically restricted, survey resulted in the discovery that Nicolaisen's derivatives were mistaken or Waugh did not recognise many examples, possibly due to the fact that she only studied the place-names on the modern OS map. Whatever, the situation is not resolved in Waugh's thesis. In the Northern Isles, the setr generic indicates consolidation and expansion of primary settlement (Nicolaisen (1976) 90; Waugh (1985) 5), and thus its presence in Caithness may be seen as part of this expansion from Orkney.

The latest stage of colonisation is denoted by the generic bolstathr (see fig. 31.3), recognised in Caithness by names ending in -bster/ -pster/ -mster (Nicolaisen (1976) 92-4). Although Marwick thought that "they occupy a relatively central position in their various parishes.....they were relatively early settlements, not fragmentary or residual areas which could be utilised at a later date" (Marwick (1952) 233) they are used by Nicolaisen to show the extent of settled area at its most expansive, as they were used for a long time and wherever permanent settlement existed (Nicolaisen (1976) 92). Waugh indicates that it was the most common farm generic in Caithness. Its distribution is centred on the coast and on the Forss and Thurso river valleys.

Nicolaisen contrasts the distribution of settlement generics with the generic dalr meaning a valley. This has a more widespread distribution than those relating to settlement and are considered to reveal "an area of Scandinavian influence" (Nicolaisen (1969) 16), this phrase being clarified as areas in which seasonal exploits occurred eg. hunting, fishing, summer grazing and raids or visits, with the condition that "in most of these undertakings, Norsemen must have been accompanied by Gaelic speakers as otherwise the names concerned would not have come down to us because of a break in communication" (Nicolaisen (1969) 16). It appears inconceivable that raiding or visiting Norsemen could affect a change of nomenclature among the native speakers. It is possible that this distribution simply represents a sphere of Norse influence outwith the immediate area of Norse settlement. However, although there has been speculation on the mechanism and reasons for the renaming of farms and topography by the Norse newcomers (Nicolaisen (1979))there has been no examination of the reasons that non-Norse peoples might

accept either the Norse language or place-name nomenclature in areas outwith the immediate vicinity of their colonisation.

The area of Caithness in which the names of Norse origin survive is more predominantly arable, while in the more upland pastoral areas Gaelic place-names preponderate, the boundary running North West/South East along the rivers Thurso and Wick. However this boundary is more likely to indicate the level reached by later Gaelic speakers rather than Norse settlement. Within the predominantly arable area the extent of the land farmed by the Norse is difficult to gauge precisely, but it would appear that at least the extent of land cultivated up to the time of the Improvements was also farmed by the Norse: if the Norse area of cultivation was more extensive, there would be no surviving evidence - the farm-names would have gone out of use if the limit of cultivation had retreated and any Norse farmsteads would have been destroyed by cultivation at the time of and after the Improvements. There may be some evidence that Norse cultivation was not as extensive in some areas as that of later pre-Improvement systems. Brimside is derived from saetr, Norse for shieling. It is marked on Roy's Military Survey as being the name of a farmtown in 1755, implying that while not cultivated in Norse times, it was farmed at a later date. However the adjacent farmtown to Brimside is that of White Quoy derived from kyi meaning cattlefold, indicative of the establishment of secondary farms which Waugh associates with pressure from Gaels in the West leading the Norse to withdraw from Reay Parish and remove to farm new areas in the Eastern part of the county (Waugh (1985) 6). It is therefore possible that Brimside was cultivated like White Quoy in the later stages of Norse settlement. However it is also possible that the term "quoy" remained part of the Caithness dialect and although of ultimate Norse origin the

name White Quoy may have been coined at a later date. The evidence would appear to indicate that the Norse extent of agriculture was similar to, though possibly slightly less than, the area of pre-Improvement cultivation.

In studying the farm-names of Norse derivation, it is apparent that they relate to major farmtowns on the coast or along the major river valleys. They have often been subdivided by Scots-speakers, as the Mains, North, South, East, West, Nether, Upper prefixes denote, so that the original boundaries and location of the Norse farms cannot be accurately estimated. However for studying toponymic evidence it is necessary to assume that the farms with Norse-derived place-names are situated near if not continuously on the same site as their Norse predecessors: such a close relationship can be seen at Pool, Orkney and may be one reason for the lack of archaeologically recognised Norse settlement sites in Caithness.

The Norse system of land-use has been depicted schematically by Crawford, with a primary settlement of baer, stathir, setr or skali generic or a topographic name, with setr, bolstathr, gardr and kvi elements indicating secondary units (Crawford (1987) 150; fig. 50). That such a pattern of settlement existed in Caithness can be seen in a study of the Thurso River valley as far South as Halkirk.

Here the topographic names representing primary settlement are located within the valley itself, on the best quality land: on the West bank Geise, Skinnet and Braal and on the East bank Carsgoe and Hoy. Sour, divided probably by Scots-speakers into upper and lower farms, is situated on the Hill of Sour, further from the river than the others. The farms on the East bank are situated between 40-45m OD with the exception of Hoy which lies close to the river between 20 and 25m OD:

this is the reason for its name, derived from Old Norse for hay, as it would be expected to possess good meadow ground. On the West side, Geise and Skinnnet are situated at 40 and 55m OD respectively, while Sour lies at 75m OD. Braal, like Hoy lies close to the river at 25m OD. The other early settlement may be represented by the farm of Leadby? marked only on Roy's Military Survey near the site of the more recently established farm of Glengolly.

There are fewer later names, possibly indicating that the Thurso River valley was almost fully colonised at an early date. These consist of Shalmstry (setr), Aimster and Sibster (bolstathr) and Clatequoy (kvi). It is possible that Clatequoy and Aimster were secondary establishments from Geise, Shalmstry was an offshoot of Weydale and Sibster of Hoy. Another later name is Achingills, a Gaelic/ Norse hybrid, located on higher land between Carsgoe and Sordale. These later names appear to be part of an infilling process of expansion of settlement after initial colonisation.

One farm-name derived from saetr (shieling) has survived at Framside on the East side of the Hill of Lieurary. Though pastureland in Norse times it was in cultivation before and after the Improvements. Also it was situated close to a broch which would imply that it had arable potential. Thus it is probable that Norse cultivation limits were marginally lower than those of preceding and later times, as evidenced also by Brimside.

It can be shown that the Norse system of land tenure was in use in Caithness. The continued measurement of land in pennylands is indicative of this, but toponymic evidence also supports this view. Waugh has indicated that the major difference between Norse and Gaelic toponyms lies in the nature of the specifics. Scandinavian place-name generics are often further defined by a personal name, whereas this is

absent in Gaelic nomenclature. She considers that this may be a reflection of different naming practices, but that it is more likely that there was a fundamental difference in the agricultural techniques and character of the farm systems, suggesting that in the Norse system the land was a clearly defined individual unit within a system whereas the more general specifics associated with names of Gaelic origin are not indicative of such a close organisation (Waugh (1985) 9). The preponderance of personal names in Norse place-names was probably a result of the system of land tenure: the features of udal tenure were "the holding of land in absolute ownership without a superior and the system of inheritance whereby an udal property was divided on the proprietor's death between his legitimate children....It was subject to the payment of land tax known as skatt to the crown representativeand of ecclesiastical teind" (Fenton (1978) 22). Udal tenure, while resulting in fragmentation of landholdings similar to medieval townships, had an emphasis on personal ownership unlike that of the Scots feudal system and which made applicable the use of personal names to further define property. Thus Caithness like the Northern Isles was probably subject to udal tenure, just as both areas were colonised under a similar process, although at different times.

There is little archaeological evidence for the Norse settlement of Caithness, but this is not surprising. Having established that Norse cultivation limits were similar or slightly lower than those of pre-Improvement times, it is likely that any remains would either be destroyed by later agriculture or have been preserved by successive longhouse farms built on the same spot. The grave sites and settlement excavated to date have been located generally on the coast where erosion

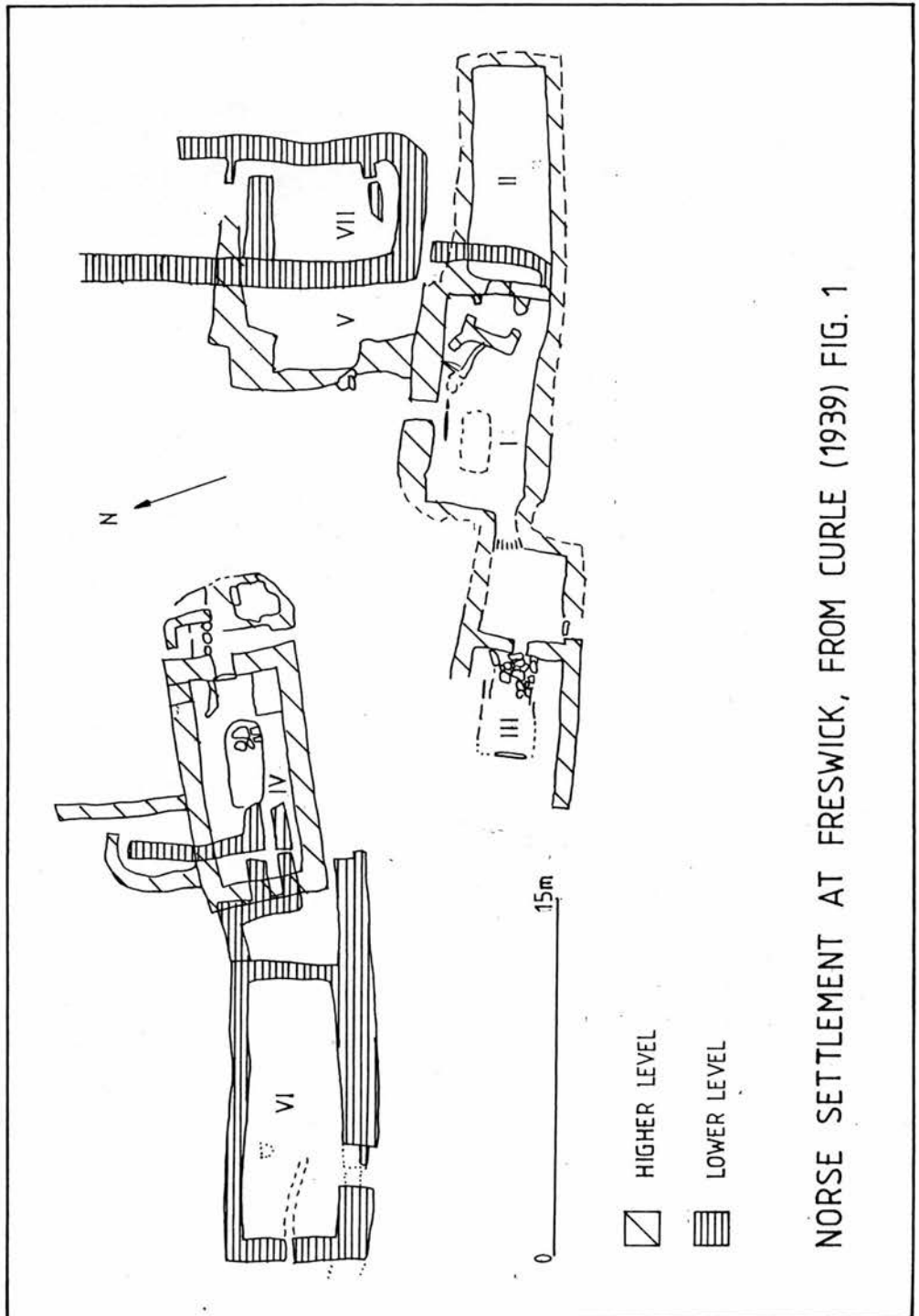
has caused their discovery and also preserved them as it made later agriculture, which might have destroyed the sites, impossible.

The only settlement of the Norse period to have been excavated or discovered in Caithness is that of Freswick. This site, commonly believed to be referred to in the Orkneyinga Saga as a homestead and estate (Orkneyinga Saga: Chaps. 92-3), was excavated successively by Edwards, Tress Barry, Curle (1939) and Childe (1942). The results of their work have recently been re-appraised by Batey (1987). That there was continuity of occupation on this site is denoted by the presence of microlith scatters and the discovery of a broch close to the Norse settlement (Batey (1982) 45-6).

The Norse farmstead (see fig. 32) was located by Curle in 1937 and consisted of a group of multiphase longhouse structures which Curle divided into three groups, Group A being the latest and Group C the earliest (Curle (1939)).

Group A consisted of a bathhouse with long fire (Structure I). Built onto this structure and apparently integral to it was a possible storehouse with midden material on the floor surface (Structure II). A third unit of this structure was a smithy, interpreted as such from the slag and bog-iron ore residues found in it (Structure III). The other structure associated with this phase was a separate dwelling, with long fire and with a possible box bed (Structure IV). North of this entrance was a box-like enclosure divided into two areas which was interpreted as for animals or for storage. A boat naust was also suggested to pertain to this phase (Structure V) but Batey considers that this phasing and interpretation is incorrect (Batey (1982) 49). According to Batey, this may have been a courtyard farmstead, with the bath and smithy built as a separate structure because of the fire hazard, but she accepts that

Fig. 32



NORSE SETTLEMENT AT FRESWICK, FROM CURLE (1939) FIG. 1

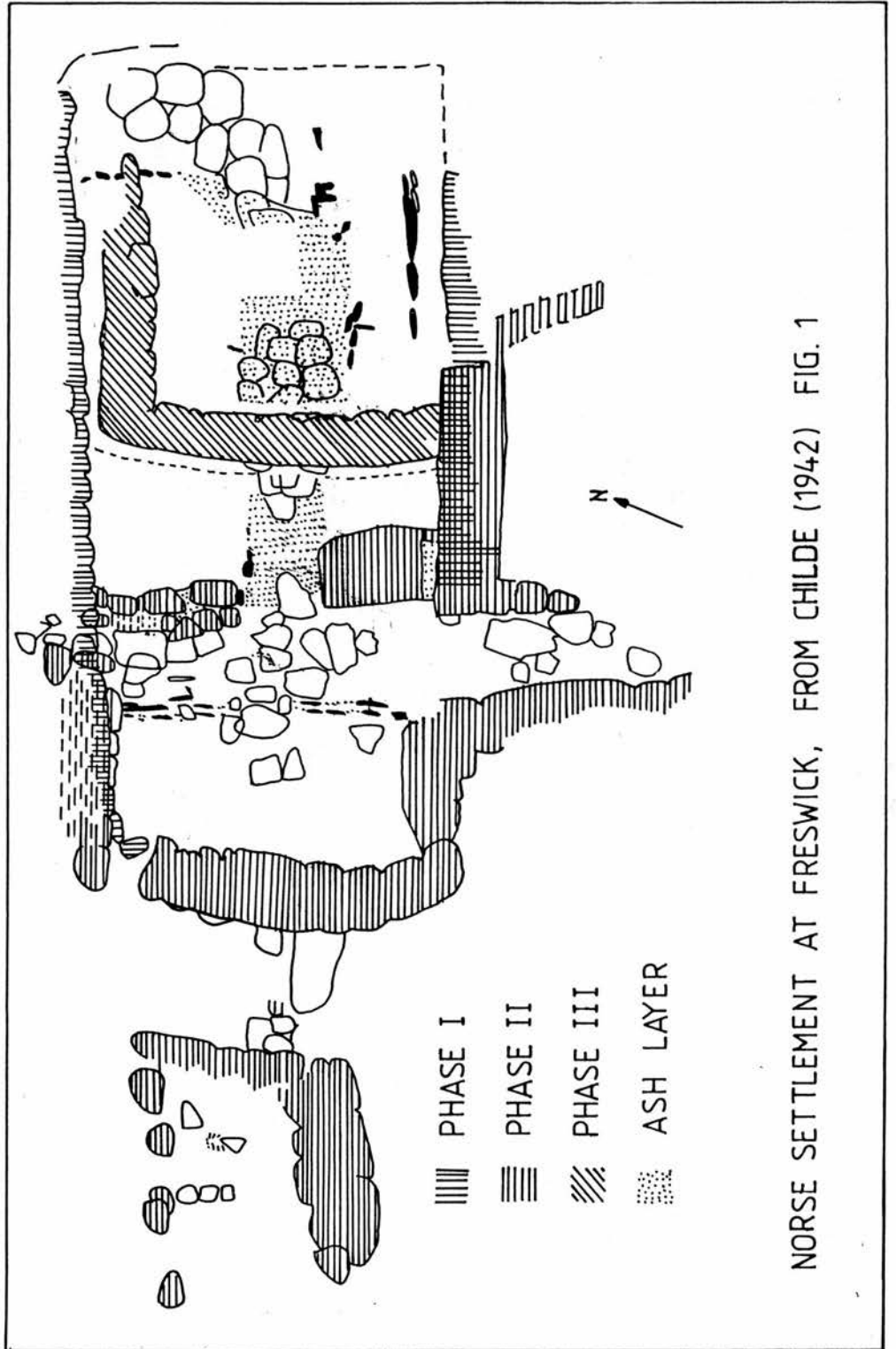
this interpretation of the settlement relies on the presumption that the separate dwelling belongs to this phase and that a range of byres and barns lies to the North, more deeply covered in sand and therefore not excavated.

Group B consisted of Structure VI, underlying Structure IV, a two-phase building with an aisle of posts and cross-timbers which supported the roof. Group C lay under Group A, one of its units being a barn as its floor was of clay and potash. Two corn-drying or fodder kilns were located in the walls of this structure and beneath this building carbonised wattle and daub was discovered (Curle (1939)).

Childe's excavations lay North East of this farmstead and uncovered a longhouse (see fig. 33), again divided into three phases. The earliest was a longhouse with long fire. In the second phase, the longhouse was of boulder construction with a paved entrance and a groove, interpreted as a wooden partition. The third phase was separated from this structure by a sand accumulation and there was no trace of a hearth (Childe (1942)).

Batey in her re-appraisal of the site has indicated that the site is larger than was previously considered, with a spread of artifacts over the entire area of Freswick Links, and with more buildings being revealed by wind and rabbit erosion. She has distinguished four midden layers, and her general description is of an upper horizon containing burnt stones, limpet shells and fish and animal bones and a lower horizon which produced a dense layer of fish bones. The species represented were ox, sheep, pig, cod, haddock, ling, crab and shellfish. Botanical samples indicated the presence of barley and oats while the grass and sedge species characterised a heathland/ dune environment (Batey (1982) 56-8). Continued work at Freswick will produce further evidence of the Norse environment and economy.

Fig. 33



The funerary sites, like Freswick, were discovered due to coastal erosion. Several interments were found at Reay, one of which was an extended inhumation in a cist and another in a crouched position. Because they were early discoveries, only those which contained grave goods were recorded. Often, for example in the case of a burial at Longhills, Westerseat near Wick and at Reay, it is mentioned that other cists were found. The grave goods of Norse origin were axes, shield bosses, knives, sickles, iron mountings, buckles, whetstones, penannular and tortoise brooches, spindle-whorls, bridle bits, tweezers and armlets (Grieg (1940) 19-25).

One hoard was also discovered at Kirk o' Banks, Rattar, near Dunnet, consisting of two pieces of silver ring money and three silver rings (Campbell (1871-2)). Eight pieces were found in total but three were lost (Grieg (1940) 110). As they were found in a cist in an ancient enclosure near Kirk o' Banks chapel, they may be grave-goods placed with an inhumation rather than a hoard.

The burial form can be used to suggest the conversion of the Norse to Christianity, with the proposal that inhumation in a cist was a result of the influence of Christian burial rites (Crawford (1987) 118). That there was a Christian presence in Caithness is attested by the existence of the Bishopric of Caithness, whose most famous incumbent was Bishop Adam (bishop from 1213 - 1222) who was attacked and roasted on his own kitchen fire by the local population, incensed by his increase of their tithes, (Anderson (1922) II 451) but that there was an earlier presence in Caithness is indicated by the existence of two place-names with a papar element, the name which the Norse applied to clerics. These are Pappel, Canisbay Parish, the name of an off-shore island situated opposite a parish church and Papigoe near Wick. Although there is evidence that

the term papar applied to eremites, especially as the distribution of such place-names concentrates on small islands and marginal land and is almost totally lacking from the Scottish mainland, it was probably used as a blanket-term to denote any religious element (MacDonald (1977) 107-12).

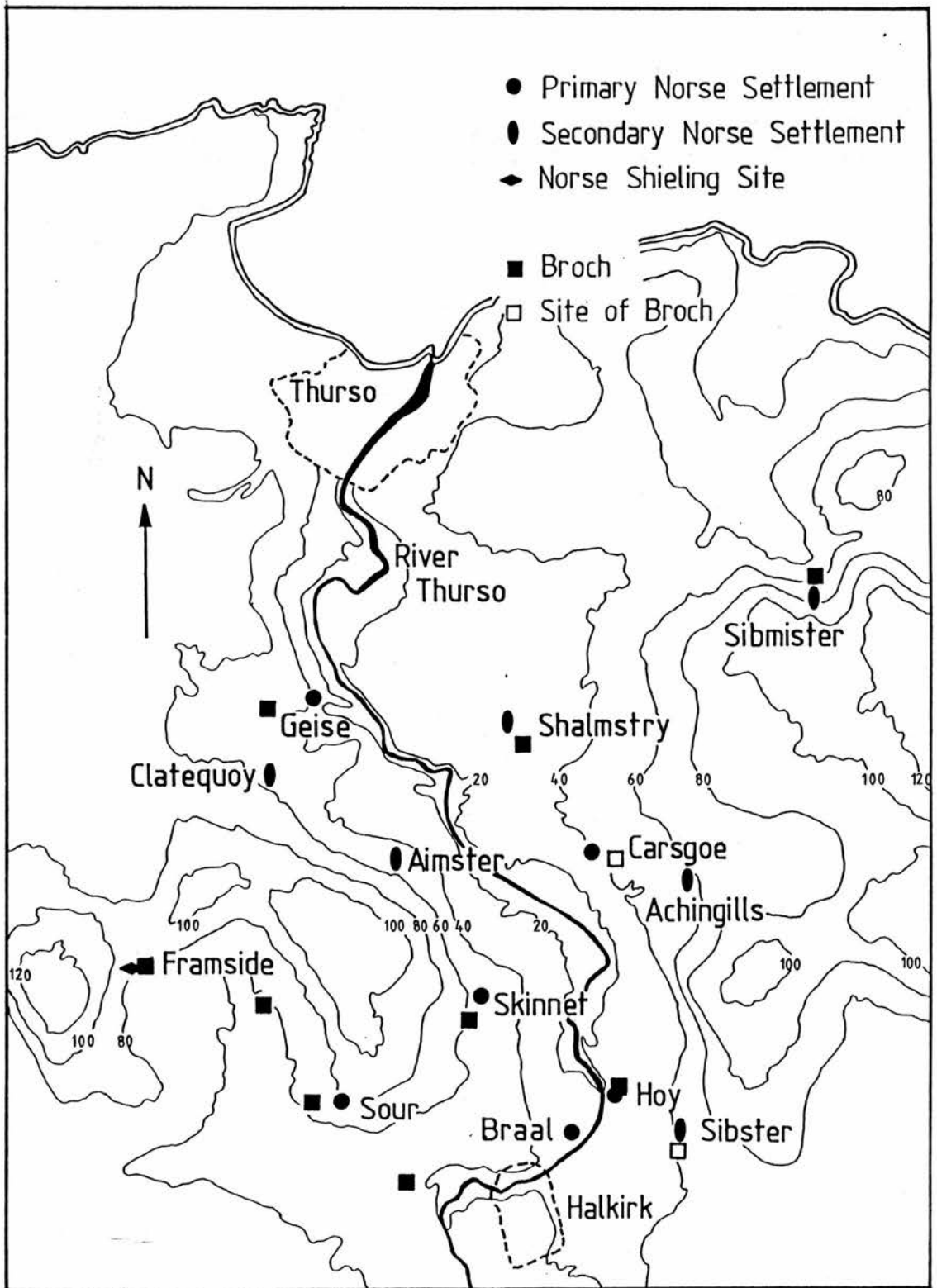
A great deal of attention has been paid to the processes by which Norse colonisation was affected. This has been recently viewed as being one of peaceful integration with pre-existing communities (Ritchie (1973) 23-5). However it is difficult to imagine the means by which the Norse attained linguistic and cultural supremacy with possession of the best farmland operated by their own system of land-use and tenure without some degree of force. Archaeological evidence can never yield ultimate proof of invasion or enforced colonisation and it is likely that the side taken between force and peaceful integration is a reflection of the ideology of the author dealing with the native/ Norse interface. Ritchie's argument for such interaction is based on the excavations at Buckquoy, Orkney, where there were three major building phases of pre-Norse occupation dating to the seventh and eighth centuries. These were in the form of native clover leaf farmsteads, with a final phase consisting of a ninth century Norse longhouse farmstead. This comprised a dwelling and two outbuildings and its material culture contained nothing "necessarily of intrusive Norse origin" (Ritchie (1973) 24-5), all the bone pins and combs being of native form. However there was a chronological break between the last pre-Norse farmstead and the Norse structure (Ritchie (1974) 29) and thus the initial phase of Norse colonisation, which might have clarified the immediate interaction is not represented.

Elsewhere the nature of Norse settlement is ambiguous: at Skail, Deerness, Orkney "the evidence ... does not suggest much cultural

continuity between the Pictish and Viking periods. That there was considerable integration between the two peoples can hardly be doubted, but a sense of a clear break ... is very strong at Skail" (Gelling (1984) 38); at Underhoull, as at Buckquoy, the native settlement was deserted by the time of the Norse occupation (Small (1964-6) 235); at Jarlshof, Norse structures were built a distance away from the broch and wheelhouse, therefore the question of whether the latter was deserted prior to the Norse structures cannot be resolved (Hamilton (1953) 129); at the Brough of Birsay, there was a chronological break between native and Norse, except in one area where there was a Norse building constructed immediately above a series of native forms. The continued use of the same location for structures was considered to be a sign of "a type of control, possibly even of a political nature, that was still ostensibly native" (Hunter (1986) 112). However it could be argued that another reason could have been to re-use surviving building materials. Crawford's concluding question was that as the Norse tended to settle on native sites "what happened to the old occupiers when the newcomers settled on or near their homes?" (Crawford (1987) 140). From the topographic and literary evidence it would appear that the native peoples were not linguistically or politically dominant and the fact that the Norse tended to acquire the native settlement sites and were buried with swords, knives and shields, would imply that the colonisation process was not necessarily peaceful.

In Caithness because of the lack of Norse sites there is little evidence for the process of colonisation. However the fact that the newcomers managed to obtain the best quality land must imply that the native population was removed from it, either by natural or economic forces. By studying place-names in Shetland, it was concluded that as stathir names

Fig. 34



bore no relation to broch sites, they settled on more marginal land, allowing the local inhabitants to farm their original holdings (Crawford (1987) 101). One explanation for this lack of association is that the Norse system of land-use was so different in character from the earlier system that different sites were needed: an argument also used for the lack of extant pre-Norse toponyms. However in many excavations there were Pre-Norse and Norse occupation levels. In Caithness itself, however, there is evidence for a relationship between Norse farmsteads and brochs. In the Thurso River valley there are brochs close to the present farms of Sibmister, Shalmstry, Geise, Skinnet, Sibster, Sour and Framside, while at Hoy, the broch is actually located within the farmyard (see fig. 34). At Carsgoe there was a reference to the destruction of a broch during the Improvements (Anderson (1874) 184). It should however be said that several farms with Norse-derived names are not associated with brochs, but this may be explained by the fact that land-use associated with brochs operated on a system which resulted in a more dispersed pattern of settlement. Certainly all the brochs with the exception of that on the Hill of Sour near the farm of North Calder are associated with Norse-derived farm-names and not with those of Gaelic or Scots origin.

It has also been indicated that while in Ireland, England and Normandy the Norse colonists abandoned their language for the local tongue with the exception of some loan-words, this was not the case in the Northern Isles and Caithness, although here there was not the continued Norse influence that persists today in Iceland and the Faroes (Fellows-Jensen (1984) 150). The conclusion may be drawn that the "pre-Norse inhabitants of the Northern Isles must eventually have been utterly overwhelmed by the Viking settlers" (Fellows-Jensen (1984) 151).

Fellows-Jensen also indicates that the destruction of pre-Norse place-names in the Northern and Western Isles - and Caithness - and the survival of Scandinavian examples implies a more dominant Norse occupation than in England and Normandy (Fellows-Jensen (1984) 151).

Crawford suggests that there may have been a primary phase of fort-building, either to defend against native occupants or Viking raids, citing the case of Udal, North Uist where the first Norse settlement was a fort, possibly similar to those excavated on the Isle of Man (Crawford (1987) 138-9). There are a series of promontory forts in the Northern Isles and Caithness (Mercer (1982) 71-8; Lamb (1980)) but as there has been no excavation their date is uncertain. Lamb has concluded that these forts are not related to the nesnam or ness-taking mentioned in the sagas as one of the activities of Vikings when out on raids, as he considers it to be a poetic epithet for plundering (Lamb (1980) 88-9) and dates them to an earlier period, that of the Early Iron Age. However, it may be speculated that they could relate to a primary phase of a less than peaceful process of colonisation, although there is no Norse tradition of fortification to support this view (Talbot (1973) 27).

From more recent excavations evidence has been collated about the economy of the Norse sites, which were, apart from the Brough of Birsay, self-sufficient units. At the Brough of Birsay ox and sheep were the predominant species in the earliest Norse levels. In later periods there was a larger quantity of carbonised barley and oat seeds, probably due to the recovery of a greater amount of material (Hunter (1986) 116). There was evidence that the Brough could not support itself and, as in native times, depended on supplies of grain and meat from other farms (Hunter (1986) 117). This might imply that when the Norse took control of the settlement they continued to maintain the original networks by which the

inadequate resources of Birsay were supplemented from other areas: a reason for the similarity between the native and Norse economies.

At Buckquoy, near the Brough of Birsay, the bone-count revealed the same proportions of species as in the native period, with cattle predominating (50%) and also sheep (30%) and pigs (20%) (Ritchie (1976-7) 191), a comparability rendered meaningless as a sign of economic and social continuity as it is common throughout prehistory and history. At Pool, Hunter noted the introduction of flax by the Norse. Sheep, horse and cattle were represented, the cattle apparently for traction, the horses for consumption (Hunter: Lecture to Society of Antiquaries of Scotland). That the Norse exploitation of resources was similar to that of the native period may be taken as a sign of continuity. However it may be symptomatic of the necessity of exploiting all available resources and maintaining the native system to do so optimally (Crawford (1987)152).

At Jarlshof and the Brough of Birsay, there appears to be a greater reliance on marine resources after the primary Norse settlement, an indication that additional resources were needed, possibly due to an increase in population (Hunter (1986) 149). Elsewhere in the Northern Isles there was no evidence that fish or shellfish were an important part of diet (Crawford (1987) 151) but at Freswick there were abundant fish and shellfish remains, many of the fish being over 1m long, although the species are not noted (Batey (1982) 58). It is possible that it was only at times when additional resources were needed that the exploitation of fish and shellfish occurred. However Batey considers that the most significant species represented in the extensive midden deposits at Freswick was fish which militates against this theory. Indeed the quantity of fish bone has suggested to Batey a large scale, possibly even

commercial activity (Batey (1987) 313), with possible equipment and areas set aside for fish-processing (Batey (1987) 314-5). The remaining assemblage attests the presence of cattle, sheep/ goat, pig, horse and bird bone, the latter mainly gull and auk (Batey (1987) 315). Cereals are represented by oat and barley impressions on pottery, although there is no direct evidence for their cultivation on the site (Batey (1987) 316). Future environmental analysis may provide a more detailed account of the economic basis of the site.

The image of Caithness appears different in the various strands of evidence: politically, ie. from the saga evidence, it appears marginal to Norse rule, pertaining to the Scottish crown officially, although in contested Norse control. From place-name studies, it is clear that the county was linguistically dominated by the Norse, a dominance also attested by the profusion of words of Norse origin in the Caithness dialect, and that the Norse colonists were in occupation of the prime farmland. Archaeologically, Caithness is almost devoid of Norse monuments, a feature of the lack of survival of sites or continued re-use of existing locations. However, just as the present Caithness dialect reveals linguistic Norse influence, the continued use of longhouse farmsteads up to the present day demonstrates the continued influence of Norse building forms. It is probable that if continued surveillance of coastal erosion deposits was made, further sites like that of Freswick could be found. It is unlikely that interior sites shall be located unless they lie under the modern farms which bear, in derived form, the names given by the Norse colonists.

CHAPTER 7: PREHISTORIC SETTLEMENT AND LAND-USE

CHAPTER 7: PREHISTORIC SETTLEMENT AND LAND-USE

In this study of the prehistoric occupation of Caithness, it is proposed to divide the material into two: the physical evidence of land-use associated with the monuments, as revealed by excavation and survey, with an analysis of mensurational data recovered by these means and secondly, the settlement patterns indicated by their locational tendencies and distributions. The first part will be subdivided by monument class, the second by the aspect of locational preferences under examination.

Land-use

An examination of land-use relies on two main sources: the faunal and botanical assemblages recovered from excavated sites and physical remains such as enclosures and field systems recorded by survey. However in the first instance the majority of excavations in the county occurred at a date before adequate sampling techniques and methods of quantification were available to the archaeologist; and in the second instance, although much of the county has been surveyed at a recent date (Mercer (1981, 1982, 1985a); Batey (1984)) even if the monument has survived the intensive cultivation of Caithness, associated field systems often do not.

In considering a more general appreciation of land-use, a pollen sample from the Loch of Winless, Caithness gives an indication of human interference in the environment. The first such sign may be evidenced in the elm decline at around 3000 bc, although with no concomitant proof of anthropogenic influence, this is uncertain. After 2500 bc the climate became wetter. At about 2000 bc the first traces of ribwort plantain

(Plantago lanceolata) were recovered, a plant associated with farming, clearings and pasture because of its need for light, open conditions (Simmons and Tooley (1981) 104). Further ribwort plantain associated with charcoal and weeds indicative of pastureland at around 1000 bc is the first signs of definite rather than imputed human interference with the environment, while after 500 bc cereal pollens were present throughout the remainder of the sequence (Peglar (1979)). This shows the late impact of man on the Caithness environment as recorded by pollen, with all the restrictions of this form of analysis. It is clear from excavated sites that arable farming occurred at an earlier date than that determined by Peglar, and it must be on such evidence that a more detailed account of prehistoric land-use depends.

This shall be examined by monument type: while recent work has shown the differences in traditional cultural groupings as determined by architecture and material assemblage (eg Barrett (1981); Martlew (1982)) and that the grouping of monuments into site types can be misleading especially when the term covers a variety of forms, it is virtually impossible to discuss prehistory without such a framework. Therefore, bearing in mind the shortcomings of such groupings, the evidence of land-use will be studied in that way.

Brochs

Brochs have attracted greater attention from excavating archaeologists than any other settlement form in Caithness. The majority of sites were investigated in the mid to late nineteenth/ early twentieth centuries and are therefore prone to the constraints of the excavational techniques, recording and reporting that prevailed at this stage of archaeological

research. The most recent excavation which occurred in 1966 and 1969-72 is that at Crosskirk by Fairhurst (1984) which may provide a touchstone by which the earlier excavations may be better interpreted.

The majority of early excavations concentrated on the coastal strip between Wick and Duncansby Head, due in the main to the energy of Sir Francis Tress Barry who excavated nine brochs in this area, reported by Anderson (1901). Prior investigations were carried out by Rhind at Kettleburn (Rhind (1853)), at Yarrows, Brounaban, Bowermadden, Old Stirkoke and Dunbeath, as described by Anderson (1874) and Ousedale by Mackay (1891-2). In addition the indefatigable Tress Barry was responsible for the excavations at the Hill of Works near Barrock House (RCAHMS No.3 p 1), Bail a' Chairn at Acharole (RCAHMS No.466 p127-9), Hillhead near Wick (RCAHMS No.520 p160-2), Cairn of Elsay at Staxigoe (RCAHMS No.521 p162-3) and Cogle (RCAHMS No.469 p129-30), although in no case did he report his own investigations.

These excavations, as might be deduced by their date, were on occasion caused by the intended demolition of the structures to make way for agriculture, for example at Kettleburn which had already been damaged by previous cultivation and plundering for building materials; this was the case also at Old Stirkoke which had been used to provide stones to build drains and at Bowermadden. In his appendix to the excavation reports, Anderson produced an index of brochs which reveals the damage to or destruction of further broch mounds during the nineteenth century, apparently due to the Improvements, for example Hempriggs (Wick Parish), planted over with trees.

The broch at Skitten, partially excavated by Tress Barry in 1904 was further explored by Calder in 1940 prior to its destruction by the building of Skitten Aerodrome. Calder (1948) noted that "under the stress of war

conditions, which made the speedy provision of airfields an urgent necessity, excavations had to be carried out with more haste than could have been desired" (Calder (1948) 124). Despite this constraint the report is comparatively detailed.

From these excavations it is intended to examine evidence for land-use, which may be recovered from the earliest reports in a list of faunal and occasionally botanical remains, but there are difficulties in interpretation: there is in general a lack of provenance except in exceptional circumstances and therefore it is impossible to determine whether the bone etc. was discovered in the primary levels of occupation or at a later stage; there is rarely any attempt to quantify the assemblage and when this occurs it is in the most general of terms (ie. "abundant", "numerous" or "rare"). Also it is probable that the reports are partial not only in terms of retrieval but also in the recording of exceptional species rather than the accepted norm for broch sites: for example the "palmated horn of the true elk (Alces malchis)" is the sole species recorded in the excavations at Skirza Head (Anderson (1901) 145). The descriptions also tend to be imprecise - deer, bird, shellfish and fish being reported with no further information as to type.

From the amassed reports, ox, sheep/ goat, pig, deer and shellfish are the most commonly represented species, the shellfish being further detailed as limpets, periwinkles, buckies, cockles, mussels and whelk. Fish and birds are the next most frequently mentioned animals, with haddock-sized specimens, swan and heron recorded at Kettleburn and the great auk at Keiss Harbour. Considering the small size of fish bone it is surprising that it was found at so many sites. Other recorded species are dog at Kettleburn, Yarrows and Dunbeath; whale and seal at Kettleburn; hare at Ousedale; horse at Kettleburn and Yarrows; a polar

bear (*Ursus arctos*) at Whitegate; and the aforementioned elk antler at Skirza Head. Often the bone is described as pertaining to a midden layer, many examples being burnt and split for marrow extraction.

Deer antler was also frequently found on these broch sites, in "great quantity" at Kettleburn with pieces cut off by edged tools (Rhind (1853) 216). This was also reported at Yarrows where "abundant" red deer antler was found, often split, sawn or cut into lengths of 3"-4". Antlers were also noted at Old Stirkoke, Bowermadden, Dunbeath, Wester, Keiss Road and Keiss Harbour brochs. Antlers were said to have been found in Enclosure D at Yarrows and it is possible that this was an antler-working area. Cylindrical handles made from bone and antler were found on several sites and it is likely that the deer were hunted for meat, antler and probably other more perishable secondary products, although it is also possible that the antlers were collected after they were shed.

One question that vexed the minds of the antiquarians was that of the human remains found on the sites. At Kettleburn four fragments of human skull were found in a chamber of the broch, embedded in ashes and associated with pot sherds and a comb. Rhind thought that this might be indicative of cannibalism amongst the broch population, but concluded that it was not right to "be hasty in stigmatising a people with the infamy of cannibalism except on the most unexceptional authority, nor would it be logical, far less would it be just, to accuse them of possessing so abominable an appetite on the evidence of one or two isolated facts which may have been purely accidental in their origin" (Rhind (1853) 217). As the chamber in question had been partly robbed in quarrying material for a croft it is possible that the skull represented the remains of a secondary inhumation in a cist, a common deposit of

Norse/ Early Christian date. Certainly this was the explanation preferred by Anderson on finding in an outbuilding (Chamber G) at Yarrows a skeleton among the midden material despite lack of a cist (Anderson (1874) 132).

Direct evidence of cultivation by botanical remains is rare. Rotary and saddle querns were often listed among the inventories of finds, but in only two cases was grain noted. At Dunbeath carbonised bear and oats were found close to the broch wall on the clay bottom (Anderson (1874) 146). Burnt bear was found at the Keiss Road broch, though its provenance within the broch is less certain. These carbonised fragments may indicate that grain was dried in a process similar to that used in pre-Improvement times either to dry grain when a crop did not fully ripen because of a short, damp growing season to provide the following year's seed or for preparing the grain for easier grinding (Fenton (1978) 375). Such a process may account more accurately for the presence of charred grain than accidental burning. The only other plant species represented was hazel nuts in the midden layer at Ousedale between the original floor level and secondary occupation (Mackay (1892) 354). That all available resources were exploited is attested by the probable presence of peat also at this site (Mackay (1892) 356).

By the time of the rescue excavation at Skitten, faunal reports were more scientific, with the species present in different areas and levels being treated separately. There was also an attempt to compare the numbers of species. From the interior, a red deer jaw and femur were recovered and a pig tusk and ox bones belonging to a young animal. Below the central hearth there was a pit containing the remains of sheep, many young. From the entrance passage ox, sheep and shellfish were recovered. They were also represented elsewhere with the addition of

red deer antler found in a radial chamber outwith the entrance. The latter were described as large and showed signs of being worked. Throughout the midden material were human bone, numerous sheep, both young and adult, ox bone of adult age, pig bone, described as less common and with all ages represented, red deer bones, birds such as capercaillie (Tetrao urogallus), raven (Corvus corax) and gannet (Sula bassana), many shellfish including edible littoral species such as Cardium edule, Patella vulgata and Purpura lapillus. One fish bone was found, probably that of cod (Gadus morhua) (Platt (1948) 143-5).

The excavations at Crosskirk produced a far more detailed image of the subsistence economy and environment associated with the broch. The most numerous domesticated species was the ox, represented mainly by mature adults, the inference being that this was the staple food source for the inhabitants. The fact that they were of adult age implies that the inhabitants must have had adequate winter feed or otherwise young animals would have been represented (Macartney (1984) 143-6). While the identification of the ox as the most common species cannot be attested at Skitten, the predominance of adult species over young again implies that there was no shortage of fodder in winter.

The next most common species at Crosskirk was that of pig, the majority of the sample being young or juvenile animals. The analyst considered them to be domesticated, especially as there was a lack of suitable deciduous woodland for foraging which implied feeding by the farmer (Macartney (1984) 143, 147). This is unlike the situation at Skitten where pig remains were sparse and all ages were present.

Sheep were less well represented than pigs at Crosskirk, being of Soay type, mainly of young and juvenile age followed by sub-adult and mature suggesting preferential slaughter of young animals while also eating

culled breeding stock. At Skitten sheep were commonly found of young and adult status, although the information is not sufficiently detailed for proper comparison with the Crosskirk material.

Other species represented at Crosskirk were the horse, used for transport and traction - a situation not paralleled at Kettleburn where some horse bones were chopped for marrow extraction (Rhind (1853) 223). Dog bones were found at Crosskirk, although it is uncertain whether they were domesticated. Large quantities of deer antler were recovered, twenty-seven whale bones of deep sea species probably obtained from stranded animals. While used elsewhere for artifact manufacture at Skitten (Platt (1948) 143) and Kettleburn where a comb was made of this substance (Rhind (1853) 269), there was no evidence of this at Crosskirk. Of other marine resources, seal were represented by two bones and fish were underrepresented, their presence attested by wrasse (Labrus sp) and pollack (Pollachius pollachius) with others unidentified due to small size and fragmentary nature. The analyst considered that either the bones were destroyed by cats or burning elsewhere or that the inhabitants did not make full use of their marine resources, a situation supported by the dearth of fish bone found on other sites, though in those cases retrieval would be a problem. It was also suggested that the bone might have been used as a fertiliser (Macartney (1984) 135), a practice attested in the secondary sources relating to pre-Improvement agricultural practice in Caithness. Common limpet (Patella vulgata) and periwinkle (Littorina littorea) were the most frequently recorded shellfish, as is the case on the other excavated sites. Sea birds, particularly gannet (Sula bassana), great auk (Alca impennis) and shag (Phalacrocorax aristotelis) - account for over half the birds represented, while domestic fowl and goose were present at

low levels. The remaining birds represented either the coastal nature of the site or implied a hilly moorland with few trees (Macartney (1984) 135-6), as is the case at Skitten where the capercaillie was represented.

The botanical remains from Crosskirk provide a more detailed image of the environment of Iron Age Caithness. The moorland ecology implied by the bird species was also expressed in the plant species typical of moor and bog. Six- row barley and oats - either domesticated or wild - were utilised and there was evidence that it was threshed in the broch. Exploitation of wild plants, now designated as weeds was also suggested, represented by fat hen (Chenopodium album), corn spurrey (Spergula arvensis), chickweed (Stellana media) and nettle (Urtica dioica) (Dickson (1979)). Heather and possibly bracken were brought into the broch for bedding or thatch (Dickson and Dickson (1984) 146-55). One grain of flax was retrieved, though whether the plant was cultivated for food or cloth is unclear (Dickson (1979) 64). Burnt barley chaff was found in one context along with some carbonised leaves and seeds in a slab-lined tank on the broch floor, but its significance is unclear (Dickson and Dickson (1984) 155; Fairhurst (1984) 169), although the implication is that cereal processing was carried out within the inner court of the broch.

The chief implication of the faunal and botanical remains from Crosskirk broch is that the inhabitants utilised a broadly based economy exploiting wild and domesticated plant and animal resources, on land, coast and sea. It is likely that a similarly large variety of resources were exploited by the occupants of the other brochs. However the emphasis placed on certain elements of the economy would appear to have differed between sites, although the evidence from other excavations is insufficiently detailed for a less generalised comparison.

Having completed a general depiction of the economy of the brochs it is now proposed to examine these monuments as an element in a landscape rather than as isolated structures. However there are difficulties in such an attempt as frequently cultivation up to and, on occasion including, the broch mound has destroyed other elements in the broch-related landscape. Few surveyed sites are associated with field systems: there is evidence for a complex phasing of structures at many examples and traces of outbuildings are frequent, implying a continuity of occupation and "social networks, land organisation, territorial patterns and even proprietorial rights with antecedent communities" (Mercer (1985a) 100), although there is little evidence as to the nature of the above characteristics.

In Mercer's surveys of Caithness there was the suggestion that the area between inner and outer earthwork at one site, that at Scrabster (Mercer (1981) 79 Mon.449), because of its width and shallow nature, which countermanded interpretation as a ditch, might have had a function as a cattle retaining feature.

Outwith, but close to, Caithness in the Forsinain region of Sutherland in the Halladale River valley is one monument in association with field systems: the Borg broch (Mercer (1980) 26), where a series of enclosures were surveyed which were considered to be synchronous with some period of broch occupation. The site itself lies in a narrow, North/ South running river valley on a fairly steep slope facing West. In direct association with the broch were the remains of three large enclosures lying to the South East, North East and North, with several smaller enclosures attached to the Northern enclosure and broch. These were interpreted by Mercer as, respectively, stock pens and cultivation plots (Mercer (1980) 26). There were also two sets of enclosures on either side

of a burn which ran South East/ North West into the Halladale River, which Mercer also associated with the broch, although more tentatively: they were not in direct relationship with the broch structure, but their association is implicit, in that they lay uphill of ie. outwith the head-dyke associated with two pre-Improvement farmsteads. Mercer also indicates that prehistoric cultivation occurred, implied by the presence of clearance cairns on the hilltops above the broch and on the opposite side of the river valley, with patches of cleared arable. This, however has even less association with the broch (Mercer (1980) 26).

However there are difficulties in any assumption of similarity between this complex around a broch site and the possible field systems associated with brochs in Caithness. In the latter region, brochs are mainly a lowland phenomenon and generally situated amidst arable land - the reason for their poor survival. In the case of the Borg, its more upland nature argues against any direct comparison, as does its relatively good condition: as has been indicated by Stevenson in connection with a study of ring forts in the Perth area, if a site is successful it is re-used and so damaged by later settlement and therefore those which survive represent the least successful examples in location and also, perhaps, economy (Stevenson (1975) 106). This is especially the case with brochs where the majority of sites consist of mounds whose very identity as brochs is uncertain due to lack of survival of typologically acceptable features, but which, nevertheless, on fuller investigation by excavation prove to be monuments of this class.

Brochs are more frequently associated with outbuildings and it is possible that these were used for agricultural purposes: for housing livestock or for storing or processing cultivars. However although the plans of these structures are included in the early excavation reports, few

are described in any detail sufficient for an attempted analysis of their function, particularly as differential distribution of faunal or botanical assemblages and artifacts was not recorded. At Crosskirk, the external structures examined would appear to have had a domestic function, containing hearths and midden material.

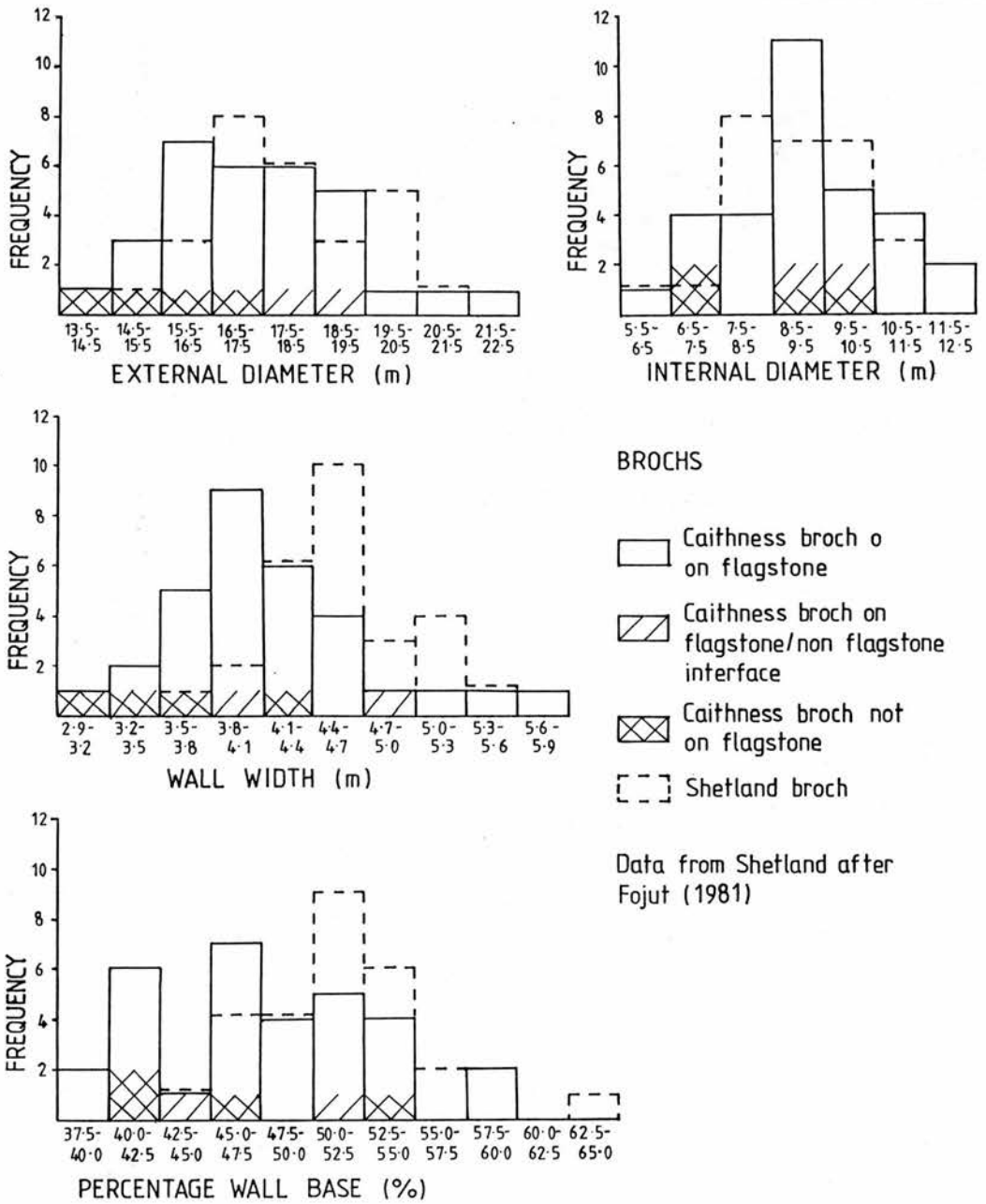
The interiors of brochs were frequently subdivided. Such details were recorded in early excavation reports, because the broch was considered to consist mainly of the tower and its contents: thus the architectural detail within was of greater significance than that outwith the broch walls. Such internal divisions probably represent differing activities within the inner court: "the patterning of activities and relationships structured through the medium of the house" (Barrett (1981) 212). This was typified by the broch at Bu, Orkney, where the central area of the floor level was a kitchen, approached from the right from three flagstone paved rooms. To the left were "sockets for radial partitions from the wall, suggesting three compartments floored with a mixture of mud and midden" (Hedges (1985) 166) interpreted as possible animal housing within the broch (Hedges and Bell (1980) 90). At Crosskirk, while there was radial division of the inner court and signs of differential domestic activity, there were no indications of activities which might relate directly to land-use. There was a suggestion that threshing occurred in the first occupation phase in a walled depression next to the South wall which contained cereal, mainly barley heads (Fairhurst (1984) 60); and it was also thought to be possible that during the second phase of occupation cattle were kept in the broch interior, accounting for confusion in the stratigraphy of the Northern sector of the inner court, but it was later adduced to be the outcome of many small alterations to this area (Fairhurst (1984) 64). Thus in the case of brochs

in Caithness there is a paucity of evidence for the differing functions of sectors within the inner court, although there is an implication that activities associated with agricultural practice may have been carried out there by the inhabitants.

A great deal of attention has been paid to the typological aspects of brochs. This is partly because the traditional methods of studying archaeological material have relied on typology for developmental inferences, the question of origins and chronology to provide "a guiding framework for analysis, and the greater the precision with which each type is defined, the clearer, it appears, will be the path of that analysis" (Barrett (1981) 207). More recent studies have examined broch typology, not to maintain an "illusory uniformity" (Mercer (1985a) 97) but to examine differing scales and forms of regional development. More recent examples of such research are those of Fojut (1981) with an examination of the structural details of Mousa in comparison with the other brochs of Shetland and Martlew (1982), a study of Scottish broch typology by cluster analysis, revealing differing regional trends.

In Caithness a total of thirty-one out of a possible one hundred and fifty-three examples was preserved to such an extent or had been recorded sufficiently accurately during excavation that external diameter, internal diameter and wall width were obtainable with any degree of exactitude. These broch dimensions were treated in such a way that direct comparison with the work of Fojut (1981) and Martlew (1982) was possible (see fig. 35). When the measurements of the Caithness data were displayed in graph form, they revealed a positively skewed distribution with a peak at 15.5 - 16.5m external diameter ie. while the latter is the modal class there is a stronger probability of the external diameter being larger than smaller, as is also demonstrated by the mean

Fig. 35



external diameter, calculated as 17.34m, average deviation (AD) 1.49m. The Shetland sample differ, having a modal class of 16.5m- 17.5m with a secondary peak at 19.5 - 20.5m. Caithness brochs have a greater range than their Shetland counterparts, from 13.5 - 22.5m as opposed to 14.5 - 21.5m.

In internal diameter, the Caithness brochs have a normal distributional curve: a peak at 8.5 - 9.5m diameter, falling more or less equally on either side, thus differing from the Shetland measurements which produce a positively skewed distribution centred around a modal class of 7 - 8.5m. Again, Caithness brochs have a greater range, from 5.5 - 12.5m diameter compared to that of Shetland, 5.5 - 11.5m. The mean internal diameter of Caithness brochs, as calculated by MacKie (1971) from a sample of twenty seven was 9.14m, with a standard deviation (SD) of 1.38m. With a slightly larger sample there was little difference, the mean being 9.11m, AD 1.12m.

Caithness brochs have wall widths with a marked peak at 3.8 - 4.1m, those from Shetland in comparison have a modal class at 4.4 - 4.7m, with a normal curve, unlike that of Caithness which has a slight positive skew, revealed by a mean width of 4.11m, AD 0.44m. This mean compares well with that obtained by MacKie (1971) which was calculated at 4.18m, SD 0.48m. The more diverse nature of Caithness brochs is again revealed by the ranges, the latter being 2.9 - 5.9m as opposed to that of Shetland, 3.5 - 5.6m.

Percentage Wall Base (PWB) was a device created by MacKie (1965) and used by Fojut as a parameter which encapsulated a relationship to the stability and potential height of brochs: "the parameter PWB summarises the relationship (ie. between the diameter, wall width and curvature) in such a fashion that high values of PWB are associated with

the most stable proportions of broch foundations. And the more stable the foundations the higher the broch could have been built" (Fojut (1981) 223). It is obtained by the formula:

$$\text{PWB} = \frac{(\text{External Diameter} - \text{Internal Diameter})}{\text{External Diameter}} \times 100$$

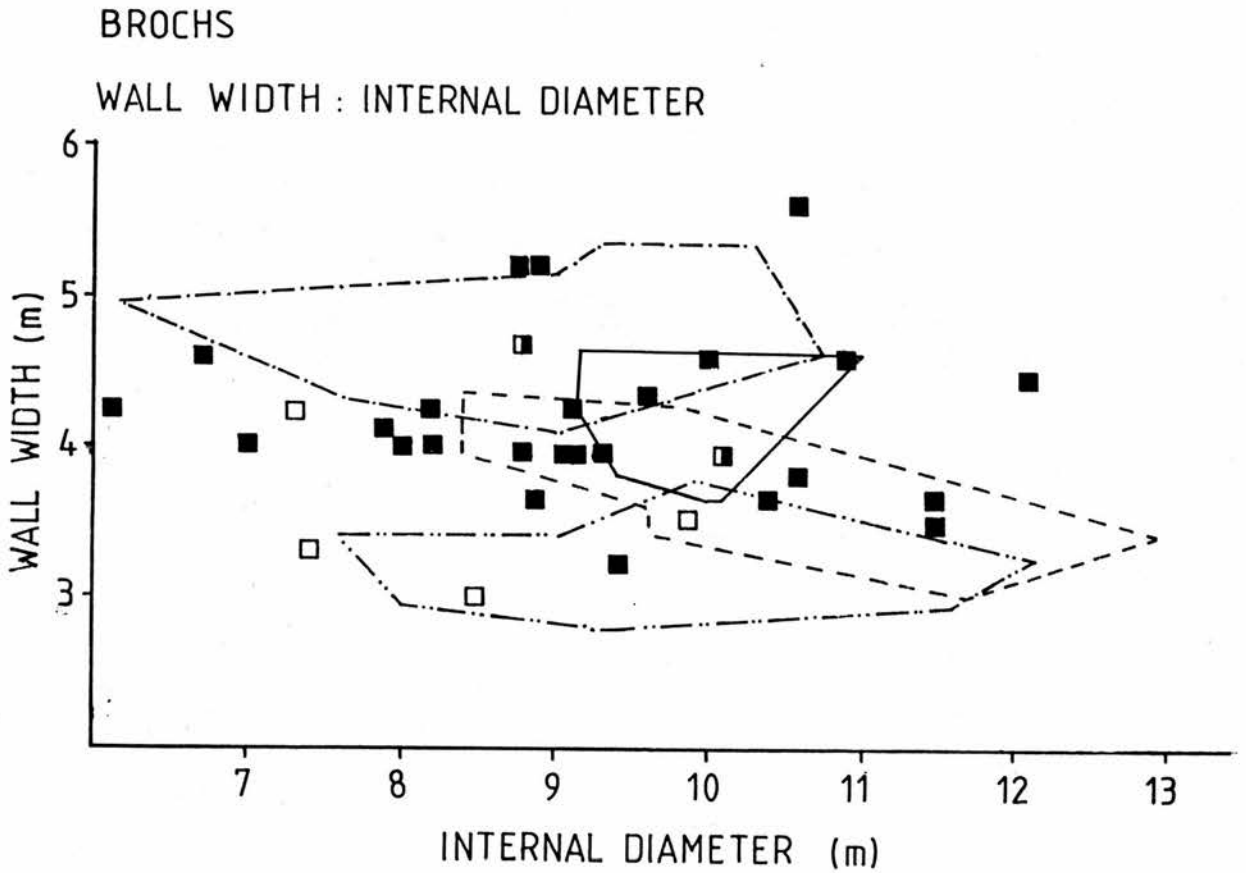
Caithness examples display a wide range of PWB: 37.5 - 57.5% as compared with the more restricted range of Shetland brochs (42.5 - 57.5%). The Caithness mean was calculated as 46.26%, less than that of Shetland, 50.68%. This smaller PWB average was also supported by the modal class of 45 - 47.5% with a secondary peak at 40 - 42.5% for Caithness monuments as opposed to that of Shetland which was 50 - 52.5%.

From these figures it may be summarised that, in comparison to their Shetland counterparts, the Caithness structures have a tendency for:

1. A smaller external diameter
2. A larger internal diameter
3. A lesser wall width, as is implicit from the first two statements
4. A smaller percentage wall base, with the concomittant implications of lesser height or greater instability
5. A greater diversity in all the aforementioned fields

This accords with MacKie's broch chart and shows that the regional group that conforms least to the average broch dimensions of the rest of Scotland is that of Shetland, having an internal diameter narrower than those of Orkney, the West coast and isles, the widest average wall width and the highest PWB, while Caithness lies in the middle range of all

Fig. 36



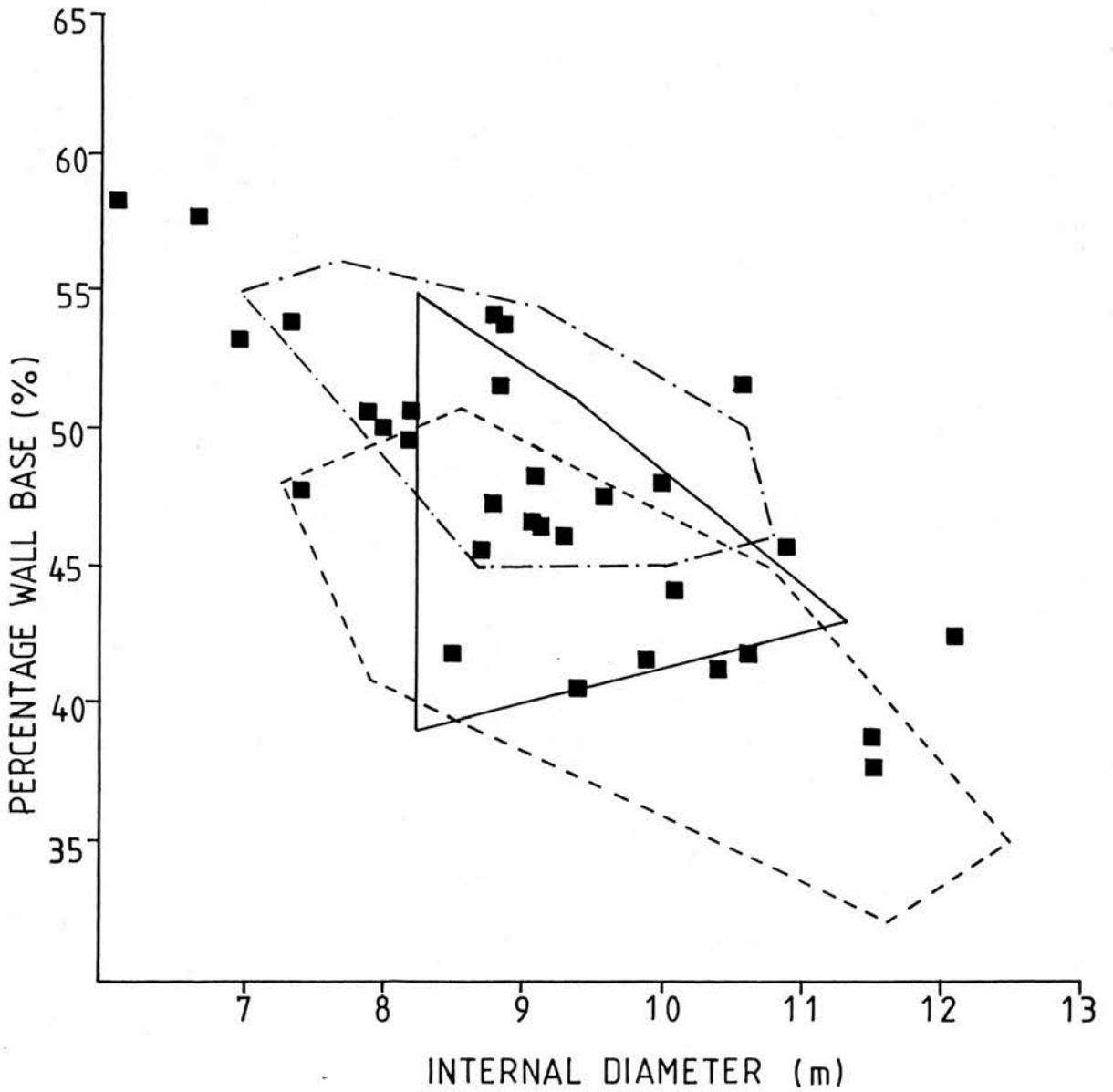
- Caithness broch on flagstone
- ▣ Caithness broch on flagstone/non flagstone interface
- Caithness broch not on flagstone
- · — · — Shetland broch distribution
- Orkney broch distribution
- · — · — Outer Hebrides, Tiree and Mull broch distribution
- — — — Skye broch distribution

Data from outside Caithness after Martlew (1982), generalised

Fig. 31

BROCHS

PERCENTAGE WALL BASE : INTERNAL DIAMETER



■ Caithness broch

- · - · - Shetland broch distribution

— Orkney broch distribution

- - - - West Highlands and Outer Isles broch distribution

Data from outside Caithness after Fojut (1981), generalised

these values (Martlew (1982) 257 Table 3), a fact supported by their mean being comparable with that of a total of 120 brochs from Scotland as a whole (Martlew (1982) 259 Table 4). The diversity of the Caithness monuments remains a constant factor, which might be said to typify this group.

When wall width was plotted against internal diameter, (see fig. 36) the distribution could be compared with data in which brochs from Shetland; Orkney; Skye and the Outer Hebrides; and Tiree and Mull appeared to form distinct groupings (Martlew (1982) 260 Fig.1). In comparison, Caithness brochs form no such distinctive regional pattern, occupying "a central position on the wall thickness scale but.....a wide range of internal diameters" (Martlew (1982) 261) diagnostic of their variability.

Plotting PWB against internal diameter (see fig. 37), the results could be compared with those of Fojut for Shetland (Fojut (1981) 224 Fig.2). Caithness provides a more diverse group than any other as might be expected, yet produces a stronger negative correlation between the two measurements than Shetland, Orkney and the West highlands and outer isles. The strength of this correlation could be calculated by the following formula to obtain the product moment correlation coefficient:

$$r = \frac{nSXY - (SX)(SY)}{S(nSX^2 - (SX)^2)(nSY^2 - (SY)^2)}$$

or

$$= \frac{S_{xy}}{(S_x^2)(S_y^2)}$$

where r = product moment correlation co-efficient

n = number of pairs of scores

X = each of the scores on the first variable

Y = each of the scores on the second variable

S = the sum of

x = deviation of any X value from the mean of all X values

y = deviation of any Y value from the mean of all Y values

Using both methods, the resultant co-efficient was -0.755, a high negative correlation (Cohen and Holliday (1982) 93) ie. as the internal diameter increases, the PWB decreases. This is a reflection of the relative uniformity of wall width of Caithness brochs and the wide range of internal diameters: in the case of internal diameter there is no compensatory increase in wall width and therefore PWB to aid stability. Taking into account the fact that PWB reflects the potential stability and height of brochs, the implications might be that brochs with a large central court and lower PWB were of lesser height or lesser stability than their smaller counterparts whose PWB was higher or that the wall width necessary for the stability of large inner courts was applied to smaller brochs.

Caithness flagstone forms much of the underlying rock of the county and with its propensity for splitting into large slabs as well as its ready availability, has been considered a prime building material, facilitating the construction of monuments in Caithness and in Orkney where a similar flagstone exists. In the case of this study, twenty-five out of the

thirty-one brochs were built on areas of Caithness flagstone, as one would expect as the majority of the county is formed of this material. Two were constructed on the interface of flagstone and other rock types: Everly broch (ND 3695 6830) built on its juncture with John o' Groats sandstone and Achvarasdal (NC 983 647) on that with diorite of Reay. The remaining four brochs were situated on non-flagstone forms: An Dun (ND 103 249) sited on granulitic quartz/ biotite/ schists and gneisses (metamorphic); Burg Langwell (ND 103 218) constructed on basement beds; Ousedale Burn (ND 071 188) on basement beds/ conglomerate; and Freswick Links (ND 376 676) built on John o' Groats sandstone.

When the dimensions of these four brochs were compared with the remainder of flagstone-sited monuments (see fig. 35), some differences could be determined: all four belonged to the lower half of the spectrum of external diameters (13.5 - 17.5m); two had lower internal diameters (An Dun and Ousedale Burn, with 7.4m and 7.32m respectively) while Freswick Links and Burg Langwell, with internal diameters of 9.9m and 8.52m respectively fall into the middle range. In wall width, where one might expect a wider wall to compensate for poorer building material, the opposite was the case, all falling into the lower range of groupings. In PWB, while three related to the lower spectrum of measurements, that of Ousedale Burn was fairly high with a PWB of 53.85%. When the differing underlying geological formations were added to the map comparing internal diameter to wall width, this tendency for overall smaller dimensions was apparent, though it was no more than a general trend.

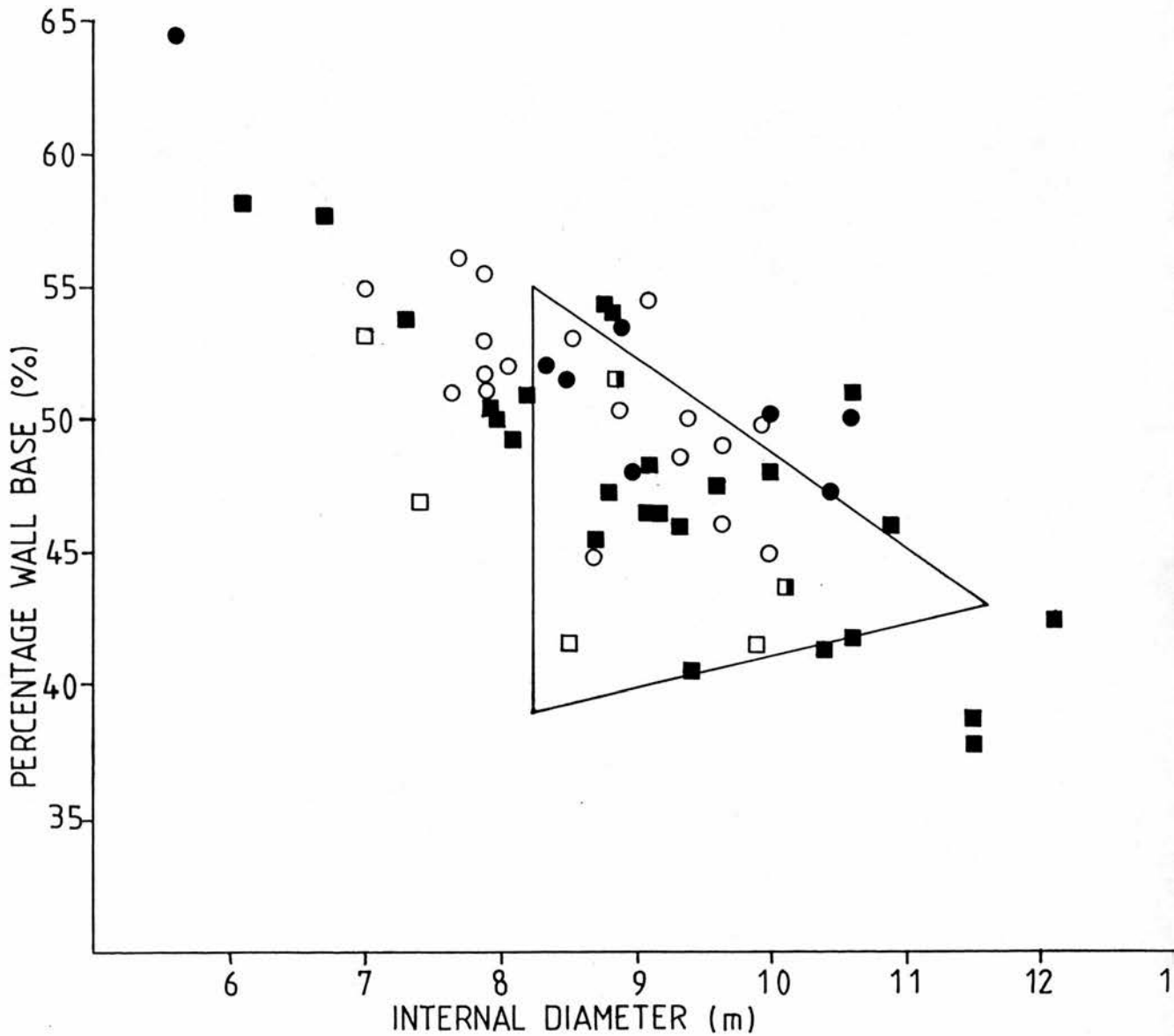
The Orkney brochs used to form the data base (Mackie (1965) 93-146) were all located on Rousay or Stromness flagstone and it was considered possible that their restricted clustering on the internal diameter/ PWB

diagram might be due to this geological phenomenon. In this case it might be expected that the Caithness and Shetland examples situated on flagstone features would overlap the distribution of the Orkney dimensions. The geological formation of Shetland is dissimilar to that of Caithness and Orkney, being composed mainly of igneous and metamorphic rock types. Therefore the majority of the brochs examined by Fojut (1981) were situated on the latter formations with only nine of the twenty-seven sites being situated on Brindister flagstone.

When this was plotted on the Internal Diameter/ PWB diagram (see fig. 38), the results were inconclusive, with a mixture of differently situated brochs falling within the generalised triangle formed by the Orkney brochs. Indeed the split of the four different geological forms was virtually even: of the Caithness non-flagstone brochs, two fell within the Orkney cluster while two lay outwith it; of those situated on flagstone, fourteen corresponded with the Orkney pattern while thirteen lay outside it. Of the Shetland sites, five flag-built brochs related to those of Orkney while four did not and in the case of those not built on flagstone, eight corresponded while ten lay outwith the Orkney results.

Certain trends, however could be seen: the Shetland brochs situated on Brindister flagstone tended towards a higher internal diameter, almost forming a distinct cluster within the Shetland grouping. Caithness brochs reveal the same pattern, with those brochs built away from flagstone having a tendency towards smaller measurements, forming an almost distinct line of negative correlation at a lower level. Thus it might be stated that while there are dimensional differences between those sites built on flagstone and those built on other geological formations, the differences operate within the regional groupings demonstrated by Fojut and Martlew and do not form a distinct group of their own in which those

Fig. 38



- Caithness broch on flagstone
- Caithness broch on flagstone/non flagstone interface
- Caithness broch not on flagstone
- Shetland broch on flagstone
- Shetland broch not on flagstone
- Orkney brochs (generalised) all on flagstone

of flagstone correspond no matter their geographical location. This reinforces the idea of the regional differences and differential developments envisaged by Fojut (Fojut (1981) 226) while not detracting from the intra-regional differences dependent on geological formation and constructional materials.

Hut-circles

Before an analysis of hut-circle settlement in Caithness, it should be noted that the term "hut-circle" itself is a misnomer. The meaning of hut - "a small simple or crude house or shelter...temporary wooden etc. house for troops" (Concise Oxford Dictionary) - does not apply to these structures which were large dwellings of sophisticated construction not necessarily occupied on a temporary basis.

In Caithness, the state of our knowledge about the monument form classed as hut-circles is, in many ways, the converse of that concerning brochs. Whereas physical evidence of land-use and settlement patterns associated with brochs is derived mainly from excavated sites and the botanical and faunal remains found therein, with a dearth of associated field systems necessitating examination of examples from outwith the county, that associated with hut-circles has a lack of recorded excavation apart from those by Edwards at Freswick (Edwards (1924-5) 89-90) and Mercer at Cnoc Stanger (Mercer (1981) 52-57). The excavated site by which all other hut-circle settlement is compared is that of Kilphedir, Sutherland, close to Caithness and investigated by Fairhurst and Taylor in 1963-5 and 1968 (Fairhurst and Taylor (1971)).

Before examining the evidence recovered from this site, it may be best to define the hut-circle class of monument. The term is used to describe

an enormously wide variety of circular or subcircular structures defined by a bank of greater or lesser stature, simple or more complex form. While Curle (1911) defined three major categories of hut-circle in the area of Caithness and Sutherland, the most recent division of prehistoric settlement forms has resulted in sixteen categories of structures (Mercer (1985a) 64-5). It is proposed to consider the hut-circle in its broadest sense in this chapter.

The site of Kilphedir was located on the North side of the Strath of Kildonan at the edge of a sharp drop to the burn below, a tributary of the Helmsdale River, an area with a dense concentration of prehistoric settlement (Fairhurst and Taylor (1971) 91 Fig.15). Of these monuments, a cluster of five hut-circles was excavated, revealing two phases of occupation. The first phase of occupation is represented by monuments I - IV, which were of broadly similar form though with no evidence of contemporaneity, possessing banks composed of stone and earth faced on either side with stone. In the interior a ring of post-holes which was a sign of further support for a roof and a central hearth were the two main features. The post-hole rings had been replaced on several occasions in Hut-circle I, implying a length of residence. Hut-circles III and IV were smaller than I and II but were considered to be of the same type. It was Hut-circle V that revealed the second phase of occupation and it was also different in form from the other structures, with a more massive construction, especially at the entrance which had expanded terminals. It was later in date than structures I - IV and there was evidence that it overlay the foundations of a hut-circle similar in type to the earlier forms. (Fairhurst and Taylor (1971) 71-87).

A pollen diagram revealed two peaks of Plantago pollen, the first being "contemporaneous with the occupation of Hut-circle I", the second post-

dating "the destruction of this hut-circle by a relatively short time, no longer than a few hundred years" (Romans and Durno (1971) 98). The interpretation of this diagram is that the initial, strong surge of Plantago is indicative of cultivation nearby, while the second, lesser peak is a result of cultivation on a regional basis at a greater distance from the site (Fairhurst and Taylor (1971) 89). It is unfortunate because there are signs of two-phased occupation in the hut-circles and also in the traces of field systems surrounding the excavated structures.

This field system was evidenced by an area of smoother, less stony ground around and in the vicinity of the hut-circles. That this was due to human processes was attested by the presence of clearance cairns and of boulder alignments, the latter being "unsorted collections of stones heaped up along the edges of what appear to have been cultivation plots" (Fairhurst and Taylor (1971) 88 Fig.14). The land between these features was probably cultivated although the precise boundaries of the cultivation and even the original extent of the arable could not be accurately charted due to subsequent peat growth. Cultivation by means of a spade rather than by plough or ard was imputed for the areas between clearance cairns as they were scattered throughout the cultivated area in a manner that would have made ploughing impossible. Such cultivation by spade was a feature of pre-Improvement agriculture (see above, Secondary Sources Chapter). However the areas between the boulder alignments were elongated and wider and here the use of the ard would have been possible although no ard marks would be likely to have survived (Fairhurst and Taylor (1971) 89). The extent of this area, while impossible to calculate exactly was estimated as no more than and probably less than four to five acres (2 hectares), the arable patches interspersed with rougher moorland. In a comparison with pre-

Improvement agriculture, such a holding would be considered at the upper end of the spectrum for an individual cottar, estimated at 1 - 5 acres with tenants averaging 10 - 20 acres up to 40 acres of arable (Henderson (1812) 36). The quality of arable would tend to be greater on a pre-Improvement farmtown where marginal land such as the Kilphedir valley would tend to be used as common rather than cultivated. Thus the amount of land demonstrably cultivated at Kilphedir by the prehistoric population would appear to have been inconsiderable, even without a clear idea of actual numbers of occupants, as even for one cottar and associated family it would be minimal.

Continued fertility of the land at Kilphedir would have been a great problem for the prehistoric farmers. Together with the unexpectedly high numbers of prehistoric sites in the area, this led to the proposal that "shifting cultivation....with fresh land-winning at short intervals" was the most likely agricultural system practised in this upland zone with the corollary that the density of settlement was the "result neither of a dense population nor of a long period of settlement" but of a relatively brief occupation of marginal land preserved because subsequent peat growth made later agriculture impossible (Fairhurst and Taylor (1971) 92). That the density of prehistoric monuments did not represent the population of an area is also indicated by the fact that if it did, the Iron Age population would have surpassed that prior to the clearances, a time when resources were under pressure from an increased population (Fairhurst (1971) 7) a situation considered unlikely when the prehistoric farmers did not appear to utilise the available land resources optimally (Fairhurst and Taylor (1971) 92).

The scarcity of land suitable for cultivation implies a subsistence economy weighted towards stock-rearing and use of non-domesticated resources, but there is little evidence for these aspects of agriculture, particularly as the acid nature of the soil predicated against the survival of a faunal assemblage. The only possible traces indicative of a pastoral economy were the two parallel lines of boulders running from the moorland South East towards Hut-circle V, between which the moorland was rough. It was suggested that this could be a sign of a "route for stock from the open grazings on the hill into the round house" (Fairhurst and Taylor (1971) 83). Despite the lack of evidence, logic dictates that this must have been a dominant element in the economy.

The preservation of hut-circle settlement by subsequent peat growth appears to be a feature throughout the Scottish highlands and islands. The recent excavation of a site on Jura at Cul a' Bhaile revealed a multi-phase hut-circle set within an enclosure, occupied between the late second/ early first millennium BC (Stevenson (1984) 127-160). Pollen samples produced information about the environment and land-use during the occupation of the land, divided into a fivefold sequence: the first was unrelated to the hut-circle, but associated with ard marks found below the structure, although how much earlier than the occupation is unclear. The pollen revealed cultivation of wheat and barley with fertilisation by cattle litter inferred by the presence of Pteridium and Lycopodium both of which would be ideal bedding for cattle (Whittington (1984) 153) and possibly also midden material (Stevenson (1984) 138). The cultivation probably occurred on the upper slopes of the settlement with lower areas associated with stock-raising. The second phase was the abandonment of the land due to higher rainfall and resultant peat growth. The third phase was that associated with the hut-

circle and enclosure, with cultivation within the latter structure relating to a fourth stage. It is suggested that outside the enclosed area there was pastoral activity but no cultivation. The fifth stage saw an abandonment of the site because of a deteriorating climate, with greater rainfall and less sun, resulting in further peat growth (Whittington (1984) 153). Similar phases of occupation and land-use were also discovered by Barber at Machrie Moor, Arran (Barber (1980) 34). The hut-circles in Caithness probably encapsulate similar sequences of events: the occupation of more marginal land whenever this was made possible by ameliorating climate or necessary due to population expansion and its later abandonment either during periods of deteriorating climate or after land exhaustion. It is likely that only the more marginal fringes of settlement have survived and therefore it is unclear to what extent such information is representative of true stature of the economy, which must also have included the settlement and exploitation of the better quality land.

The evidence from the excavation of structures at Cnoc Stanger may be incorporated at this point. While not strictly of typical hut-circle form, the site contains structures which might be included in the broadest category of such settlement types. At Cnoc Stanger, a rescue excavation was carried out in the face of erosion of the cliffs on which the structure was set. The excavation by Mercer ((1981) 52-57; forthcoming b) revealed that on this site there was a series of depositions which included several structures. The most modern of these was a dry-stone wall (Structure I) in association with human skeletal material contained within a layer of sand (Layer 2) dated by Mercer to the historical period.

Layer 3 was a developed turf-line which sealed a horizon of plough marks. Built on this turf-line was a structure (Structure II) consisting of

a single skin of flagstone, horizontally coursed, which formed a roofed circular construction with a diameter of around 14m. This was subdivided by an internal wall to the South of which lay a paved area. The Northern sector was devoid of flagging, implying differential function. Associated with this structure was a deposit of occupation debris containing a faunal assemblage of animal bone and shellfish: predominant among these were common limpet (Patella vulgata) and common periwinkle (Littorina littorea) with flat periwinkle (Littorea littorealis) and land snail (Cepaea hortensis) also represented. Their form indicated that the limpets had been gathered from the lower tidal zone and there were indications that their collection as well as that of common periwinkle was in spring or early summer, due to its being the quiet time of the agricultural year (Mercer (forthcoming b)). That fishing occurred was attested by the presence of cod (Gadus morhua). Of the faunal assemblage, cattle (Bos), sheep (Ovi-caprids), pig (Sus), dog (Canis) and deer (Cervus) were represented. Although pig were underrepresented, Mercer considers that in such a small sample ratios are relatively meaningless and possibly only indicative of differential animal management rather than of actual stock numbers. Barley (Hordeum) and hazel nut shells were also contained in the floor deposit.

Below the turf-line lay a series of layers (4 and 5) containing shellfish, charcoal and human bone representative of midden clearance deposited on an area of cultivation or disturbed midden material. Close to the deposits lay a series of structures which were superimposed, all of which had been robbed. Of these structures, Structure V was the best preserved. It consisted of a circular building more substantial than Structure II with a basal construction of large boulders and an internal diameter of over 11m. As with Structure II there was differential paving,

the claw-entrance in the South being flagged. This structure is also reminiscent of that excavated by Edwards on Freswick Links (Edwards (1924) 89-90). Here in a coastal dune environment, the wind exposed occupation debris associated with an oval construction of single boulders resting on pure sand. Part of the floor on the North East arc of the hut-circle paved. The latter feature was interpreted by Edwards as a hearth as the sand around it was discoloured and charcoaliferous. The rest of the floor was clay-lined containing embedded limpet shells "in fairly large quantities" (Edwards (1924) 90) and in a more restricted area, common whelk shells. The entrance was to the South West with a large portal pillar 1.2m high by 0.35m wide and 0.35m thick on the East side of the door. The structure was, however, far smaller than that at Cnoc Stanger, being 5.2m x 4m. Nevertheless it shares with it the differential paving, the single boulder construction and a similar setting on dunes on sterile sand in association with occupation debris.

At Cnoc Stanger, layers 4 and 5 contained bones representing ovi-caprid, cattle, pig, dog, red deer, crab and fish including cod (Gadus morhua), Thornball ray (Raja clavata), haddock (Melanogrammus aeglefinus) and possibly shark. Charcoal indicated the presence of hazel (Corylus), alder (Alnus) and birch (Betula) as well as carbonised barley grains and hazel nut shells.

Below this lay a level of sterile sand which post-dated a second sequence of cultivated soils associated with ard-marks in the surface of Layer 10, which revealed cross-ploughing. Mercer argues for the traction source as human rather than animal due to evidence in the marks for the weakness of the "pull" (Mercer (forthcoming b)).

This site with its thirteen recognised strata reveals multiphase occupation from the Bronze Age onwards to the late first millennium bc

(Mercer (1981) 57). As with Kilphedir, it may be viewed in the light of occupation of marginal land at times when this was permitted by favourable environmental conditions: while at Kilphedir and other upland sites this would be during intervals of peat growth, at Cnoc Stanger and probably other dune settlements, occupation and cultivation occurred between layers of blown sand. The economy at Cnoc Stanger was broadly based, with exploitation of littoral resources, stock-raising and with the evidence of ard marks and carbonised plant remains implying exploitation of domesticated and wild plants. Although in almost opposing positions - Kilphedir on the highland extreme of settlement and Cnoc Stanger on the coastal margins - there is implication in both cases of shifting cultivation reaching marginal areas when such resources were available. This contains another inference: that in both cases the settlements are non-representative of the greater number of sites on more permanently fertile areas where cultivation was less prone to interruption by processes of environmental decline or exhaustion of resources.

There is evidence of land-use similar to that at Kilphedir in the Royal Commission records for Caithness, particularly those in a similar environmental niche in the more highland areas of the county, ie. especially in the South West area of Latheron parish and also in the West of Reay parish, topographically more a part of Sutherland than Caithness. Clearance cairns, indistinct field banks and lynchets are often recorded in close proximity to hut-circle settlement, for example: "on the slopes around the hut-circles, occupying about six hectares are numerous stone clearance heaps and vestigial field banks indicating contemporary cultivation, but no measureable field plots can be identified", a description similar to many others which relates to settlement at Ard-

Achadh (ND 1079 2590; RCAHMS ND12 NW21). Much of these field systems have been buried and therefore obscured by peat growth and heather cover so that accurate plans cannot be obtained. Exceptional circumstances such as the burning-off of heather may reveal a more coherent pattern of field systems.

In field survey of Caithness, hut-circles have been recorded in association with enclosures reminiscent of the excavated example at Cul a' Bhaile, although synchronicity cannot be proven (Mercer (1985a) 92). In one such example, a hut-circle settlement of five structures, set into the base of a rocky outcrop was associated with two enclosures built of boulders and orthostats which utilise the crags as their Western wall (Mercer (1985a) Fig.30 Mons. FOR 30,31). There is no evidence that cultivation occurred within the enclosures as was the case at Cul a' Bhaile and it is possible that they represent pens for stock.

Prehistoric settlement complexes consisting of hut-circles, clearance-cairns, scooped platforms, cellular structures and enclosures have been located within the county: at Sandside, Reay, on the South East facing slopes of a hill (Mercer (1981) 44-47); the Links of Dunnet (Mercer (1981) 64-67) where settlement was on a raised beach preserved by coastal erosion which prevented later agriculture, but they offer little information to suggest the land-use associated with the settlement.

In only one area were the hut-circles associated with a sufficiently well-preserved field-system that an overall pattern could be distinguished and the structures accurately plotted. This was in an area of Broubster (ND 030 580) set in the angle between the Forss water and a tributary stream on a slope facing East (Mercer (1985a) 125 Fig.84 Mons. FOR 276-277, 283-287) and consisted of hut-circles, clearance cairns and field walls. The clearance cairns appear to cluster around an area that may

represent the area of cultivation. There would appear to be two distinct terraces of cultivation associated with linear clustering of stone heaps which follow the contours of the land from Mon. 277e towards the North, then curving towards the North East and a second line parallel to this from Mon. 285b, with an area of around 50m wide between them. They are also close to a series of walls which suggest the division of the land to the North and West of the hut-circle settlement into plots about 60m wide. However as there is no direct relationship between these walls and the hut-circles, it is impossible to resolve the question of contemporaneity. To the South there are several deserted farmsteads of pre-Improvement date and it may be to this period of occupation that the field wall system relates. However there are signs that the curving banks which meander North-South around the longhouses represent the head-dyke, in which case the field walls would lie outwith the boundaries of pre-Improvement agriculture. Thus it is likely that the system of field walls and clearance-cairns relates to the prehistoric settlement, and as at Kilphedir two forms of field system are represented, clearance cairns and walls, although the relationship between them is unclear.

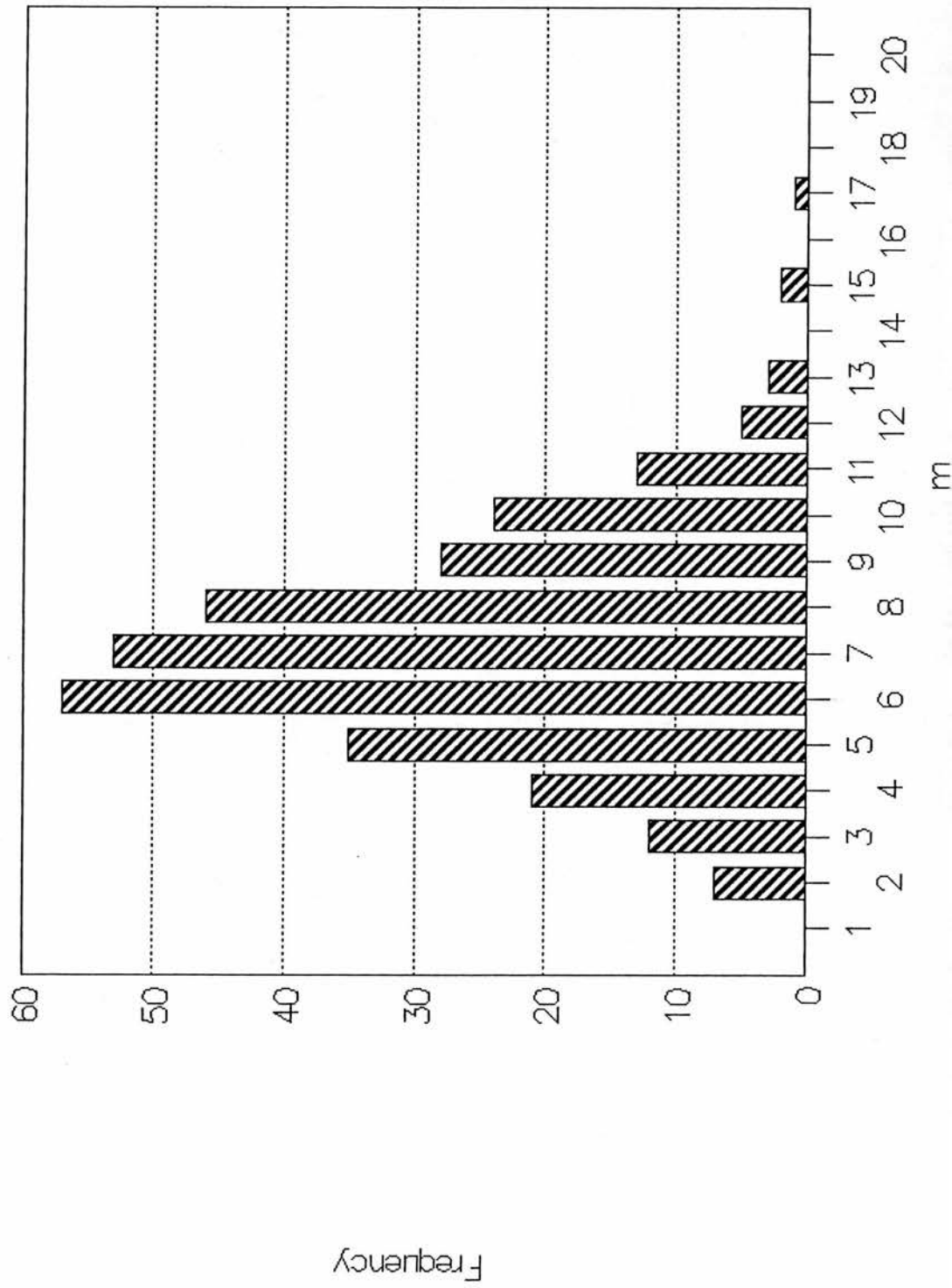
The large number of hut-circles in Caithness has produced a large database of dimensional information. As has already been stated, this form of settlement covers a broad spectrum of structural forms. For the purposes of this study it was felt to be preferable to consider all forms in one category to facilitate analysis by the provision of a large sample.

The prime measurements by which hut-circles are recorded are the external diameter, internal diameter and internal floor area derived from the latter dimension. When these measurements were plotted for hut-circles surveyed by Mercer between 1976 and 1983, the hut-circles appeared to fall into three distinct categories according to size: a small

group emerged consisting of those with an internal diameter of 3-6m; external diameter of 5-9m; and internal floor area of 5-35m². The medium group ranged from 6-12m in internal diameter; 9-16m external diameter; and 35-105m² in internal floor area. Monuments with an internal diameter of 12-16m; external diameter of 16-22m; and internal floor area of 105-165m² formed the large hut-circle grouping, distinguished by clear frequency changes (Mercer (1985a) 61). However, when all recorded monuments were included in the sample, the resulting graphs did not demonstrate this trimodal pattern to such a marked degree. The graph depicting internal diameter (see fig. 39) revealed an almost normal curve centred around a modal class of 6m, with a slight positive skew and a range of 2 - 17m. That for external diameter (see fig. 40) revealed a similar curve, slightly positively skewed around a peak of 11m with a range of 3 - 23m. In the graph depicting internal floor area (see fig. 41) the positive skew was stronger, centred around a peak of 30m². This graph did reveal a slight trimodal grouping at slightly different dimensions to that of Mercer: a small group at 10-40m²; medium at 40-100m²; and large at 100-230m². As internal floor area is directly derived from internal diameter this pattern could be seen in the graph of internal diameter, with a suggestion of a grouping between 1-6m, 6-10m and 10-17m and in external diameter graph between 3-10m, 10-15m and 15-23m, although they are less well defined. Probably the greater number of hut-circles has tended to blur the pattern. Also, no matter the attempts to standardise, there will be differences between different surveying groups in the interpretation of even such basic measurements as external and internal diameters, for example whether original wall measurements or present dimensions regardless of spread are taken. Therefore it is unsurprising that information pertaining

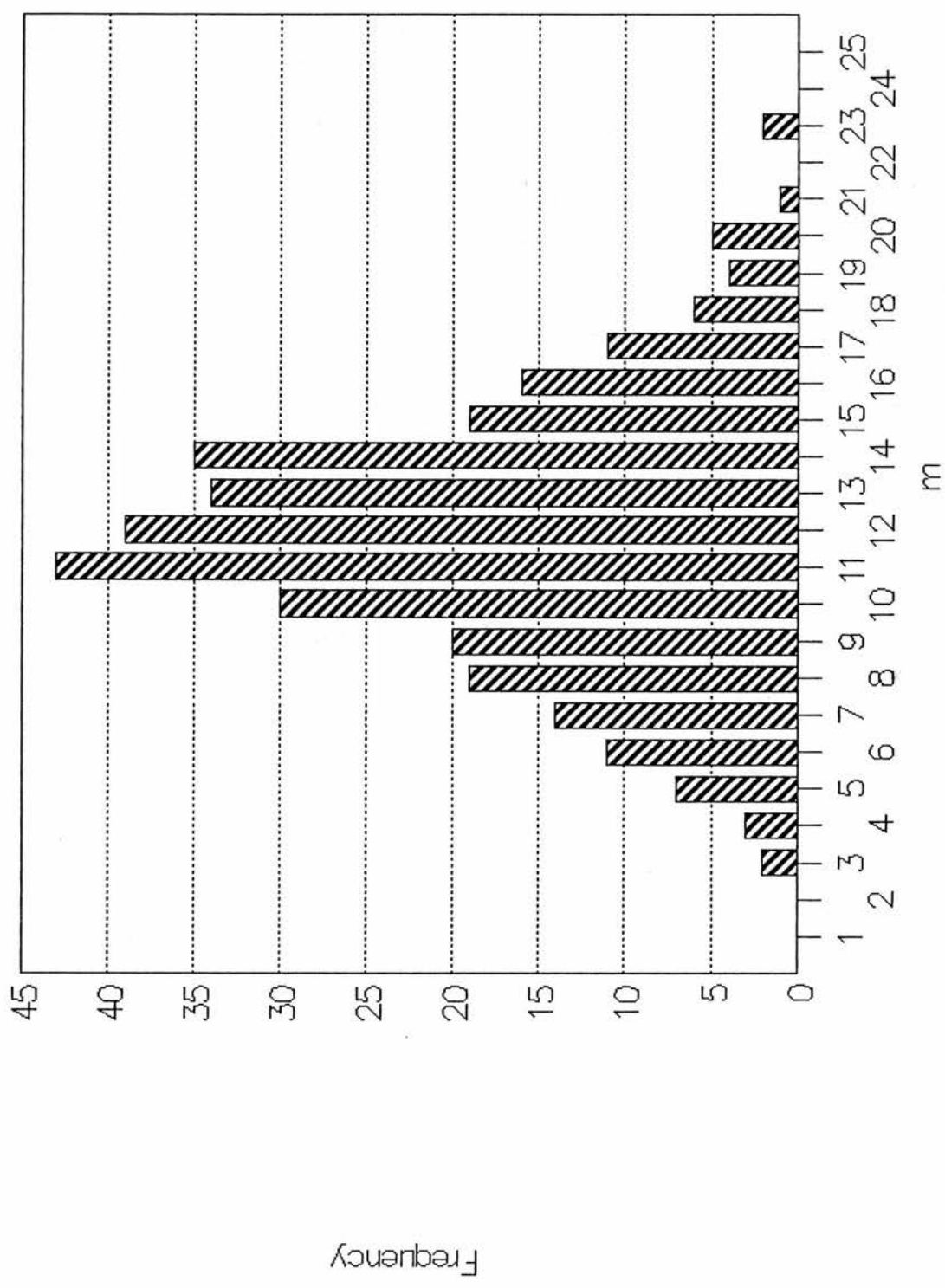
Fig. 39

Hut Circles: Internal Diameter



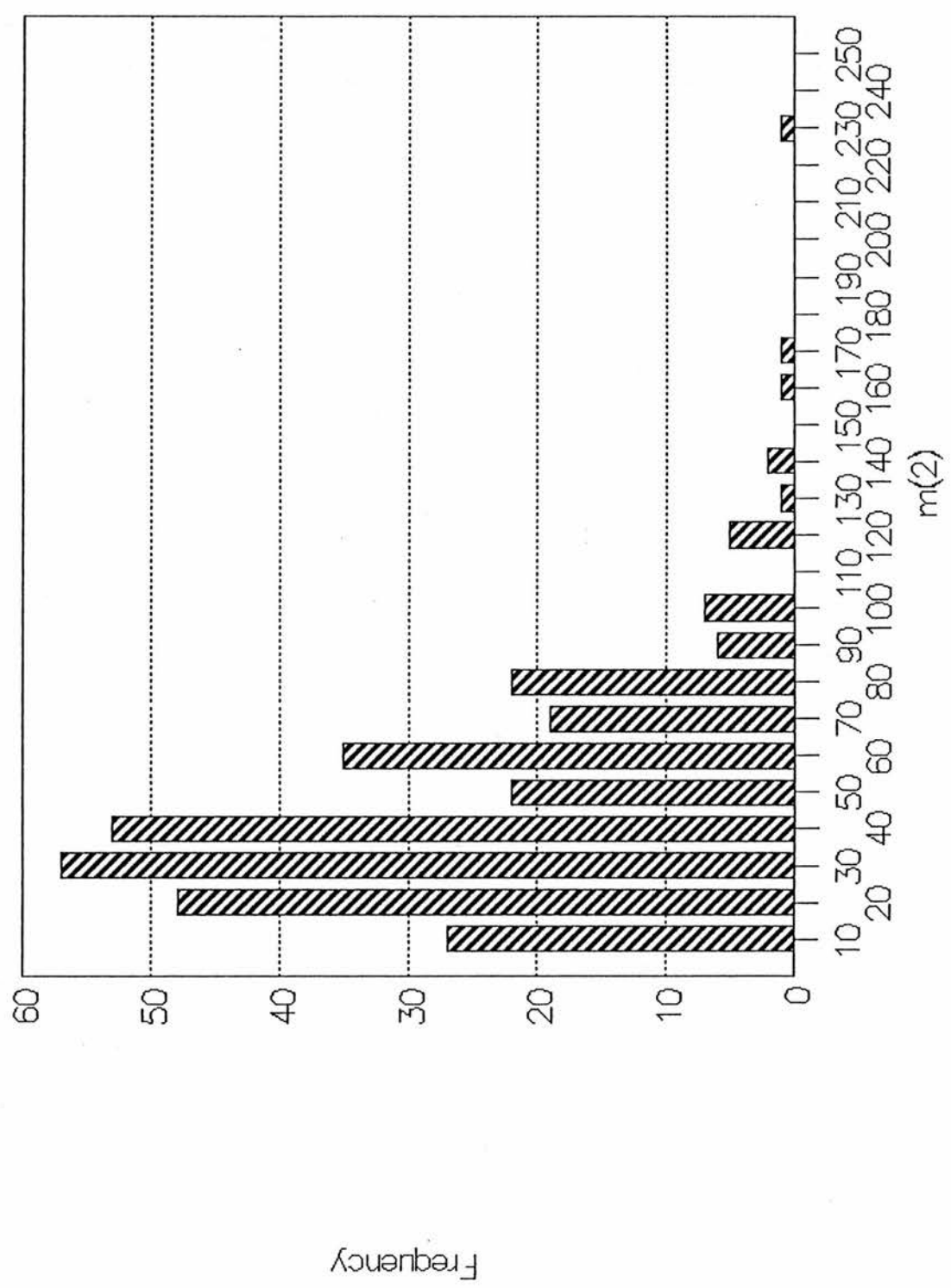
Hut Circles: External Diameter

Fig.40



Hut Circles: Internal Floor Area

Fig. 41



to one surveying authority results in a less diffuse and clearer pattern than that obtained from several sources.

The graph relating to internal floor area was compared to those of the longhouse farmsteads. The hut-circle floor area was considerably smaller than those of the farmsteads, the latter having modal groupings at 60-70m², 130-140m² and 230-240m² compared to 30m². The ranges also differ, although to a less marked extent, 10-230m² for hut-circles as opposed to that of the longhouse farmsteads which is 30-280m². Hut-circles have a far greater tendency towards the lower size groupings than longhouse farmsteads, further reinforcing the difference. When only simple crofthouses, the smallest longhouse form was considered, there was greater similarity with the hut-circles, with a range of 20-120m² and a modal class of 50-60m², although hut-circles tend to be smaller. It is possible that the space required for prehistoric agriculture and residence was less than that relating to the historical period or that each farming unit comprised more than one hut-circle. The latter is an attractive hypothesis but one with little supporting evidence: hut-circles are frequently found in groups and differences in constructional techniques and forms may relate to differing functions. However, all hut-circles at Kilphedir showed signs of domestic occupancy, with central hearths therefore it is likely that all were used to house a group of people, and also, possibly livestock. Nevertheless, such domestic function may not have been synchronous, the function altering over their occupation as occurred on longhouse farmsteads. Also it is possible that the shifting agricultural system proposed for these more marginally situated structural forms meant that less space was considered necessary when their occupation was not permanent. However the evidence from these temporary settlements cannot be applied to lowland sites.

Fig.42

HUT CIRCLES

ELEVATION : INTERNAL DIAMETER

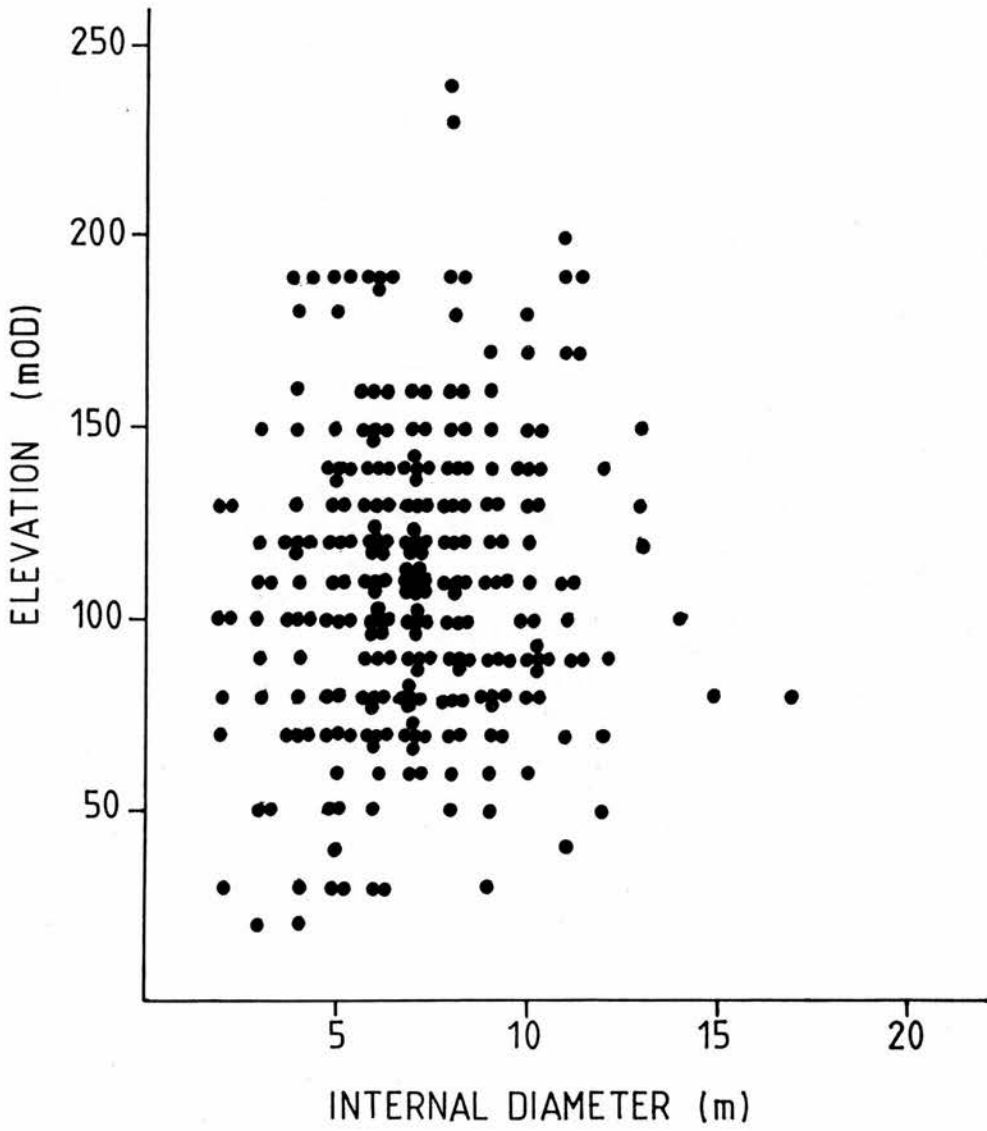


Fig.43

HUT CIRCLES

ELEVATION : EXTERNAL DIAMETER

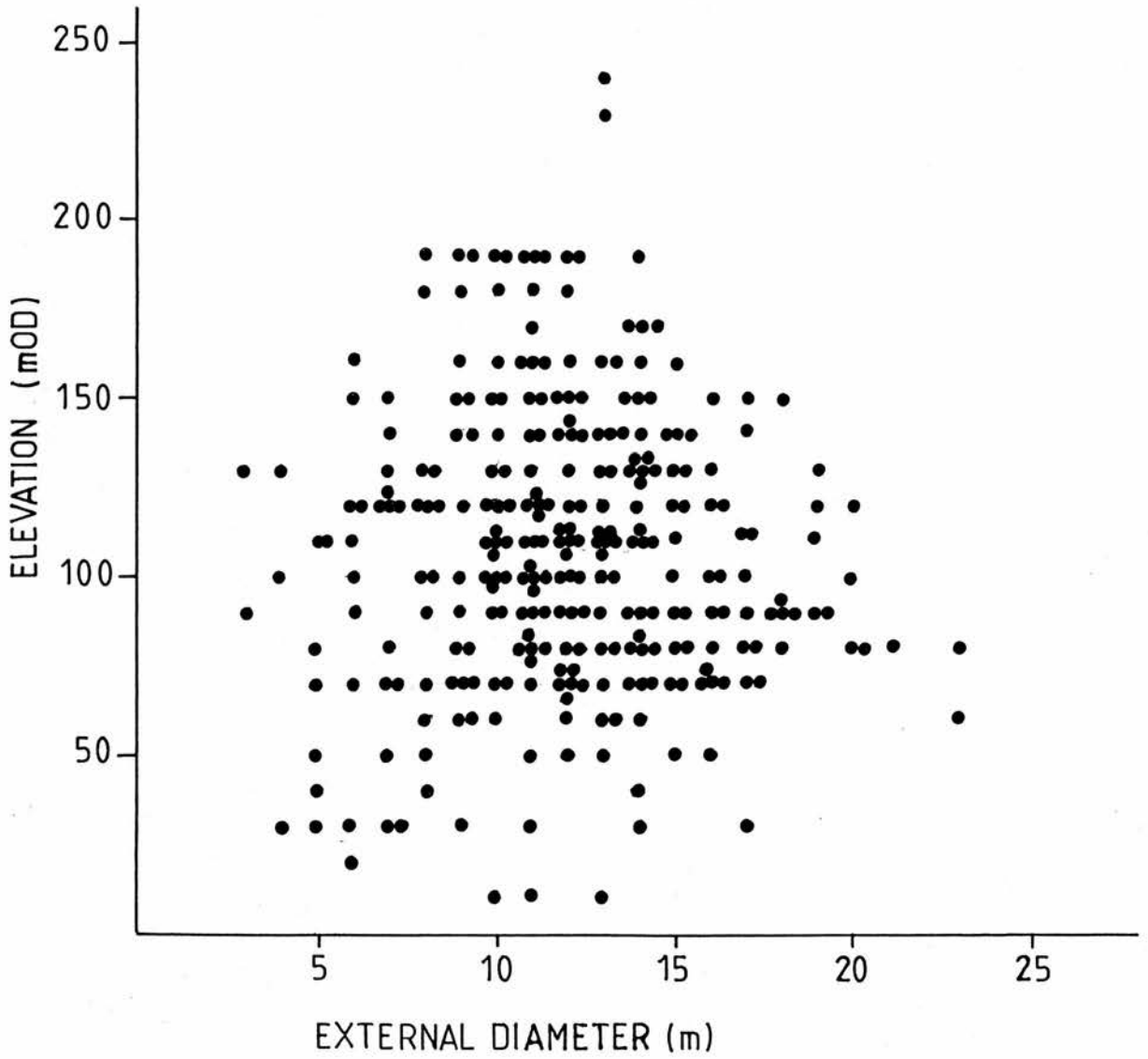
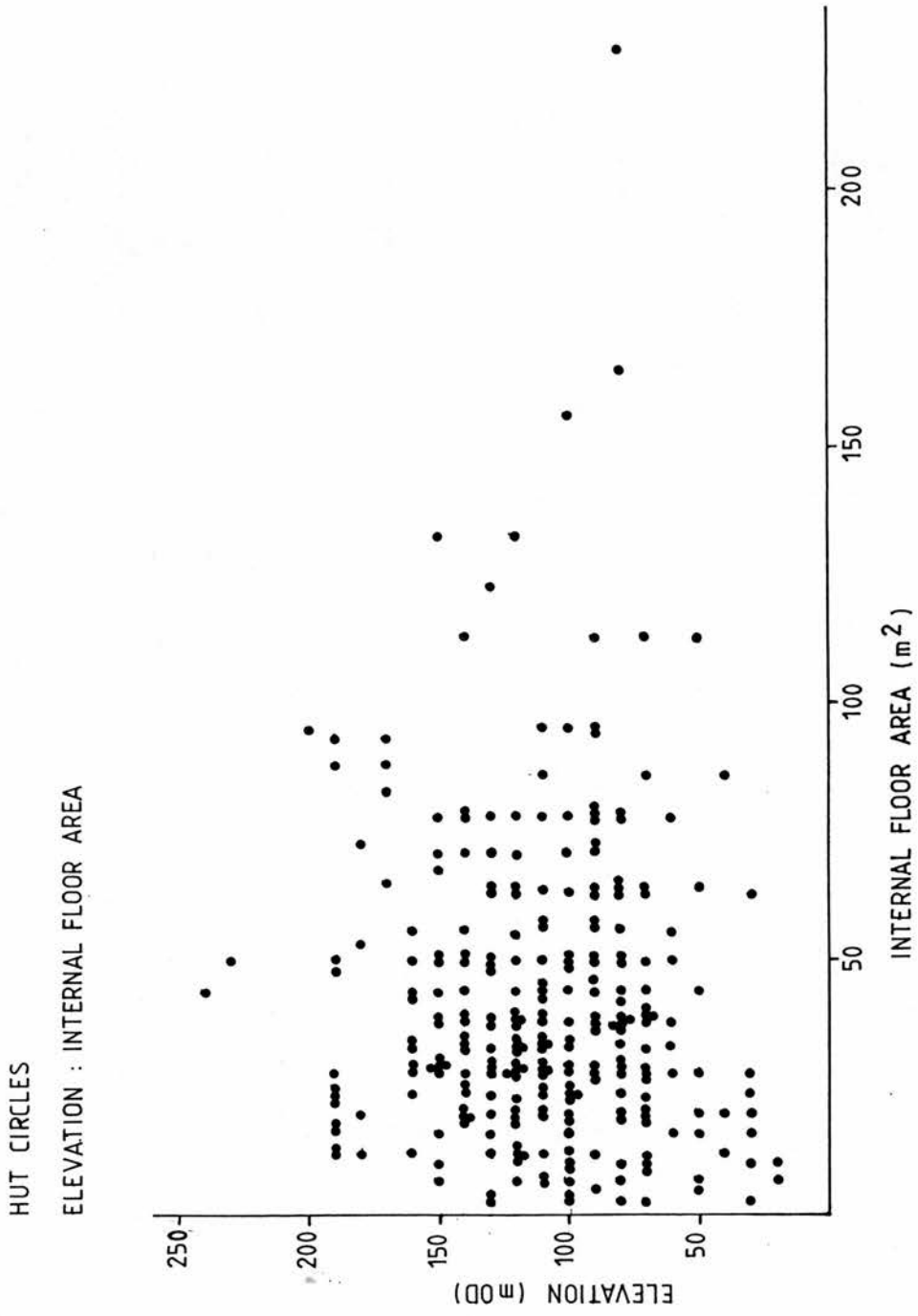


Fig.44



The external and internal diameters and internal floor area of the hut-circles were plotted against the elevation of the monuments, producing scatter diagrams with a distinctive pattern, replicated for each dimension (see figs. 42-44). As hut-circle size increases there is an increase in altitude ie. a tendency for smaller hut-circles to be situated at lower altitudes, which counters survival value as more destruction by later land-use occurred at lower altitudes and smaller hut-circles would be easier to destroy, until a cut off point at 8m internal diameter, 13m external diameter and 45m^2 internal floor area at 240m OD after which the elevation decreases in inverse proportion to hut-circle size. Also as the dimensions of the hut-circles increase there is a trend for the hut-circles to be built on higher levels ie the largest hut-circles tend to be situated on the middle range of altitudes.

To discover whether the trends seen in the scatter diagrams corresponded with the three-fold grouping of hut-circles, graphs were produced to compare the frequency of occurrence of each hut-circle group with elevation (see figs. 45-46). This was carried out for external and internal diameter only, as internal floor area relates to the latter measurement. The results corresponded with those of the scatter diagrams and revealed further differences between the hut-circle groups that reinforce the trimodal classification.

The most distinctive group is that of the large hut-circles. The restriction in range seen in the cluster diagrams relates to this group as they are only found within an altitude of 80-150m OD in the case of internal diameter. In external diameter the restriction is less marked, with a range from 30-150m OD. The middle size class, while occurring most frequently at elevations similar to those of the large group, has the most extensive range of altitudes from 10-240m OD (external diameter)

Fig. 45

Hut Circles

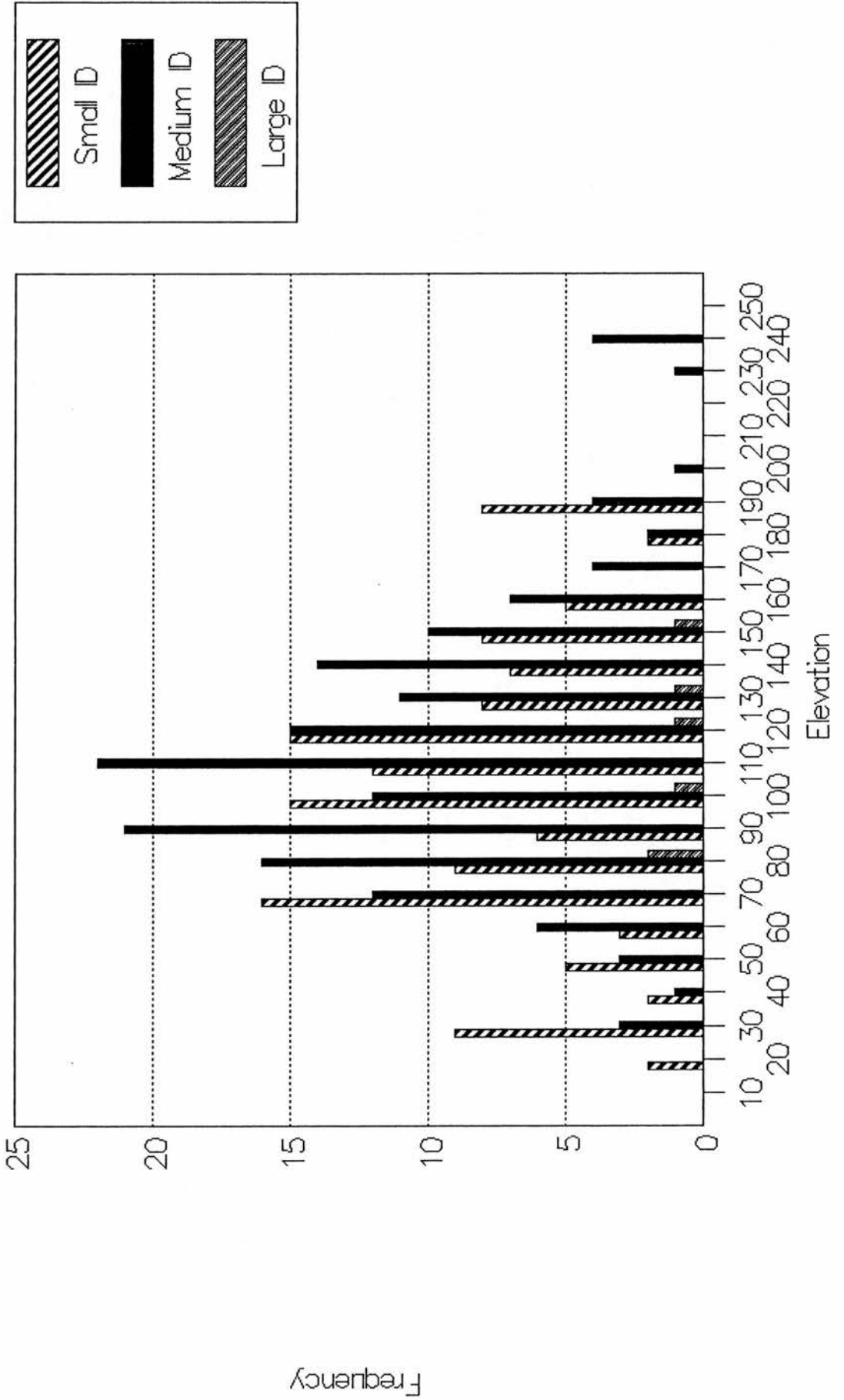
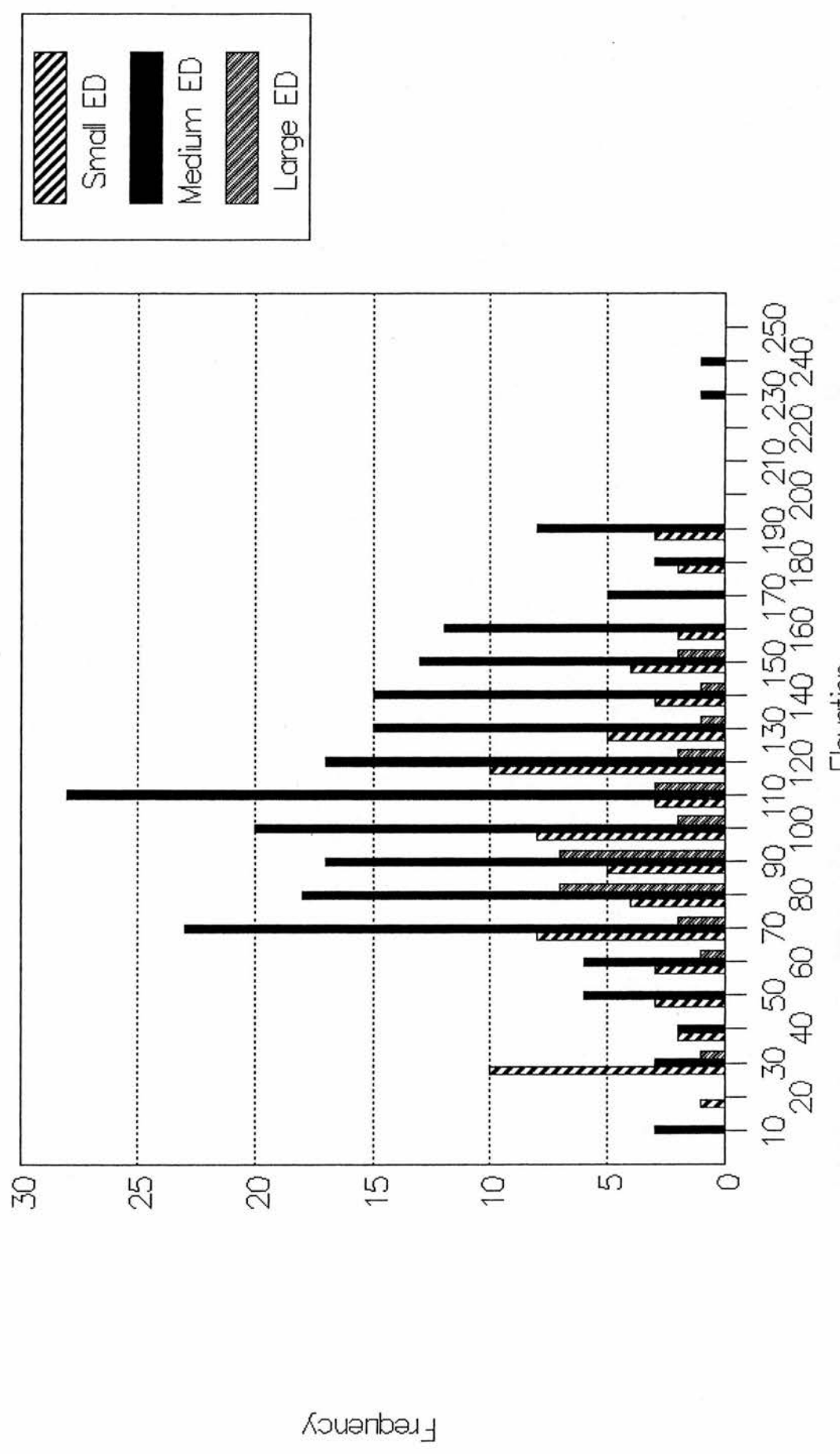


Fig. 46

Hut Circles



and 30-240m OD (internal diameter). The small group occur at all but the highest altitudes with a range of 20-190m OD (external and internal diameter).

The modal groups also differed according to the size of the hut-circles: small examples had modes at 30m OD and 120m OD (external diameter) and 70m OD (internal diameter). Medium structures had a peak at 110m OD (external and internal diameter). That of large structures was at 80m OD (internal and external diameter) and 70m OD (external diameter alone). Thus the different categories of hut-circle are associated with different locational patterns with regard to elevation.

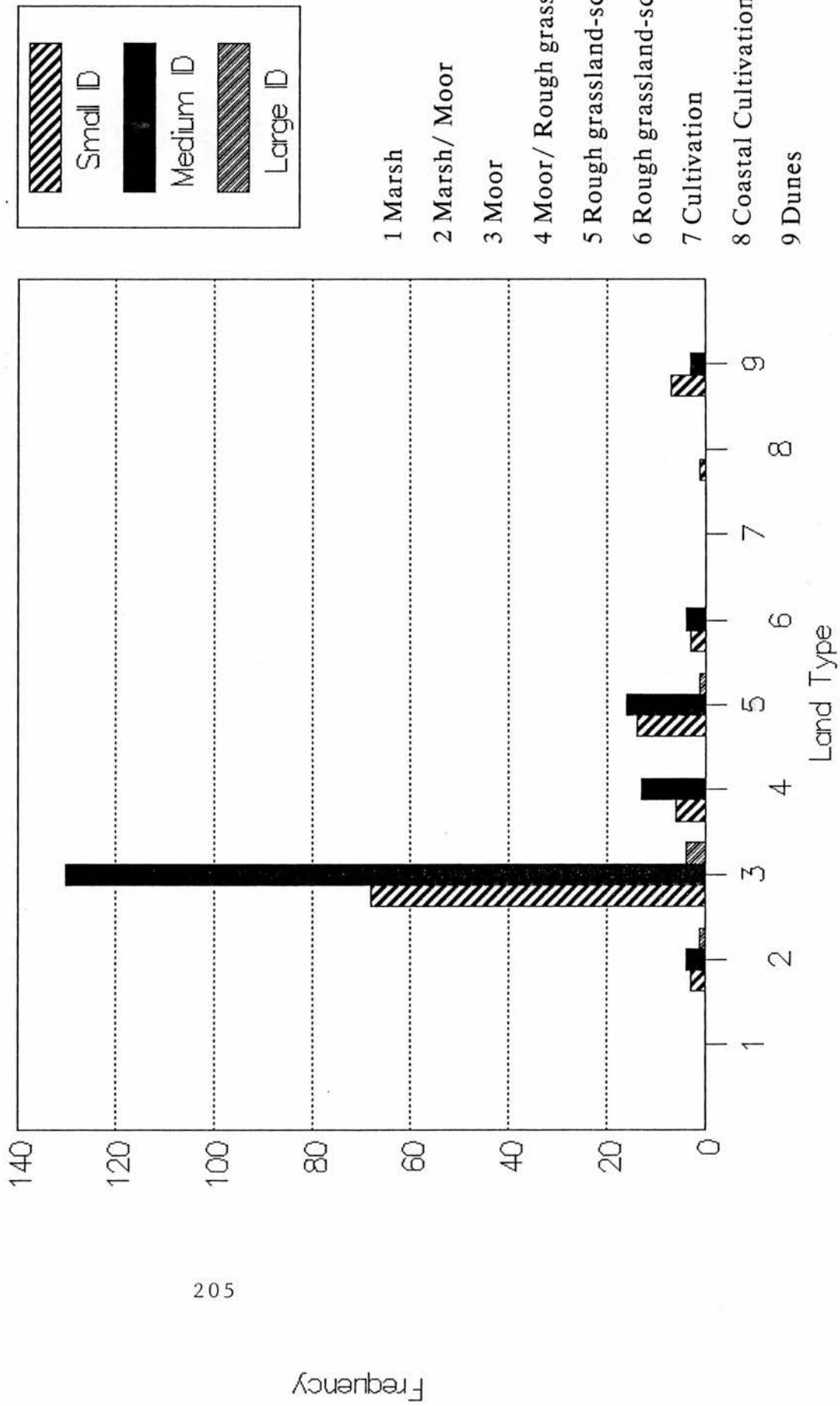
Because of the restriction of the range of altitude associated with large hut-circle forms, avoiding the extremes of altitude, it might be considered that this class was associated with better quality land. Accordingly the modern land types (see below) associated with the different groups of hut-circle were compared, again with two graphs, one for internal, the other for external diameter (see figs. 47-48).

All hut-circles tend to be situated on moorland, an indication of patterns of preservation rather than preferential location. Large hut-circles were no different, being mainly situated on moorland and indeed they are the only category of hut-circle not represented on the interface between rough grassland-scrubland and cultivation, the best quality land type on which hut-circles occur. However as this does not take into account later peat growth and climatic differences it is possible that the large hut-circles were situated on land of a better quality.

A second trend in land type is that small hut-circles have a greater probability of being located on dunes, the likelihood decreasing as size increases. This pattern is unlikely to relate to site survival or recognition and therefore it seems likely that small hut-circles are more commonly

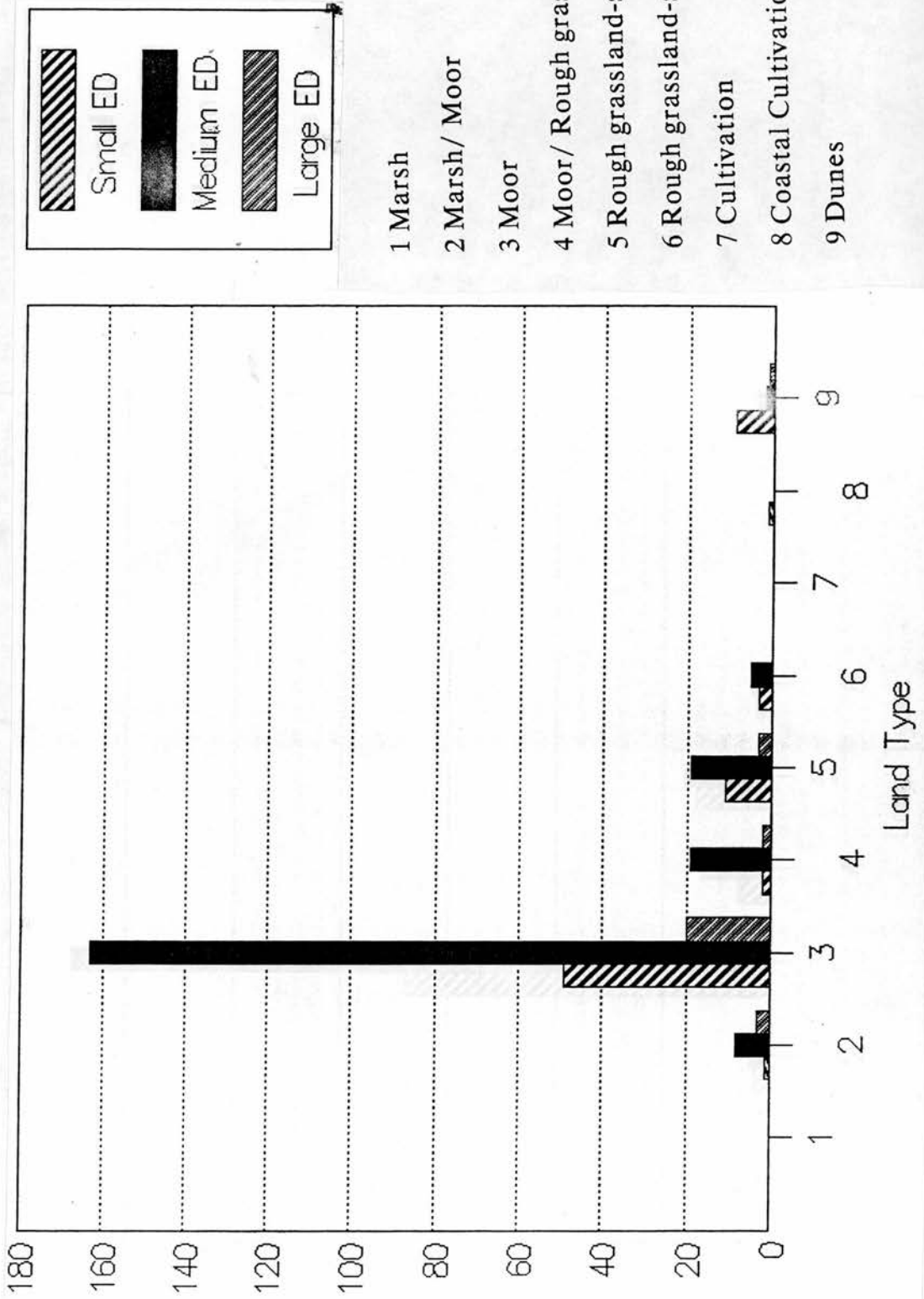
Hut Circles

Fig. 47



Hut Circles

Fig. 48



Frequency

Land Type

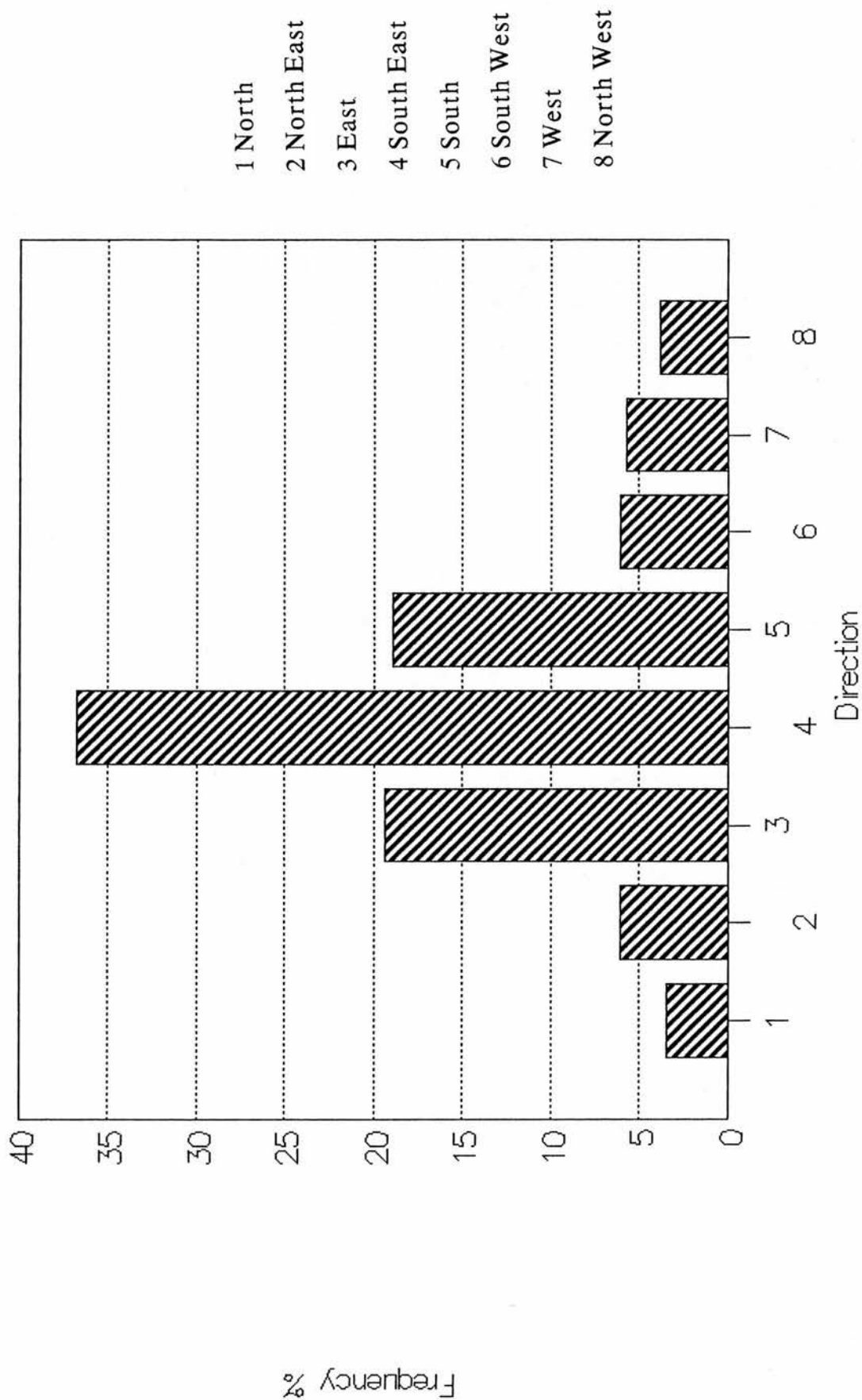
located on the coast, as they are also the only size of hut-circle on the coast bordering cultivation. This would also explain their preference for an altitude at 30m OD, the level of the raised beach at the Links of Greenland where many small hut-circles occur.

It should be indicated that the differences between the graphs relating to external and internal diameter does not imply that some hut-circles fall into one size category for internal diameter and another for external diameter. In some examples the interior measurement was evident while external dimensions were unclear and vice versa, resulting in a slightly different sample for each dimension.

Curle initially suggested that in regard to the orientation of hut-circle entrances, South East was by far the most popular (Curle (1911)). In an examination it was found that only 35.5% faced this direction in the Caithness region, less than those in Sutherland (around 40%) (Howard (1981)). When this was re-examined with further data, the result was broadly comparable, with 36.7% of hut-circle entrances facing this direction (see fig. 49). While it is true that Caithness hut-circles have entrances facing all directions, there is a marked preference for them to have an aspect between East and South, with around 75% of hut-circle entrances facing this way, while the West and North facing entrances are far fewer. Also, while the orientation of the entrances is of interest in its own right it must also relate to the aspect of the land on which the hut-circle was constructed which makes the orientation of the entrance of unclear significance.

Hut Circle Entrance

Fig. 49



Burnt Mounds

From the Royal Commission's record of possibly five burnt mound groups in Caithness in 1911, the estimated number of this monument form has risen considerably, mainly due to the discovery of monuments by survey: an estimated total of almost one hundred possible sites was recorded on Mercer's surveys (Mercer (1985a) 89) although definite examples of these structures number thirty-one. As is implied by the association of burnt mounds with cultivated land (Hedges (1975) 80) the total number was probably substantially higher than the present distribution suggests, recovery of further monuments relying on field-walking after ploughing to recognise areas of burnt material (Mercer (1981) 57).

Burnt mounds are irregularly shaped structures containing fire-cracked stone, charcoal and ashes, often crescentic pear-shaped or oval in form with, where excavated, internal structures. The most recent excavations of burnt mounds were those at Beaquoy and Liddle on Orkney (Hedges (1975)) which have resulted in a broadening of our understanding of this structural form and its function. The mound at Liddle was composed of fired stone, ash and carbon, the burnt remains revealing that the fuel used was peat. In the North West sector of the mound a structure was found consisting of a flagged floor, hearth, a central trough and flagstone-lined gully which probably helped to carry water into the trough. There was also a radial arrangement of compartments around the wall of the structure. Beaquoy revealed two similar structures of differing phases of occupation, with trough and hearth. The primary construction possessed a peat stack, the secondary example a well-like structure. This site however was less well preserved as it had been

levelled and partially destroyed by the superimposition of modern farm buildings (Hedges (1975) 41-65).

Hedges has argued convincingly for their function as cooking areas involving the boiling of meat in the water-tight troughs by means of fire-heated stone, citing ethnographic parallels, literary sources dating from early Christian times to the eighteenth century and successful experiments (Hedges (1975) 70-81).

Because of the acidity of the mound contents, few faunal remains survived at Liddle. At Beaquoy I seal or whale bone and red deer teeth were represented while at Beaquoy II sheep or goat teeth were found. Cultivation was also attested by the presence of ard-shares, saddle-querns and in the pollen evidence (Hedges (1975) 81), implying a mixed economy supplemented by hunting.

In Caithness, Mercer has indicated that burnt mounds are found in recurrent association with hut-circles (Mercer (1985a) 95) indicating their presence at the Sandside prehistoric complex, defined as amorphous cumulative structures (Mercer (1981) 44) and also near the hut-circle group on the West shore of Loch Calder and associated with the Dorrery monument group (Mercer (1985a) 95). They are also situated within the prehistoric settlement on the North East facing slopes of Bouilag Hill (ND 09 33), Tulloch Turnal (ND 0916 2288), the Forse Common (ND 20 35) and Yarrows (ND 303 434). It might be considered that they represent the "cooking facilities" of hut-circle settlements and there is a broad chronological overlap, although the range of dates is wide - 1000-200 bc for burnt mounds and 650-325 bc for hut-circles (Mercer (1985a) 85,87). It is probably best, however, to view the burnt mounds as a form of prehistoric settlement which reveals a broad continuum of tradition.

Homesteads

One of the most distinctive monument forms in Caithness is that of the homestead or "wag". It has a distribution limited to the South West highland area of Latheron parish which does not appear to be replicated over the border in Sutherland. The term is applied to a wide spectrum of structures, which share certain architectural features. One of the most famous, the Wag of Forse is an unusually complex monument, excavated by Curle (1947) and recently surveyed and re-appraised by Mercer. Here, four main phases of occupation were represented (Mercer (forthcoming a)). The initial phase consisted of cellular structures excavated by Curle at the edge of the site, paralleled at the Invernaver raised beach (Mercer (1981)) and possibly part of a horizon of such structures in the North of Scotland (Mercer (1985b)). The second phase consisted of a ring work similar to Clickhimin, superseded by a broch which was later dismantled, the inner skin removed. The fourth phase was represented by the galleried dwellings or homestead.

Many homesteads are situated in the most inaccessible areas of the county leading to difficulties in examination. Because of this, any appraisal of their form relies on RCAHMS records and on one partial excavation at Borgue Langwell (ND 1016 2191). This site was composed of a circular enclosure measuring 8.2m x 8.5m associated with a subrectangular structure attached to its South East side whose dimensions were around 14.6m x 4m. This rectilinear feature was galleried, with five extant orthostats which together with lintels, one of which lay in situ, formed the roof. The aisled nature of the structure is diagnostic of the homestead form. The aisled structure was approached

from the circular enclosure, with no direct access outside and was divided into two areas by a wall. Its floor was covered in a "black deposit" containing charcoal but no other remains. Finds included a rotary-quern and saddle-quern with a rubber, the latter in the inner, aisled part of the rectangular structure, the former in the outer area where there was no evidence of a gallery. Two deer bones and a tooth were found in the inner part of the aisled house (Curle (1911)).

As Curle indicated, two forms of aisled structure occur, rectilinear and circular, the latter being in effect wheelhouses. They are commonly found in clusters, ranging from two to as many as six at Carn Tighe Chreagaich (ND 088 294; ND 02 NE2). The ground plans are often difficult to distinguish but the orthostats and lintels are evident. The economic basis of the occupants of this monument form is difficult to determine due to lack of recent excavation and faunal/ botanical evidence. However their situation in the uplands of Caithness often in poor agricultural surroundings would indicate a non-arable emphasis, although the presence of querns at Borgue Langwell might indicate cultivation - or cereal-processing - occurred on the site. Often they penetrate the upper reaches of the river systems in this part of Caithness further than the limits even of hut-circles, as at Wagmore Rigg (ND 0030 2614; ND02 NW1) and Morven (ND 013 274; ND02 NW2), the latter homestead situated in a marshy area at the foot of the mountain: the poor capability of the land is seen in that they were often robbed to provide material for sheep shelters, the only other structural form found in their vicinity. Thus reliance on hunting and/ or stock-raising is implicit. These homesteads would appear to represent a form of settlement adapted to a highland situation.

Any more profound understanding of this monument form must await further fieldwork, although inaccessibility militates against this possibility. Nevertheless, there are parallels among more accessible sites: as indicated by Curle, there are definite similarities with broch outbuildings, particularly those at the broch of Yarrows (Curle (1911) 87) where two curving edged subrectangular structures set with pillars were built, one against the outer broch wall (Structure C), the other linked to the latter aisled structure by two short passages (Structure D). While it is dangerous to directly associate such architecturally similar structures chronologically, the presence of iron slag and the quern forms at Borgue Langwell might indicate a similar dating, although these artifacts are hardly distinctive or diagnostic.

The outer works at other brochs do not reveal such galleried structures, although comparison rests mainly on the published ground plans included in excavation reports: it is possible that similarly aisled outbuildings were overlooked, particularly if there was a degree of collapse. However no such features have been found on more recently excavated broch sites. The division of the interiors of brochs do reveal similar construction: for example at Howe, Stromness, Orkney, where a gallery was formed by a central ring of orthostats (Hedges (1985) 170-171), though this was also associated with radial division of the inner court. The use of orthostats and lintels was a technique also used in the construction of chambered tombs and it may be best to regard this architectural form as part of the traditional constructional techniques used when there was access to suitable building material in the form of flagstone.

Promontory and Hill-Forts

Much of the Caithness coastline is formed of cliffs interspersed with geos, the "long narrow steep-walled, structurally controlled tidal inlets" which occur only in the sand- and flag-stones of the Old Red sandstone (Omand (1982) 12). These geological formations produce a landscape ideally suited to the construction of a fort by cutting off a promontory between two geos by means of ramparts and ditches.

In a recent survey of such forts in the Northern Isles, ten examples were recorded along the Caithness coast, including the sites at Skirza Head (ND 395 684) and Ness (ND 382 666) which are more commonly regarded as brochs but which are also situated on defended headlands (Lamb (1980) 73-76). Nybster broch could also be included in this inventory as its situation is the same. Lamb links these promontory forts with others as part of a Western coastal sea route (Lamb (1980) 20), one of the traditional paths of communication along the West and North coasts of Britain, seen from the distribution of Neolithic megalithic tombs to the area of Norse influence in the early Christian period. However it might also be considered that it is precisely in the areas where suitable geological formations exist for promontory forts that their distribution lies, which naturally is also a factor of some importance.

Lamb links promontory forts to a time in the Iron Age when defensive constructions became a necessity, brochs also forming part of the resultant defensive constructions. However, while some brochs have been situated so as to exploit a naturally defensive position, Mercer's "fortalice" type of broch (Mercer (1985a) 98), many examples do not fall into this category: while the structure itself may possess elements of protection they are often sited in entirely unsuitable locations: for

example those in the Thurso River Valley where optimal siting for agriculture would seem to be of prime importance. Nevertheless there would appear to have been a need for defensive constructions, particularly on the coast which may argue for a danger from the sea.

There are relatively few hill-forts or hill-top enclosures in Caithness, a fact which, naturally, relates to the paucity of suitable eminences. There are four recorded examples in the county, three of which have been recently surveyed (Mercer (1985a) 108-112). All utilise the natural contours of hills and natural scarps for the construction of walls and ramparts. The areas defined by the enclosures vary, from 0.35 hectares at Yarrows (ND 303 423), through 0.75 hectares at Garrywhin (ND 313 414) and 0.80 hectares at Cnoc na Ratha (ND 053 577) to the far larger area at Ben Freiceadain/ Buaille Oscar of 4.5 hectares (ND 059 557). The Garrywhin enclosure contains the greatest internal detail, encompassing a series of possible drains, quarry scoops, cairns, an enclosure or house platform and structures built into the rampart, with two hut-circles situated further down the slope. Mercer has indicated parallels with Knockinnon Castle, Dunbeath but admits that it could be of any date including the historical period (Mercer (1985a) 112).

The other hill-top enclosures, Yarrows, Cnoc na Ratha and Buaille Oscar, with a lack of internal structure would appear to differ from Garrywhin. It is unclear whether they possessed settlement, either temporary or permanent and it has been suggested that they may have pertained to the practice of transhumance (Fairhurst (1984) 170). At Ben Griam Beg, Sutherland, survey has revealed evidence of occupation at a height of 460m OD, consisting of subrectangular enclosures formed by a series of dykes, and also clearance-cairns, possible hut-circles/ scooped platforms and "annexe" enclosures implying high-altitude

occupation and land-use, possibly before the climatic deterioration of the sub-Atlantic (Ralston and Smith (1982; 1983). However Mercer considers that altitude and weather conditions make it unlikely that "this enclosure was ever occupied other than in the most clement season of the year or indeed that it was a centre for daily ingress and egress by a stable community" (Mercer (1985) 107). In Caithness the hill-forts occur at high levels in areas of dense prehistoric occupation which might argue for a function associated with transhumance. However this proximity is not necessarily of any significance: hill-top enclosures by their very nature are set at a height above the surrounding land and therefore are in situations where they might be used as summer grazings. The existence of nearby settlement at lower altitudes may only be due to preferential survival of monuments in upland locations. Even with excavation it is unlikely that the function of these sites will be clarified and therefore all possibilities must be taken into account.

Cairns

Of the Neolithic and Bronze Age funerary monuments of Caithness, round cairns are the most numerous form, containing chambers or cists while long cairns are in the minority. Like brochs, because of their monumental construction they attracted the attention of nineteenth and early twentieth century antiquarians. Since this time few excavations have occurred within the county, which has been by-passed since the first quarter of the twentieth century by archaeologists heading for Orkney. Mercer compares the situations in the two areas and indicates that according to Henshall's inventory of chambered cairns, Caithness has a similar number of surviving sites as Orkney, the latter listed as

possessing fifty-six, the former sixty-six. Of these, fourteen and fifteen tombs were excavated in Caithness and Orkney respectively before 1925, showing a similar degree of archaeological attention in both areas. However since that date Orkney has been selected for greater investigation with twenty chambered tombs excavated in Orkney compared to five in Caithness.

The most recent excavation in Caithness was that of three chambered cairns set on the Northern shore of Loch Calder: the Tullochs of Assery A and B, a short-horned and round cairn respectively and Tulach an t-Sionnach, a passage grave (Corcoran (1966)). It is not proposed to examine this or any other excavation at any length as they do not provide direct and unambiguous evidence of land-use except that implicit in their situation (see below): at the excavation at Loch Calder, faunal remains were found, indicating that domesticated cattle (*Bos taurus longifrons*), red deer (*Cervus elaphus*), domesticated sheep (*Ovi-caprids*) similar to modern Shetland types, pigs (*Sus*), whose domestication was uncertain, and domesticated dogs (*Canis familiaris palustris*), probably buried with their owner, were known to and exploited by the builders of the tombs, but their comparative numbers cannot be considered to represent the basis of their economy. From dental wear on human teeth it was postulated that cereals - inadequately ground specimens - formed part of their diet, as well as birds, fish, limpets and land snails (Corcoran (1966) 53). Similar evidence has been found on other sites: horse, ox, deer and pig bones were found in the South West chamber at Camster long cairn (Anderson (1866) 498) and a similar range of species were recovered from the Cairn of Get (Anderson (1866) 512); Kenny's Cairn (Anderson (1866) 260); Ormiegill (Anderson (1866) 248); and at Lower Dounreay where additional species were oyster, squirrel, water vole, otter, gannet

and grebe (Edwards (1928) 150), although these may be residual rather than deliberately deposited. Faunal remains can only give a general indication of a broadly based subsistence economy.

In this study of chambered cairns in Caithness, long and round forms will be treated separately. Long cairns are fewer in number, with a possible total of thirty-four examples. Henshall's synthesis of long cairn form resulted in their categorisation into two basic groups: simple long cairns with construction belonging to a single phase (Type 1) and composite cairns which had the addition of a long cairn to one (Type 2) or more (Type 3) earlier structures. These types were further subdivided, Type 1 according to the shape of the end and the chambers accessible from the East end; Type 2 by the form of the original cairn to which the long cairn was appended (A - heel-shaped, some horned at front; B - round, some horned at rear; C - trapezoidal; D - incorporating earlier chambers accessible from the East end); Type 3 again by the original features (A - with a mound at each end; B - with three linked cairns in a line; C - with two or more chambers) (Henshall (1972) 223).

However, Mercer has indicated that with the erosion or partial destruction of some monuments, such differences are difficult to distinguish in the field and proposes three main groups based on Henshall's classification but with a more practical application: simple cairns; cumulative cairns incorporating a blanket Type 2 A/ B/ C; Mercer also isolates as a separate group four long cairns: Na Tri Shean (ND 012 653; CAT 41); Breckigoe (ND 30 44; CAT 8); Camster Long (ND 260 442; CAT 12; and South Yarrows, South (ND 304 431; CAT 55), distinguished by "mensurational and formal similarity to the cairns of Henshall's Class 2 A/ 2 B although exhibiting a more massive and unitary architectural conceptual quality" (Mercer (1985a) 26).

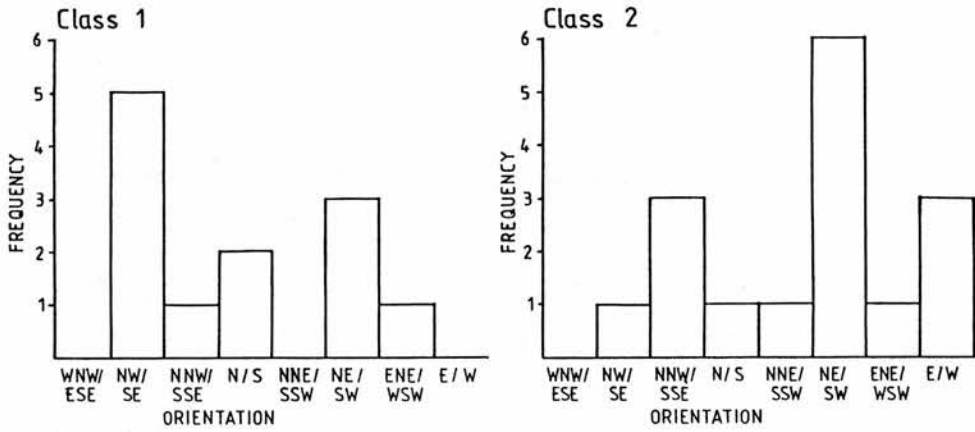
The orientation of the tombs differs according to whether the cairns are simple or cumulative (see fig. 50). Of the simple long cairns, almost 50% are oriented NW/SE unlike the cumulative monuments where NE/SW is the most popular orientation. Nevertheless other directions are represented and the difference is of a most general nature. When the orientation of the contours of the land on which they were situated was taken into consideration, it was found that all monuments of the simple class followed the line of the contours of their location. Where the land was topographically featureless, another geographical feature was taken into account: the long cairn surveyed by Mercer by the Loch of Yarrows (Mercer (1985a) Mon. WAR 5) was parallel to the adjacent bank of the loch. Again, two monuments at Auckengill (ND 3728 6391) and Latheronwheel (ND 1883 3200) were parallel to the line of the coast on which they were situated, but there may be no significance to this as the contours of the land run parallel to the sea in both cases.

When the cumulative monument types were examined, all but four long cairns lay along the contours of the land: the Cairn of Heathercro (ND 2431 6017) was set on top of an eminence and therefore could not be said to follow any contour. Of the remaining three sites, that by the Loch of Yarrows (ND 3130 4330) was formed of two round cairns linked by the addition of a long cairn. If, as seems most likely, the orientation was pre-determined by the location of the pair of round cairns, it is quite probable that the orientation would not match the lie of the surrounding land.

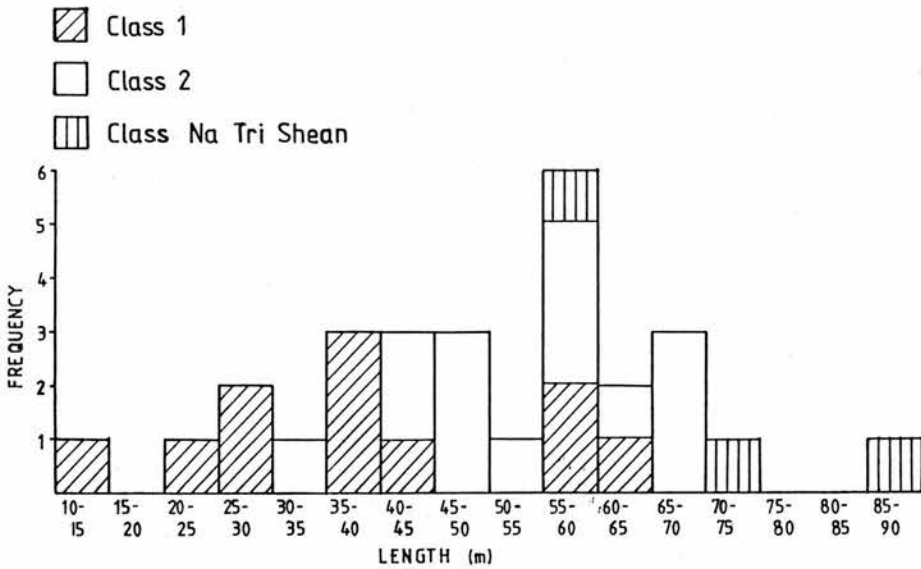
The other two monuments, although physically separated show a similar situation, Cnoc Freiceadain (ND 0130 6540) and South Yarrows, North (ND 3130 4330). In both cases the monuments are situated on top of a ridge at the more Northerly edge of a hill. At the actual summit

Fig.50

LONG CAIRNS
ORIENTATION



LONG CAIRNS
LENGTH



of the hills in both cases there are also two long cairns: South Yarrows, South (ND 3040 4320) and Na Tri Shean (ND 0130 6530) respectively, both of the latter sites pertaining to Mercer's third group of Na Tri Shean cairns. However in the case at Yarrows the pair of long cairns lies parallel while the Cnoc Freiceadain pair lies at right angles to one another. In the case of Cnoc Freiceadain, the tail of the long cairn runs at right angles to the contours and at South Yarrows, North the cairn also runs at right angles to the prevailing contour of the ridge on which it lies. Also, both cairns show signs of possessing round cairns at tail and proximal ends (Mercer (1985a) 24). Another such example is the cairn at Gallow Hill, Sordale but there the orientation of the cairn is parallel to the natural line of the hill. The similarity of location of these cairns is clear but the significance is unclear.

The cairns of the Na Tri Shean group tend to be located on top of hills, as stated above in the cases of Na Tri Shean and South Yarrows, South. Camster Long, while not in such a prominent situation was built on a natural ridge. The precise position of the Breckigoe cairn is unclear and therefore its locational preferences cannot be detailed.

It would appear that the orientation of long cairns may be a function of the topography of the land on which they were built, lying parallel to the natural contours except in exceptional cases where the orientation was pre-selected by the construction of the cairn from two round cairns. It is possible that the sites on which they were built were chosen for the specific orientations, but there is no evidence for this, especially as there would appear to little more than a general trend towards certain directions. If it were the case one might expect that in monument clusters all the cairns would be built with the same orientations in selected locations. However there is no evidence for this: on Sordale

Hill, for example the three long cairns set around its slopes have different orientations: NW/SE (Gallow Hill ND 1530 6160) N/S (Sordale Hill ND 1520 6180) and NNW/SSE (Sinclair's Sithean ND 1660 6250).

Long cairns display a large variety of lengths: when plotted on a bar graph (see fig. 50), there is a peak between 55-60m length, with a negatively skewed curve. From the graph it can be seen that simple long cairns tend to be at the shorter end of the spectrum, more complex structures tend to be larger and the Na Tri Shean group tends towards the upper end of the range.

When the ratios between length and width are plotted, this differential between the monument groups can be seen (see fig. 51). There is also a tendency for the width to increase as the length increases, as one would expect. However while it may be stated that on current evidence the more complex cumulative monuments tend to be associated with a greater length - and also therefore volume of cairn material and labour expended on the part of the builders - it must be remembered that "so many uncertainties are involved in a comparison of the lengths of the long cairn element of the composite monuments with the long cairn simpliciter as to render the exercise largely meaningless" (Mercer (1985a) 25). While this judgement may be harsh, it is true that caution must be taken in such an examination.

Round cairns are more numerous than long and may be divided into three major groups: those containing cists of Bronze Age date; those whose inner structure was a chamber of Neolithic date; and those in which the central structure is unclear. As might be expected the most numerous class by far is that representing the undiagnostic round cairns.

Fig. 51

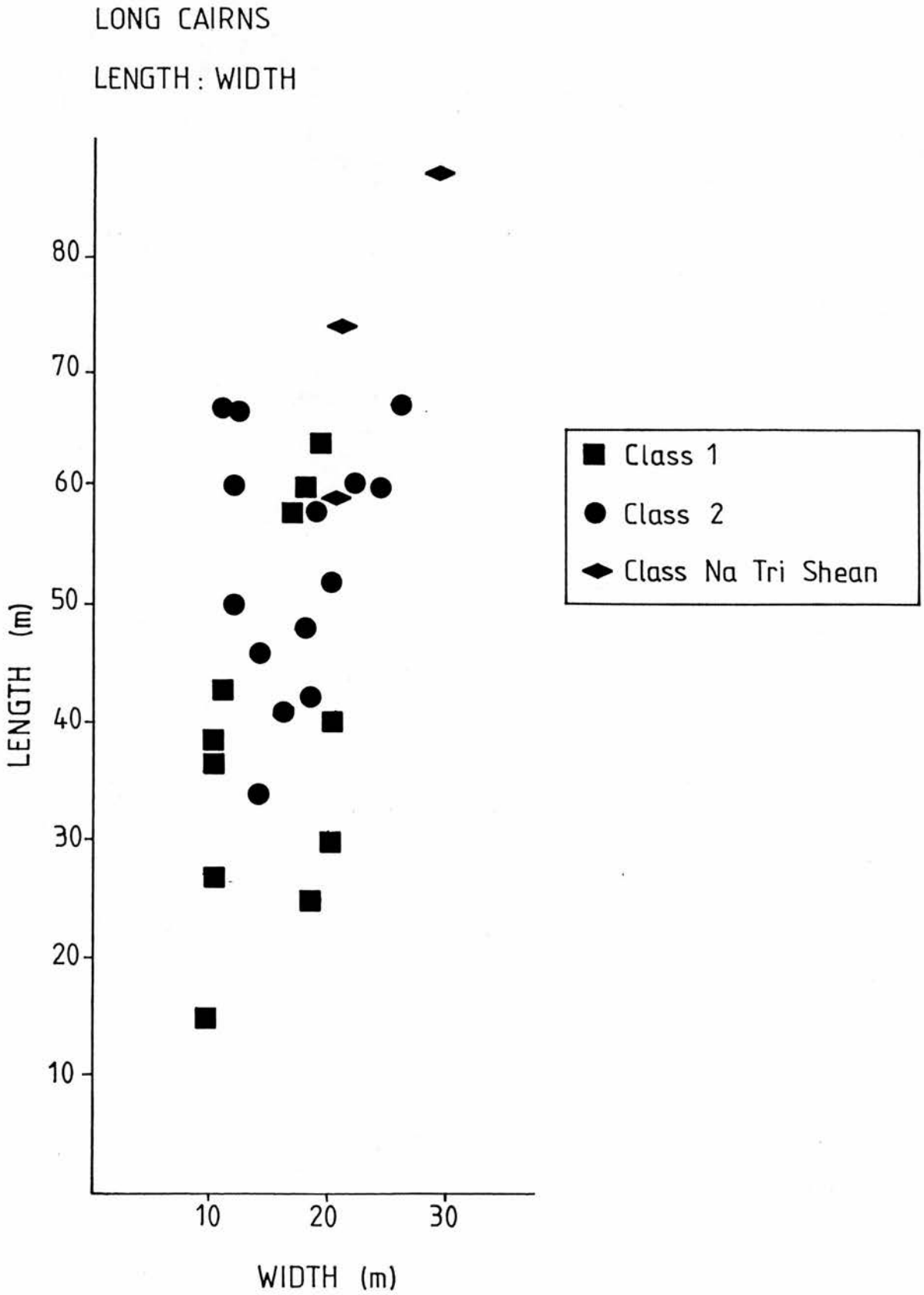
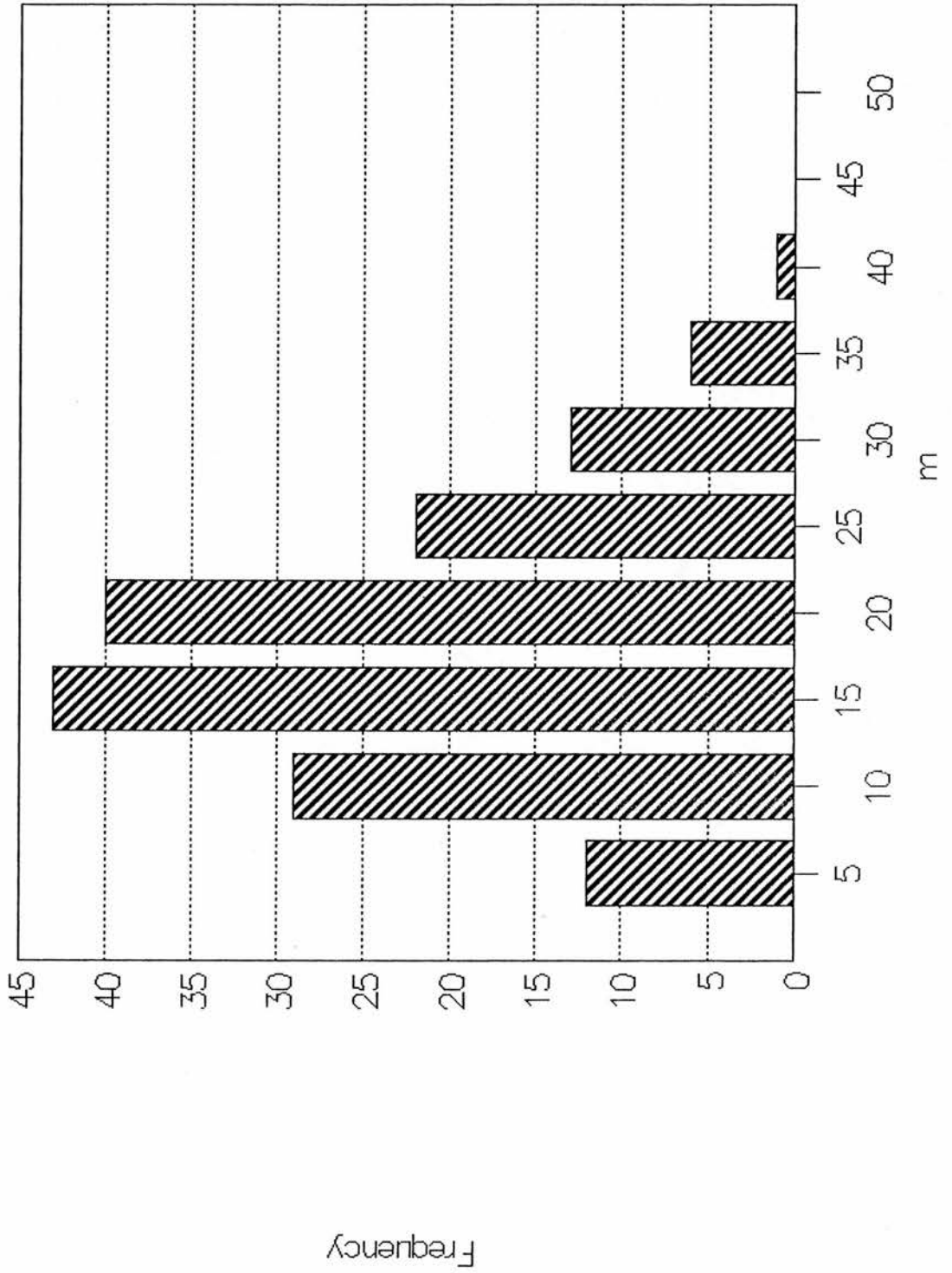


Fig. 52

Round Cairn Diameter



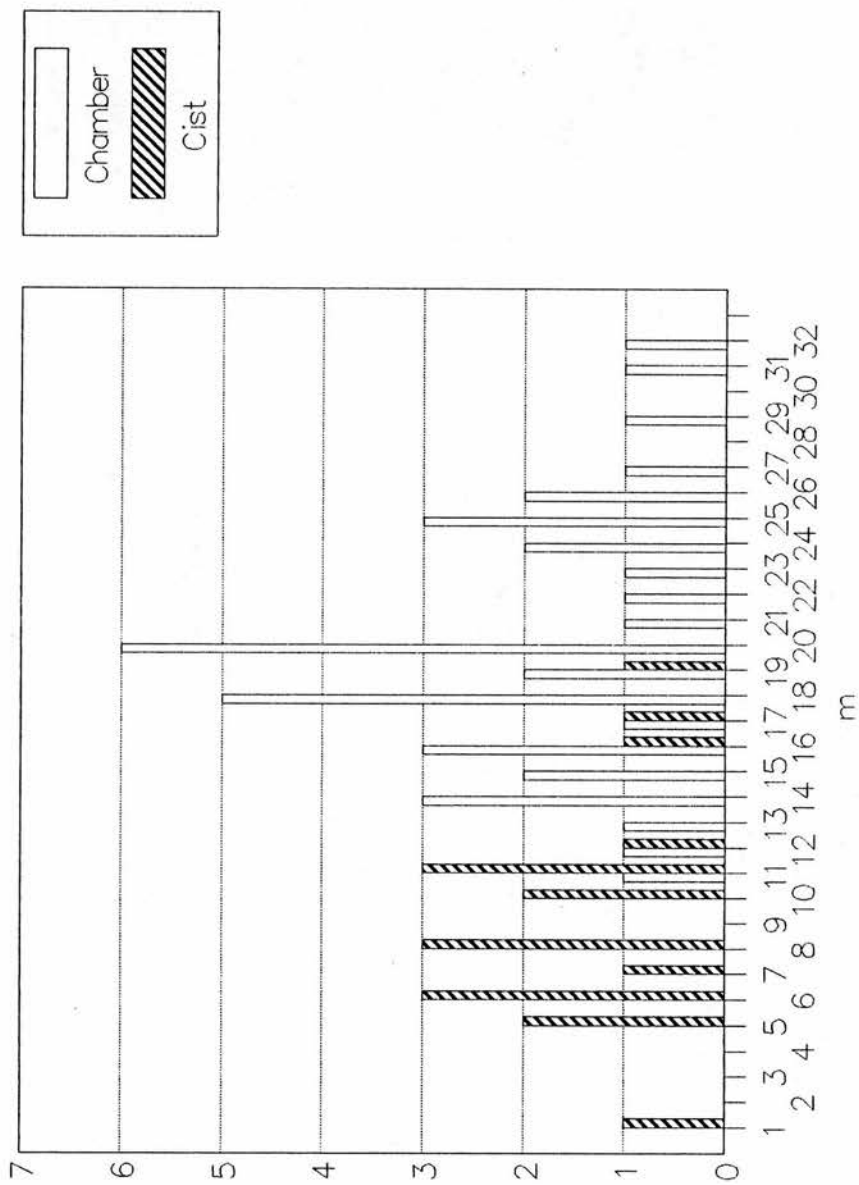
Initially all the diameters of all round cairns in Caithness were considered, the resulting graph revealing a slightly positively skewed curve around a modal class of 10-15m diameter (see fig. 52). This curve entirely disappeared when only the cairns with known cists or chambers were considered (see fig. 53). The "modal" group of 19-20m diameter contained only six examples and the majority of other classes contained only one monument, reflecting the wide range and small number in the sample. It was also clear that the almost normal curve of the graph depicting round cairn diameters contained complexities that were concealed by the great numbers of cairns where the form of the inner structure was uncertain.

There was a marked difference between the diameter of cairns with cists and those with chambers, the latter tending towards a larger diameter than the former. The two forms were almost divided into discrete groups: of the nineteen cairns containing single cists, twelve ie. 63% were smaller than the smallest chambered cairn, while twenty of the sample of thirty nine (51%) chambered cairns were larger than the largest cisted cairn, with respective ranges of 11 - 32m and 1 - 19m diameter.

The difference between the two groups may simply be due to the fact that a lesser quantity of cairn material is required to cover the smaller cist form of burial, resulting in the smaller cairn mound. However this probably oversimplifies the situation: often cairn features relate to an apparent desire to look impressive - a practice exemplified by Tulach an t'Sionnach where a round cairn, which surrounded a passage grave, was altered by the addition of a heel-shaped platform and later modified by the addition of a long cairn (Corcoran (1966))> Certainly the cairns encompassing chambers are larger than absolutely necessary. Probably

Fig. 53

Round Cairns: Diameter



Frequency

the tendency to construct impressive funerary structures, witnessed in the Neolithic was not prevalent at a later date when the funerary rite was of inhumation in a cist.

The cists within the round cairns were mainly oriented NE/SW although the range of orientations was large:

WNW/ESE	0
NW/SE	1
NNW/SSE	1
N/S	1
NNE/SSW	1
NE/SW	5
ENE/WSW	0
E/W	2

Cists with no associated material have also been discovered in Caithness. Stevenson considered that archaeologists have generally concentrated on the destruction of monuments by later land-use with a relative disregard for the element of discovery through land-use, the prime example of which is short cists, unearthed during ploughing/ quarrying/ road building operations, resulting in their discovery on arable land as opposed to uncultivated ground (Stevenson (1975) 104). However, such discovery depends on the recognition and subsequent communication of the finding for a record to be made, as indicated by Fraser (Fraser (1983) 241-242), a process of significance in the case of the cists where discovery without recognition or communication results in immediate destruction and removes a potential site from the archaeological record, whereas a more substantial site might be recognised at a later date by

survey. While cists have been recorded in Caithness, for example during road building operations near Loch Watten (ND 2449 5433) they are few in number and often not fully reported. Several putative cists were recorded for the first time on the slopes of Ben Dorrery (eg. Mercer (1985a) Mon. FOR 460) demonstrating the efficacy of survey for recognition of monuments. In the light, however, of the extensive agriculture practised in the county, the quarrying activities for flagstone and road building activities, the number of cists remains small, possibly due to a dearth of examples of such burials or due to a lack of recognition of these sites either because they were not communicated to archaeological authorities or because the cists were not buried in areas where subsequent activities would reveal them.

Few examples have reported orientations: one oriented N/S and three oriented E/W have been recorded, a result differing from the cists found in association with cairn material. However in the light of the small nature of the sample, this result is relatively meaningless.

Settlement Pattern

In this section, aspects of settlement location and distribution will be examined, but before such analysis, the problems of such a study must be considered. The first and most basic problem is that of the dependence of any study relating to patterns of settlement on the accuracy of existing maps, especially when the area is remote and inaccessible, such as the upland area of Caithness. In this study, the modern Ordnance Survey maps have been used to determine the position, altitude, aspect, proximity to water and the type of land on which the sites are located. Another problem highlighted by Fraser is the difference between

original distribution patterns and observed distribution patterns, the latter being a reflection of the original distribution after subsequent formation processes and processes of recognition (Fraser (1983) 238-239 Fig.11.3), with the criticism that while archaeologists have concentrated on the provision of a sample representative of the observed distribution pattern, little attention has been paid to ensure that a sample of the observed distribution pattern is representative of the original (Fraser (1983) 246).

To avoid this pitfall, it might be best to review the processes of subsequent land-use that have affected the modern distribution of prehistoric sites. That the Improvements and subsequent land-use have dramatically altered the pattern of extant monuments is demonstrated by the plan of the Forss Common, situated between the cultivated lands of the Thurso and Forss river valleys, drawn in 1831 prior to its division between the proprietors of adjacent farmtowns which had used the common-grazings (SRO RHP 2951). Here "seventeen cairns, seven "stones" (possibly prehistoric standing stones or perhaps more recent boundary markers) and five named points (Ravenshill, Knockafedack, Thingswa, Bourack, Clingrak) of which one (Thingswa) is certainly a broch" (Hill (1985) 148). Of these, Thingswa and possibly three cairns have been recognised in recent survey (Mercer (1981) Mons.401, 425, 427), the others having presumably been lost after the division of the common allowed ditching, draining and cultivation and quarrying at Hopefield, Langland and Janetstown to be initiated.

Of all the settlement forms in Caithness, brochs have a higher degree of preservation than any other. Being large in size, it was certainly easier to arrange the strips of arable around them prior to the advent of the deep plough rather than to remove them. It was also sensible to construct

longhouses close to them either to use some of their stone for building, to minimise wastage of cultivable land and/ or to re-use an optimal location, as has been shown to have occurred in the Thurso River Valley in association with the Mains farms at the centre of the farmtowns. At the time of the Improvements, there are records of the removal of broch mounds either to facilitate ploughing with the more powerful equipment which became available at that time or for stone to provide material for the new croft-houses, drains, roads and enclosures (Anderson (1874) 184-187). However such robbing often only appears to have partially destroyed the monuments in many cases, as was the case with those surveyed in the Thurso River Valley, most of which showed signs of quarrying scoops.

There would appear to have been another factor in the survival of the broch apart from the scale of the monument: the frequent proximity of the broch to a major farmstead of pre- and post-Improvement times would appear to have resulted in the linkage of the survival of the broch with that of the farm, a notion commonly encountered throughout the county. In the Thurso River Valley, this attitude was further enhanced by a tale that at North Calder broch, the farmer began to remove part of the broch mound, with the result that there were the successive deaths of a chicken (the best layer), a sheep, a cow, the farmer's favourite horse and his eldest son. After these events, the farmer prudently, if belatedly, decided to desist from further destruction of the mound. This story may in fact relate to the broch at Carsgoe, also in the Thurso river valley, where according to Anderson, the attempt to remove the broch was abandoned after the mysterious death of one of the farmer's cows. However, as it was also added that the destruction of the mound was completed at a later date (Anderson (1874) 184) it might be noted that in

some cases superstition yields to expediency. Certainly no such belief was encountered at the farm of Hoy where the broch mound actually lies within the farmyard, thus blocking access to several barns. However the tradition may account for the original construction of the barn around the broch, the location of the major Hoy farmstead since at least 1820, as it is so recorded on an estate plan of that date, kept in the Sinclair of Ulbster papers on Thurso East Mains farm. Probably the Mains farm related to a date a great deal earlier than 1820 as it was prior to any Improvements whatsoever: even when one takes into account that such a siting would minimise wastage of potential arable, it seems a bizarre and impractical situation which might best be explained by early superstition related to brochs.

Hut-circles, burnt mounds and associated structural forms would be far more prone to destruction by agriculture, even that of pre-Improvement date because of their relatively flimsy nature. In the Thurso River Valley the hut-circle mentioned in the RCAHMS report at the North end of the Hill of Lieurary (RCAHMS No.123 p36) had been destroyed by recent soil stripping and replacement. The fact that they were built beyond the boundary of subsequent cultivation rather than on exclusively lowland sites as is the case with brochs has meant that a sample has survived, but one which is biased and representative of marginal agriculture as is inferred in the examination of their associated land-use (see above). Burnt mounds have been subject to an additional hazard in that, because of their proximity to water, they are often eroded: this factor has led to their discovery as the burnt nature of their contents is often revealed in this way but it is likely that others have been lost because they have been washed away. Their water-side setting may have helped to preserve them in another way, as the land at the edge of streams was often left

uncultivated as meadowland, although those in a marshy rather than stream side location may have been destroyed by Improvement draining and ditching schemes or simply swamped by peat and bog formation.

The hill-top enclosures and homesteads, because of their upland settings probably represent an almost completely unchanged distribution. The possibility that homesteads existed at lower levels but were destroyed by agriculture is unlikely because of their substantial construction and their absence from the record at heights where later land-use has not involved the destruction of hut-circles. The main danger is that they have been re-used as sheep shelters at a later date and therefore have not been recognised. Promontory forts, too have escaped human destruction relatively unscathed, apart from their re-use for medieval castle sites, but have been subject to natural erosion which may have distorted their distribution.

The attempt to gauge the impact of later formation processes on cairns is difficult to quantify. While many are substantial monuments, it is clear from the Forss Common plan that they could be destroyed. If a correlation was sought whereby the degree of destruction recorded from that plan was referred to the remainder of the county, the surviving percentage of sites would be in the order of 17.6%. However this is completely meaningless as different parts of the county have been subject to different forms of activity. It is difficult to assess the degree of destruction without a fuller appreciation of the original locational tendencies of the builders of the monuments, which in turn rests on an estimate of areas of destruction. And an inference of the original distribution, while relatively comprehensible when considering the settlement sites where certain requirements are essential - access to water, agricultural land, fuel and shelter - is more difficult to determine

when assessment is of a site type where locational preferences relied on ideology rather than physical needs. It is, however, possible to at least suggest general tendencies: for example a tendency to build the funerary monuments away from cultivated land. It might be expected that, being situated outwith regularly cultivated areas the degree of destruction might be less severe than those monuments on areas of potential arable, with only the possibility of robbing for building materials. However with the division of commons, as has been seen, and their attempted cultivation as well as with the fluctuating boundaries of agriculture, such a location does not necessarily offer protection.

A study was made of the location of twenty-six chambered cairns in the East of Caithness by Fraser and Ralston (unpublished, summary in Fraser (1983) 61). Here it was suggested that there was a high probability of cairns to be built on land now freely drained but not today seen as suitable for agriculture, a tendency for orientation to the South and East and a high degree of clustering indicating a non-random distribution. However, proximity to the sea and to fresh water were not locational factors of great importance while proximity to building resources did not apply as there was little variation in accessibility. Absolute altitude was also seen to be a random factor.

To analyse the locational preferences of prehistoric monuments in the county, it is proposed to examine separately the traits which are constituents of general location - altitude, aspect, land type and proximity to a source of water - before a more general assessment of their distributional patterns and their significance.

The importance of altitude on settlement is obvious, especially that with an economy dependent on agriculture where a lowland situation

Fig. 54

Elevation

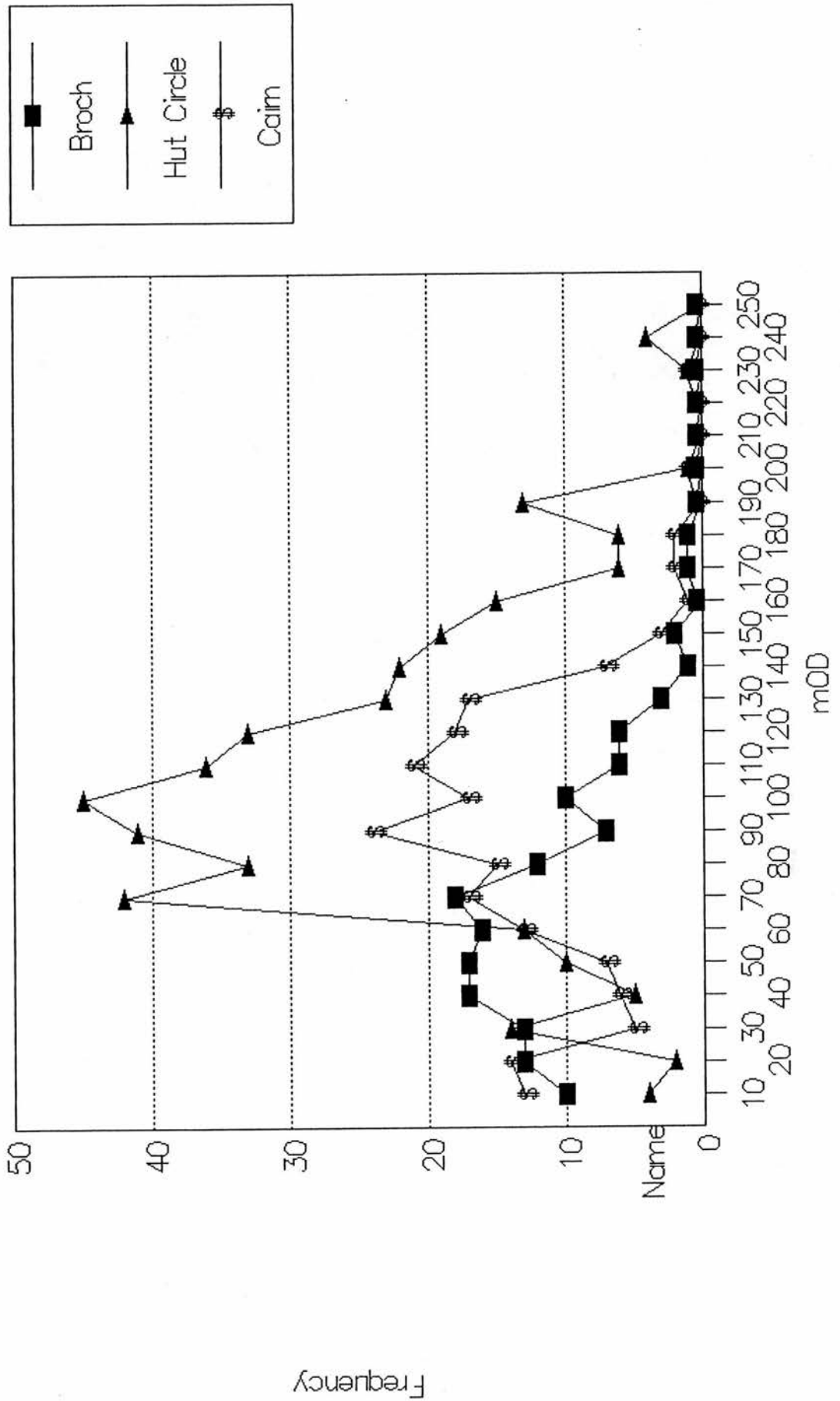
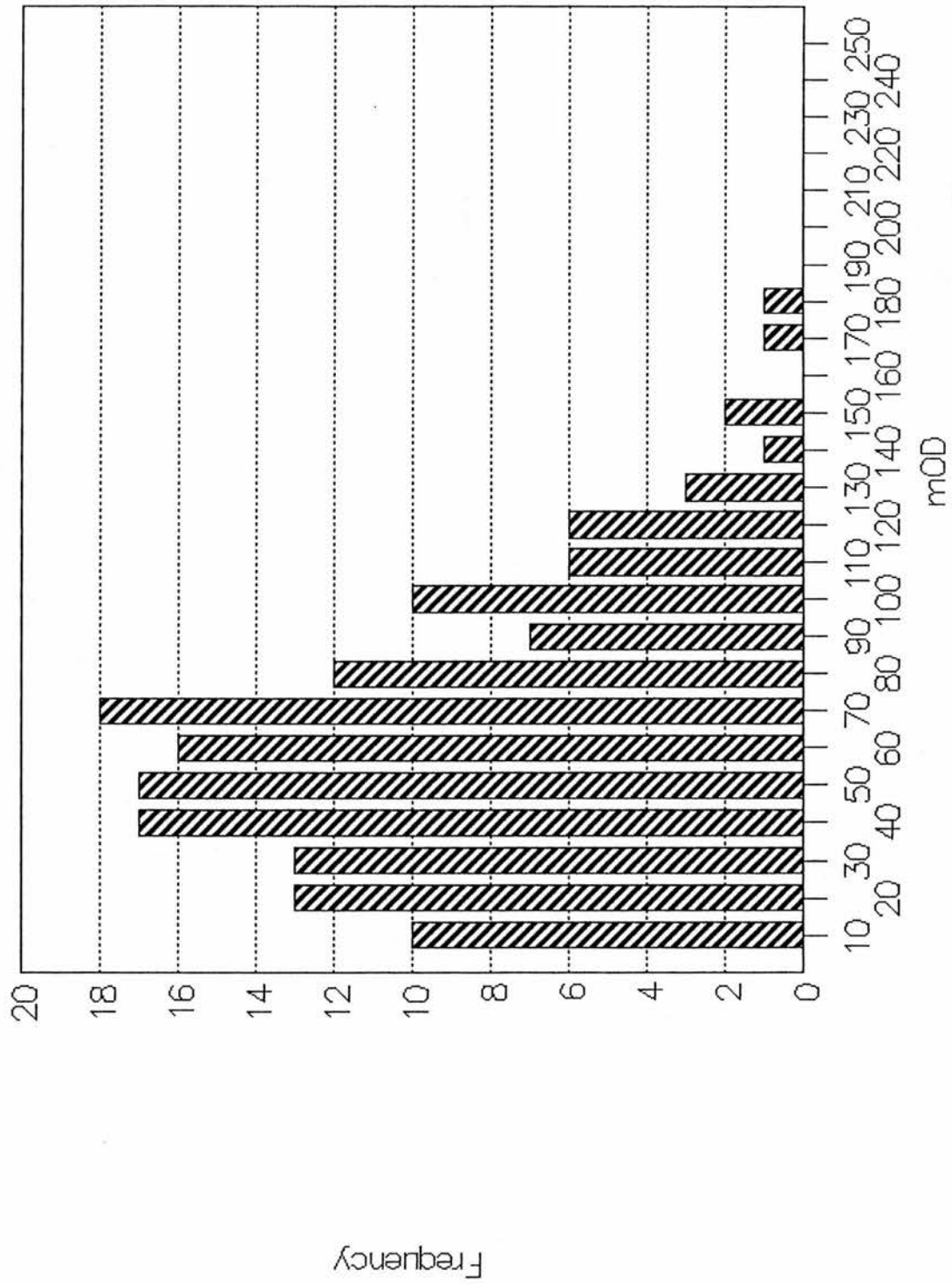


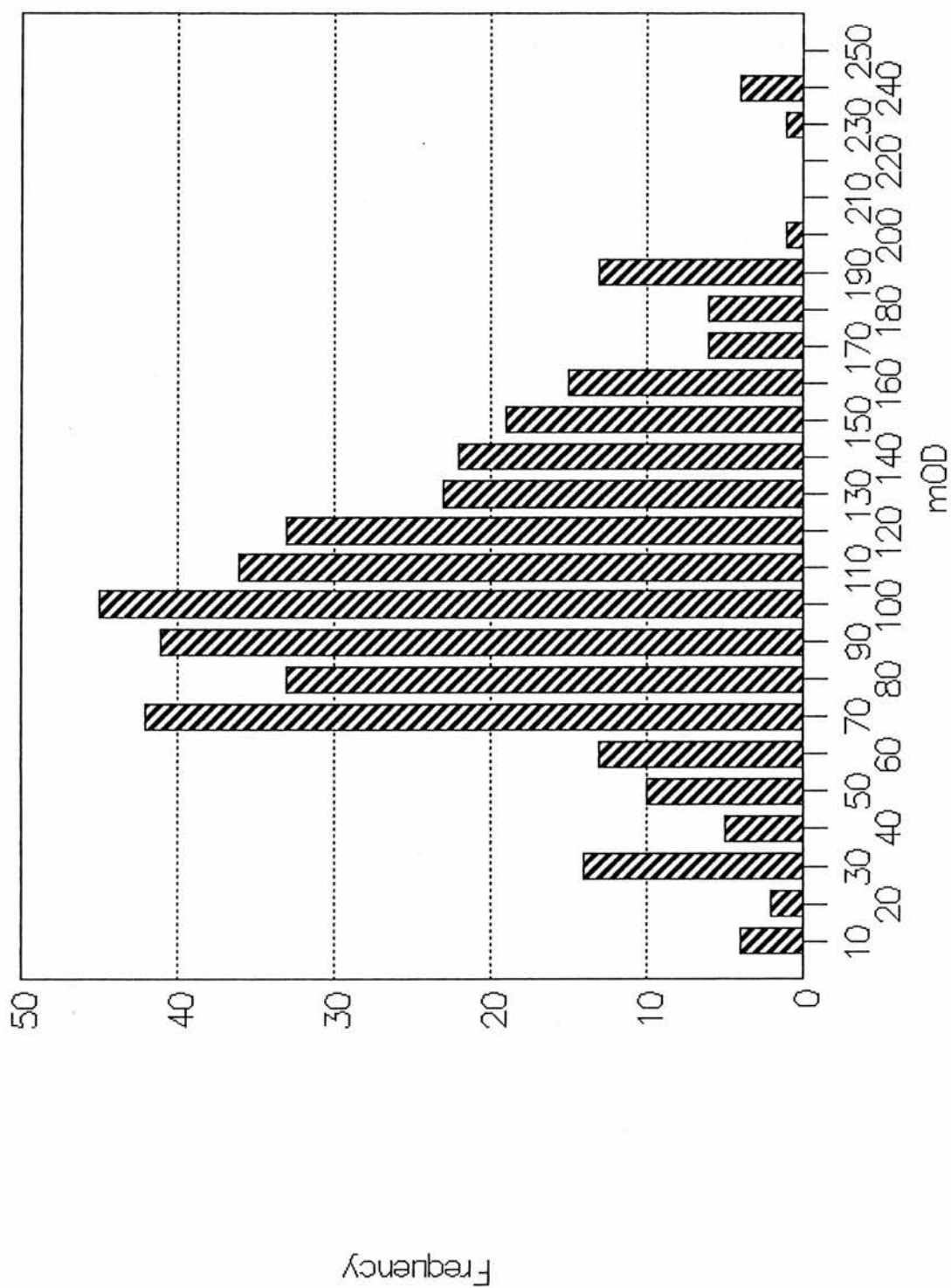
Fig. 55

Elevation: Broch



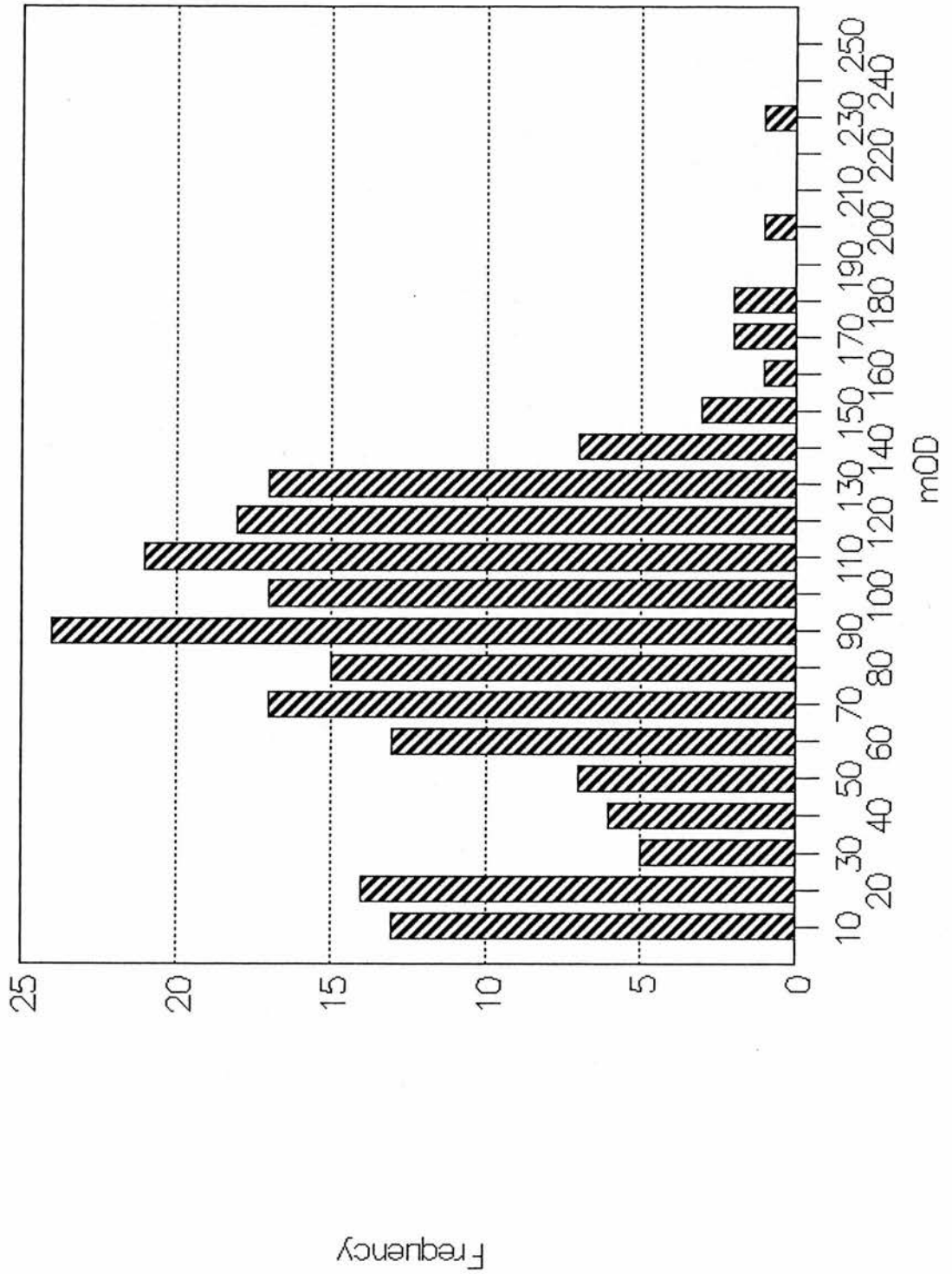
Elevation: Hut Circle

Fig. 56



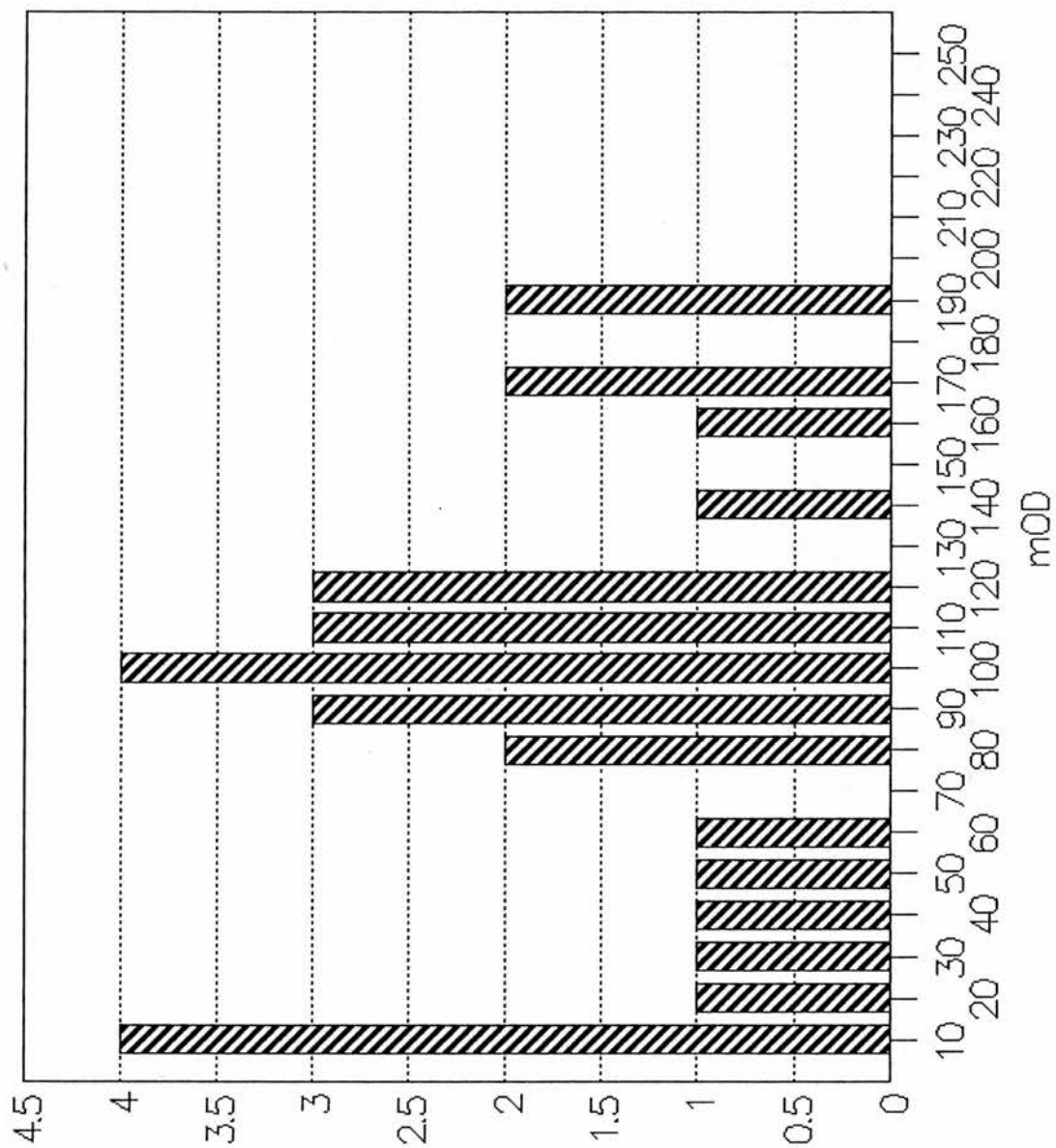
Elevation: Cairns

Fig. 57



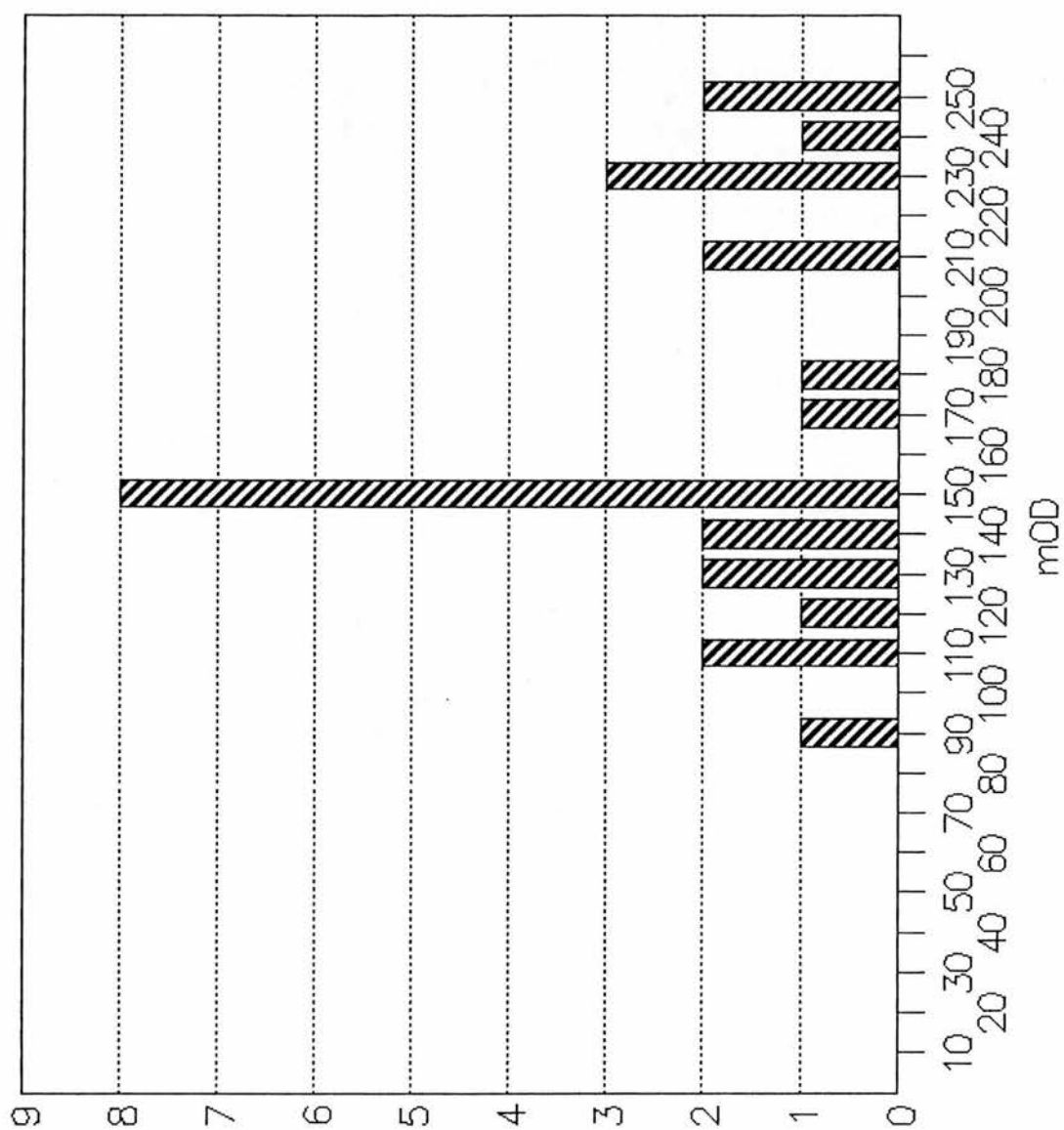
Elevation: Burnt Mounds

Fig. 58



Frequency

Elevation: Homesteads



Frequency

Fig. 59

may be preferred, generally between the zones of arable and pasture to allow easy access to both resources, as evidenced in later times in the location of the longhouse farmsteads of the tenantry. When the elevation of Caithness monuments was plotted (see fig. 54), the different monument forms were revealed as possessing differing emphases in altitude:

	Range (m OD)	Modal Class
Brochs	10 - 180	40 - 70
Hut-circles	10 - 240	70 - 120
Cairns	10 - 230	70 - 130
Homesteads	90 - 250	
Promontory Forts	10 - 80	
Hill Forts	120 - 230	
Burnt Mounds	10 - 190	

There was an insufficient number of forts, homesteads and burnt mounds for them to produce valid modal classes or for a comparison with the more numerous monument forms - brochs, hut-circles and cairns.

Brochs (see fig. 55) reveal a more restricted range than any other monument form, with no sites over 180m OD, apart from the promontory forts, whose clustering between 10 and 80m OD is due to their necessary location rather than to preference on the part of the inhabitants. The broch chart reveals the emphasis on a lowland situation, with around 68% of sites lying at 70m OD or lower, their modal range between 40 and 70m OD also indicating their preference for low elevations.

The pattern displayed by hut-circles (see fig. 56) is completely different with a higher modal range which begins at a height where brochs become

fewer, from 70 - 120m OD. The curve also displays a positive skew, revealing a tendency for hut-circles to be situated at a greater altitude than the modal class rather than lower. The range of monuments is also greater than that of brochs, up to 240m OD. While it is possible to view the hut-circles as a highland settlement form (Harris (1984) 213) occurring at levels not colonisable by brochs, it is more probable that modern land-use has completely destroyed traces of lower settlement: the trough in the frequency of hut-circles at levels below 70m OD seems best explained in this way, as the differential has an artificial appearance. With greater knowledge of the intensity of land-use after the Improvements and an insight into the potential degree of destruction it seems unnecessary to consider the hut-circle as a purely upland settlement form.

Cairns (see fig. 57) display a similar pattern to that of the hut-circles, with a similar trough up to an altitude of 70m OD, a similar range up to 230m OD and a comparable modal class of 70 - 130m OD. The fact that they do not appear at as high a level as the hut-circles which exist up to 240m OD might imply that, as they tended to be built away from ie. below or above the limits of cultivation, the Neolithic levels of agriculture were lower than those relating to the Iron Age hut-circles. The absence of monuments between 20 and 70m OD is, as in the case of hut-circles, due to an avoidance of the agricultural areas of the county, though whether this reflects destruction of the arable zone or avoidance of them on the part of the builders is unclear: probably both have affected the distribution to varying degrees depending on the history of land-use in each area. It should also be indicated that the number of monuments at low altitudes between 10 and 30m OD is a result of some coastally

situated sites and also their construction on the banks of rivers, for example at Knockglass, still avoiding areas of agricultural potential.

Of the less well-represented monument forms, burnt mounds (see fig. 58) show little preference for any particular elevation, revealing an eclectic range of altitudes, while avoiding the highest levels of hut-circle settlement, indicating a possible avoidance of most marginal situations and adherence to water courses of a certain water through-put not found at higher altitudes. However the wide range of altitudes displayed by the burnt mounds, with no clear preference for a particular elevation may indicate that other locational preferences, such as proximity to a source of water, were of greater significance.

The elevations associated with promontory forts and hill-top enclosures are the natural results of their situation. However in the case of the latter group it is of interest to note that when studied in terms of their absolute elevations, the altitudes at which they lie are lower than some brochs: from Ben Freiceadain at 230m OD, the elevations descend to Yarrows at 180m OD, Garrywhin at 130m OD and Cnoc na Ratha at 120m OD. It is on the scale of relative height that their more upland nature can be seen, as they are higher than other sites on a localised, sub-regional basis. This also indicates one of the problems in the analysis of locational tendencies in cairns, whereby siting in locally prominent positions will not be represented on an absolute scale.

The category of homestead (see fig. 59) reveals a pattern which differs from any other monument form, with a range from 90 - 250m OD and a mode at 150m OD. In this case it does not appear likely that the lack of sites at a low level is an indication of destruction by agriculture. Being substantial monuments, it is difficult to envisage their complete removal from the record. Also they do not appear lower than 90m OD, whereas

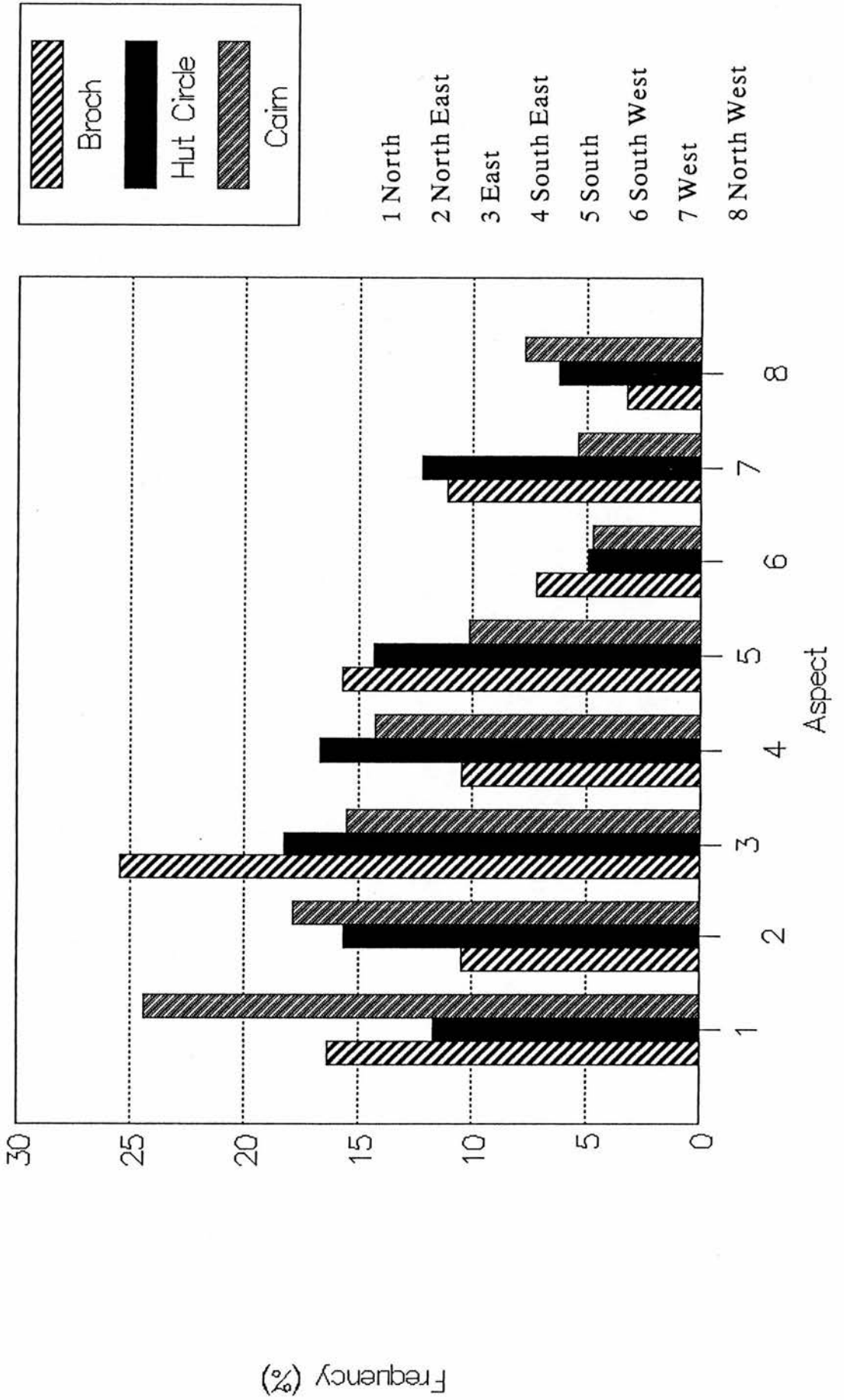
the effects of agriculture appear to extend only up to 70m OD. As their distribution is equally restricted, it is most probable that they are a highly localised settlement form adapted especially to highland conditions and an upland economy.

The aspect of sites relates to a desire for sun and shelter, the optimal location for obtaining these criteria in Caithness being on slopes facing between East and South. While this would relate more strongly to the land farmed by the inhabitants of the monuments, the associated settlement would be most optimally sited close to the areas under cultivation and would also benefit from a more sheltered and sunnier situation. In a consideration of this form of locational preference, the aspects of the three most common monument forms - brochs, hut-circles and cairns - were plotted (see fig. 60), showing the percentage of sites in association with each possible aspect for the purposes of easier comparison.

The most popular situation for brochs was on an East-facing slope, with just over 25% of the monuments pertaining to this direction. A Northerly aspect was of marginally greater significance than South, followed by a Westerly facing location. This is unexpected as one would consider the preferred aspect to face the South and in fact over 50% of brochs faced South/ South East/ East, less than might have been predicted. However it is possible that in the case of brochs a lowland situation would make the selection of aspect of less significance than would be the case in more upland sites where degree of slope is steeper and where increasing marginality might be offset by a preferential aspect. It may also be that brochs were situated away from their associated area of arable, but this would appear to be less likely as a

Fig. 60

Aspect



Hut Circle Aspect

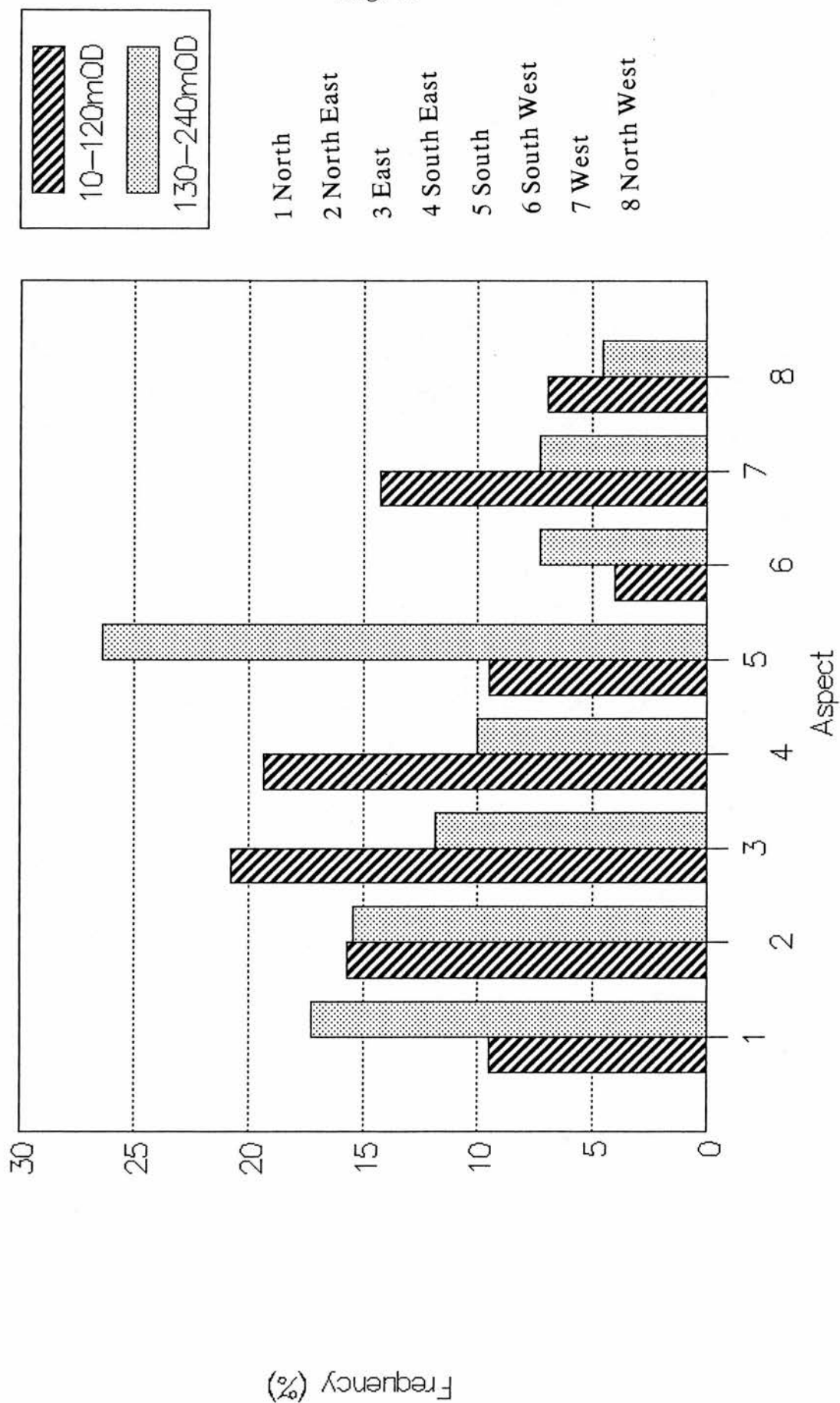
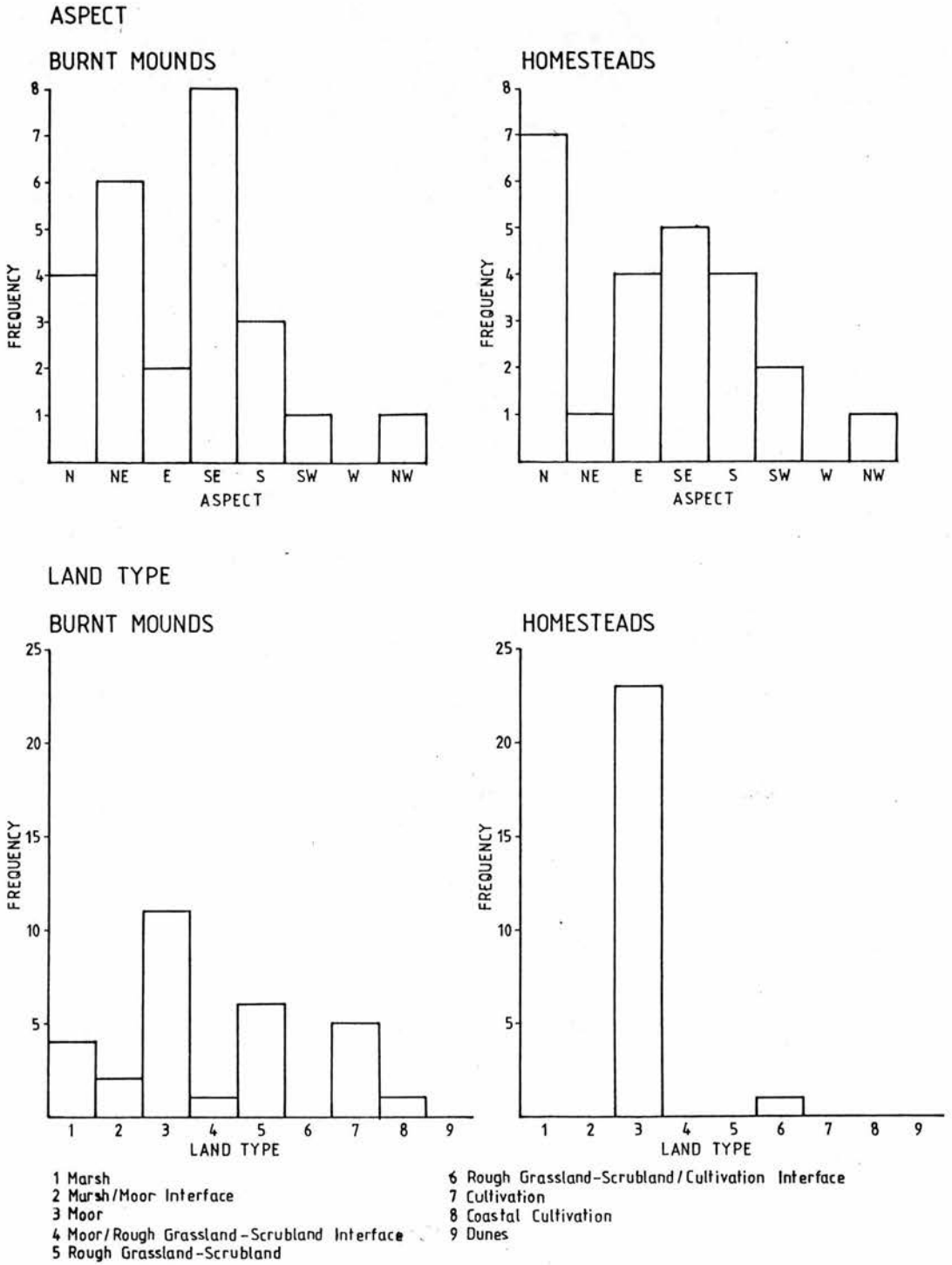


Fig. 61

Fig. 62



location away from cultivation would waste time and would not be optimal.

That the importance of aspect is to some extent dependent on altitude is implied by the hut-circles, a more upland form which display a more predictable pattern, with a modal aspect towards the East, tapering off on either side to a nadir at South West/ West/ North West, although West is better represented than might be expected. The optimal East/ South East/ South sector is less well represented than might have been predicted with just under 50% of sites facing this range of directions. However this may be explained by the concentration of later land-use, particularly agriculture, on land with a preferential outlook resulting in the destruction of prehistoric monuments on these areas and a pattern apparently more biased towards less favourable Northern and Western directional attitudes than was the case in the original pattern.

To determine whether the altitude of the hut-circle had any bearing on the choice of aspect, it was decided to divide the monuments into "upland" and "lowland" groups (see fig. 61). The "low" hut-circles were set as those between 10 and 120m OD while "highland" structures were those between 130 and 240m OD. The cut off point at 120m OD is partly artificial, in order to provide two roughly equal sample groups in terms of number for the purposes of balanced comparison and also because it is at this point that the number of brochs tapers off markedly and therefore might be regarded as the boundary of lowland settlement. Also, the implications as regards the relationship of altitude and elevation may have implications relating to brochs, as indicated above.

The lower level group reveals a pattern similar to that displayed on the graph of all hut-circles, with a preference for an Easterly facing slope, but with a Southerly aspect that is underrepresented in comparison.

Again there is a secondary peak for a Westerly orientation. The more upland settlement group however reveals a different emphasis, with a marked peak for a Southerly aspect, over 25% of hut-circles falling into this category. However, the next most popular aspect was that facing North (around 17%) followed by North East (15.5%), East (12%), South East (10%), South West (7.5%) and West (7.5%), with North West the least favoured direction (4.5%). Thus the evidence for the increasing significance of aspect with increasing altitude is ambiguous although it does suggest that there was a distinction between the upper and lower groups. However an obvious interpretation of the difference is not evident: it might imply that at higher elevations a South facing aspect was of more importance than at lower levels. However it may also be due to differential survival as on lower levels land with a Southerly aspect would be more susceptible to the depredations of later agriculture.

The pattern of aspects for the cairns differed from that of the settlement sites. Here the modal class was that with a Northern aspect, tapering off on either side, although less steeply towards the North East/ East/ South East/ South than to North West/ West/ South West. This does accord with the predicted pattern: with funerary monuments avoiding aspects optimal for agriculture but also avoiding the least popular aspects for settlement so as not to be situated so far from settlement as to be inaccessible and not clearly linked to the land.

The less numerous monument forms were also considered, (see fig. 62) but only the homesteads and burnt mounds: the promontory forts and hill-top enclosures were excluded as in the former case the aspects were predicated by their coastal nature and in the latter case a site on top of a hill cannot be said to possess one particular aspect.

The study of homesteads might be considered to relate to the question of whether a more highland situation weighs greater significance to an optimal aspect. The most popular class was a Northerly outlook which was unexpected with the remainder of the sites preferring a pattern around a peak at the South East. Thus again the situation is ambiguous and difficult to interpret. As the homesteads with a Northerly outlook tend to be situated in the furthest reaches of the river valleys in which they were set it is possible that there was no associated cultivation, in which case a favourable aspect was of less importance, or that the amount of potentially cultivable land was so small that the settlement was constructed on the far side of the valley to prevent wastage of this valuable commodity. It is also possible that homesteads do not represent settlement structures but, for example, cattle byres of massive construction associated with slighter settlement sites which have been obscured by later peat growth or otherwise removed from the archaeological record. For the remainder of the homesteads in the less extreme areas, either they were associated with cultivation or proximity to arable might become of greater importance when available resources were not constrained to the same degree, with a more predictable pattern for associated aspect.

The aspects associated with burnt mounds have a mode at the South East, but with the South and East less well represented compared to North and North East. The situation might imply that the location of burnt mounds was decided on different criteria.

A study of land type associated with the monuments was carried out, the categorisation of land being as follows:

1. Marsh

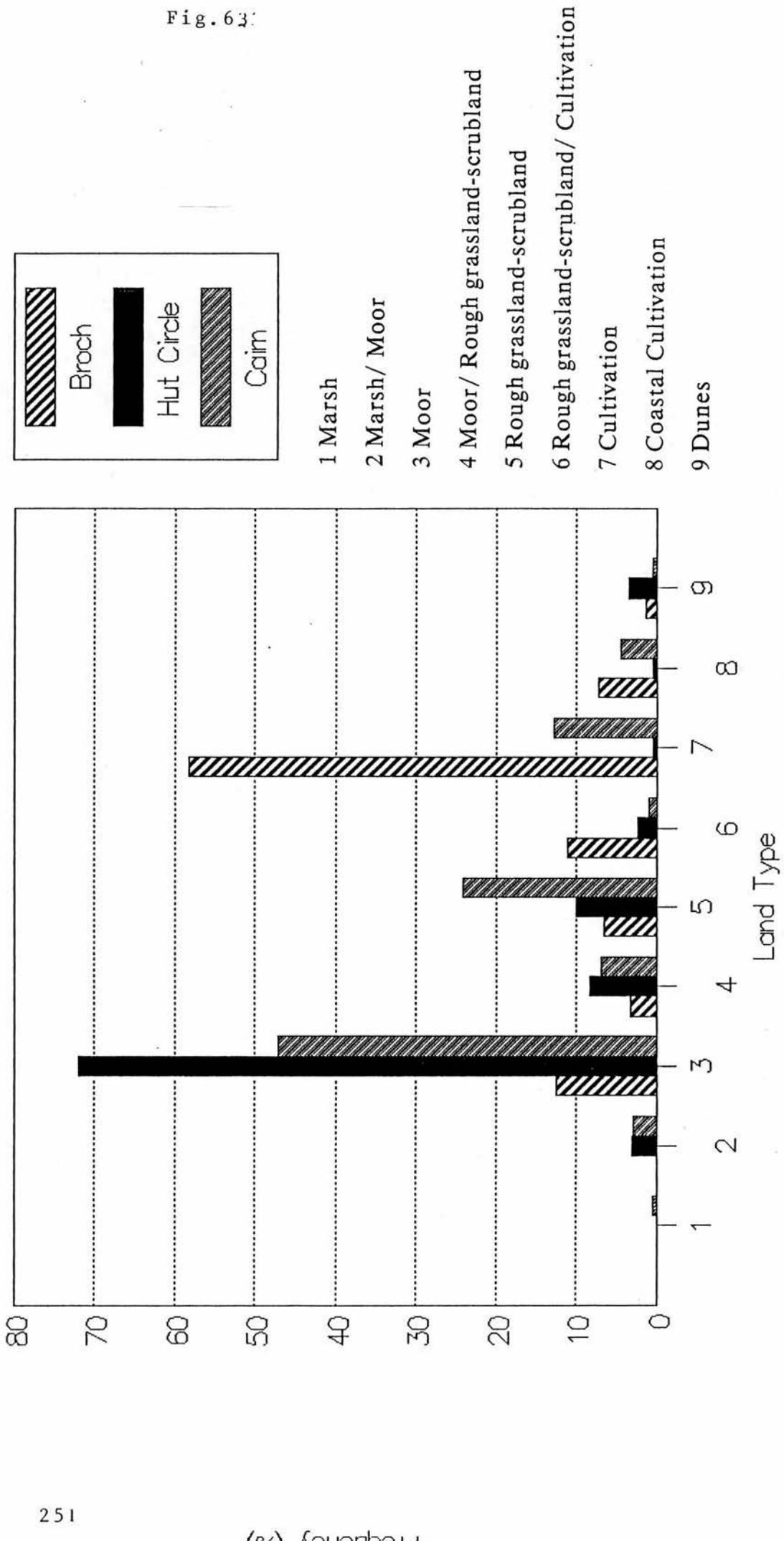
2. Marsh/ Moorland
3. Moorland
4. Moorland/ Rough Grassland - Scrubland
5. Rough Grassland - Scrubland
6. Rough Grassland - Scrubland/ Cultivation
7. Cultivation
8. Coastal situation bordering cultivation
9. Dunes

These divisions relate to those depicted in the 1:25000 Ordnance Survey maps, modern series. There is no implication that the modern categorisation corresponds in any but the most general sense to that throughout prehistory. However it serves as a basis of comparison between the monuments, especially as it is most likely that the distribution of the sites is a function of later activity and more particularly of post-Improvement/ modern agriculture. It may also be considered that, in respect to the Orkney environment "general opinion is that it has in fact changed little since the late neolithic" (Hedges (1975) 81), a situation that would also seem to apply to Caithness (Peglar (1979)) where the lowland is characterised by a lack of tree cover. Thus it is possible that a certain degree of comparability exists, except in the extent of peat-based moorland which, according to the pollen diagram from the Loch of Winless, Caithness, began to spread after the climate became wetter at around 2500 bc, as revealed by an increase in the amount of ling (*Calluna vulgaris*) at around 1500 bc (Peglar (1979)).

Again the major monument forms shall be treated together (see fig. 63), those of less numerous forms separately (see fig. 62). Each settlement type shows a preference for one particular category of land.

Fig. 63:

Land Type



Brochs display a marked tendency for a situation on cultivated land, with 58% of sites so located. The remainder of the graph shows a tapering off to either side of this zone, with the exception of the moorland category, which is the second most popular class of land on which the brochs were situated, with a 12.5% representation. This concentration is probably a factor of subsequent peat growth and it is likely that during occupancy, the land was not so covered, especially as their position is on the edge of modern peat cover.

With hut-circles the degree of association with one land type is more marked, with around 72% being sited on moorland. The percentage decreases dramatically, with a small proportion on the rough grassland - scrubland/ cultivation interface, cultivation or coastal cultivation, as is caused by the destructive quality of later land-use forms. Even the association with a sand dune locality is relatively infrequent, only 3% of the structures falling within this zone.

In the case of cairns, the pattern displayed in the graph differs from the other site types. Here, moorland is the modal class of land type, representing 47% of the monuments. However unlike the brochs and hut-circles where association with one category of land results in a curve up to the mode, with the interfacial classes represented in proportion, in the case of the funerary monuments, the interfaces are underrepresented, the next categories in order of popularity being rough grassland - scrubland (24%) and cultivation (13%). Thus, while brochs and hut-circles are associated particularly with one land type, because of the original distribution or subsequent processes of destruction, cairns are not so distinctively tied to one class of land, although in more frequent association with moorland than any other zone. Factors other than category of land must have played a part in their location, apart

from a general wish to avoid cultivation: prominent placing within the landscape seems to be a significant determinant.

Homesteads, as might be predicted from their exclusively high altitude siting, show the closest correlation with one land class, all but one example, that of Cor Tulloch (ND 1513 3553) which is situated on the interface between a cultivated area and rough grassland - scrubland, being located on moorland. It is probable that the extent of peat growth did not encompass these sites during their occupancy, but their location would still be marginal in comparison with the rest of the county and its settlement.

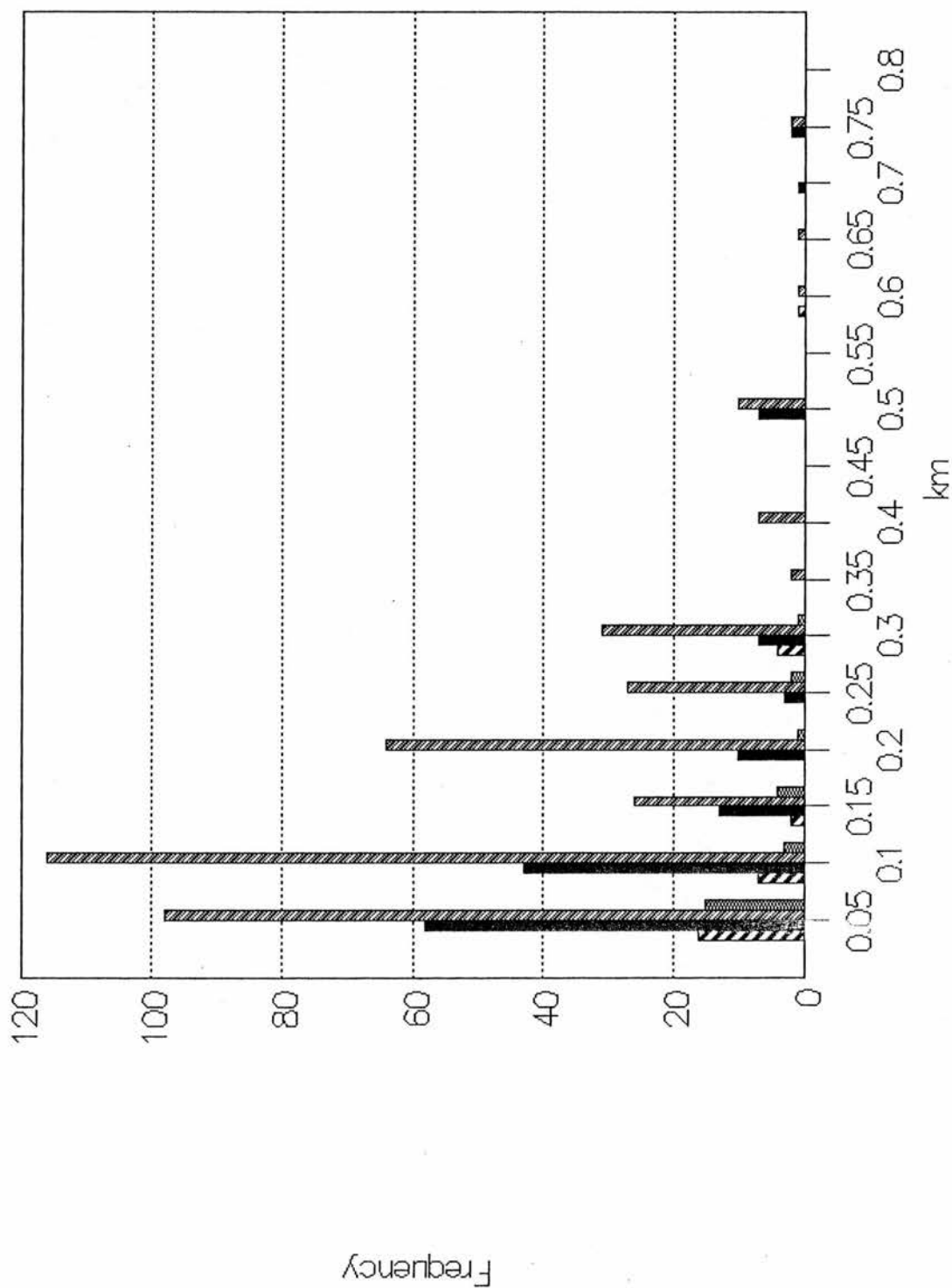
Burnt mounds also have a predilection for a moorland situation, which was not predicted, as Hedges showed that on Orkney they had a marked association with cultivated land (Hedges (1975) 80). This difference is probably due to increased survivability on more marginal land and destruction of better situated sites by agriculture. However, like the cairns they do not display a normal curve around the modal point, suggesting that the choice of one particular land zone did not play a significant part in their locational tendencies, although survival is greatest on moorland. One peculiarity of their location is their high representation on marsh and the moorland/ marsh interface. these categories are avoided by all other domestic settlement sites while only a few cairns were built on marshy ground. This is presumably due to the need for water in the function of the burnt mounds: the three needs of a burnt mound are access to water, a source of fuel and suitable stone, the latter available throughout the county except at dune sites which are avoided by all burnt mounds. Therefore the only criterion which must be met, as access to fuel and stone is not a problem is proximity to a source of water, which is likely to be the predominant factor in their location.

Proximity to a source of water is considered to be the highest priority in pre-industrial settlement location (Chisholm (1966) 103 Fig.8) because of its frequent use by and necessity to the inhabitants of the community and their livestock and the difficulties inherent in the transport from a distance of water and its storage. The importance of proximity to a source of water is also evidenced in the location of pre- and post-Improvement longhouse farmsteads and may also be seen in that of prehistoric settlement sites, though not in the siting of funerary monuments (Fraser (1983) 61). The distance from a source of water of burnt mounds, brochs, hut-circles and homesteads was plotted (see fig. 64), showing actual numbers of monuments to prevent distortion when the numbers of sites varies greatly between groups.

The proximity of burnt mounds to water was already suggested as the prime factor in their location and this was supported by the modal class which represented that closest to such a source, from 0-0.05km, with a marked drop in numbers as the distance increases. However there are a number of sites which appear to have been situated relatively far from a source of water at 0.3km and 0.6km, numbering four and one mound respectively. All these sites are located in one area where there is a concentration of burnt mounds and hut-circles at Achnaclyth (ND 09 32). It is possible that there has been an alteration in the water systems of this area or some inaccuracy in the Ordnance Survey maps. With the exception of these sites, all others fall into a range of 0 - 0.15km, the most restricted of all settlement forms in Caithness.

The determination of proximity to a source of water is difficult in the case of brochs: the cultivated areas of Caithness, as revealed in the Improvement records of the county, have been subject to

Water Source: Distance



intensive ditching and draining operations and therefore the original course of streams is often unobtainable. Nevertheless the brochs display a tendency for a situation close to water, the class of 0 - 0.05km being modal. The range is wide, up to 0.75km distance from a water source. This is probably due to the provision of some brochs with an interior well, as revealed on some of the excavated sites: at Kettleburn (Rhind (1853) 215), Bowermadden, Dunbeath, Harpsdale and Skinnet (Anderson (1874) 143-144), Keiss Harbour, Keiss Road broch (Anderson (1901) *passim*) and Crosskirk (Fairhurst (1984) 57-59), rock cut cavities often approached by steps and often still filled with water. At Crosskirk it was doubted whether the well would have held much water. Fairhurst has raised uncertainties about the interpretation of these and other tank-like constructions as wells (Fairhurst (1984) 59) but in the examples where the presence of water was noted, such a function seems to be most likely. Therefore it is possible that on brochs situated relatively far from water there were interior wells.

Hut-circles display a slightly less close link to water with a modal class at 0.05 - 0.10km, and a steady decrease to 0.75km. Over 50% of the structures fall between 0 - 0.10km however, so proximity to a source was of importance. In the case of those far from a source of water it is difficult to provide a reason: located in the highland of Caithness there has been little alteration of stream courses by draining and it would seem likely that the original pattern is represented.

The modal class related to homesteads was that between 0 and 0.05km, with a marked decrease of frequency associated with farther classes. Their range is almost as restricted as that of the burnt mounds, from 0 - 0.3km. This is probably because in upland situations, an optimal position for exploiting the available resources is closer to rivers than in a lowland

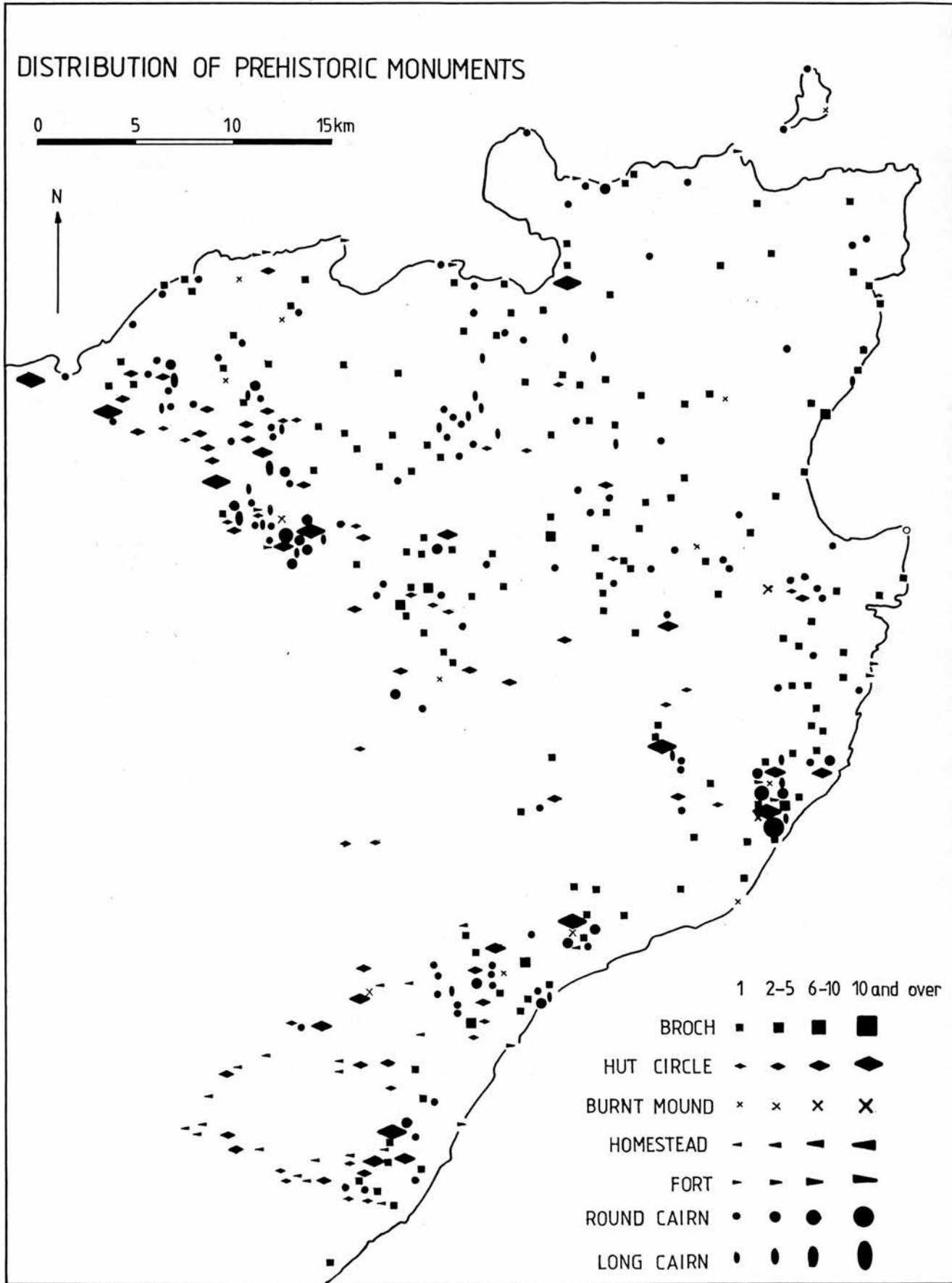
area, because access to arable/ meadowland is more important than to pastureland and in the upland zone cultivation is often confined to haughland, next to rivers and in more sheltered positions.

Therefore it may be seen that all settlement forms have a tendency for a location close to water, as was predicted. As a criterion for preferential location, it was most important to burnt mounds, followed in descending order by homesteads, brochs and hut-circles. However in an area like Caithness, the significance of this close correlation is not evident: the county has, especially in the lowland zone, extensive river systems of which the Thurso, Forss and Wick Rivers are the most important and extensive. It may be considered that even after the draining operations which facilitated Improvement cultivation and sheep-farming it might be more difficult to find a site far from a source of water.

In a study of surviving monuments it cannot be emphasised too strongly that the present distribution (see fig. 65) may be divided into two categories: those representing the original focus of settlement - coast, river valleys and low-lying land - and others reflecting the remains of more marginal land-use systems. It is ironic that it is the latter areas which now possess the densest concentration of surviving monuments while in the former areas only the more substantial - and dispersed - sites are found.

As stated above the most geographically restricted settlement form in Caithness is that of the homesteads, which concentrate in the South West of the county in Latheron parish upland zone. They have strong associations with the Langwell, Berriedale, Dunbeath and Houstry river valleys, generally in the upper reaches beyond all but the most remotely situated hut-circle settlement. However without further investigation

Fig. 65



their economic basis may only be inferred as being predominantly of a pastoral and/ or hunting nature.

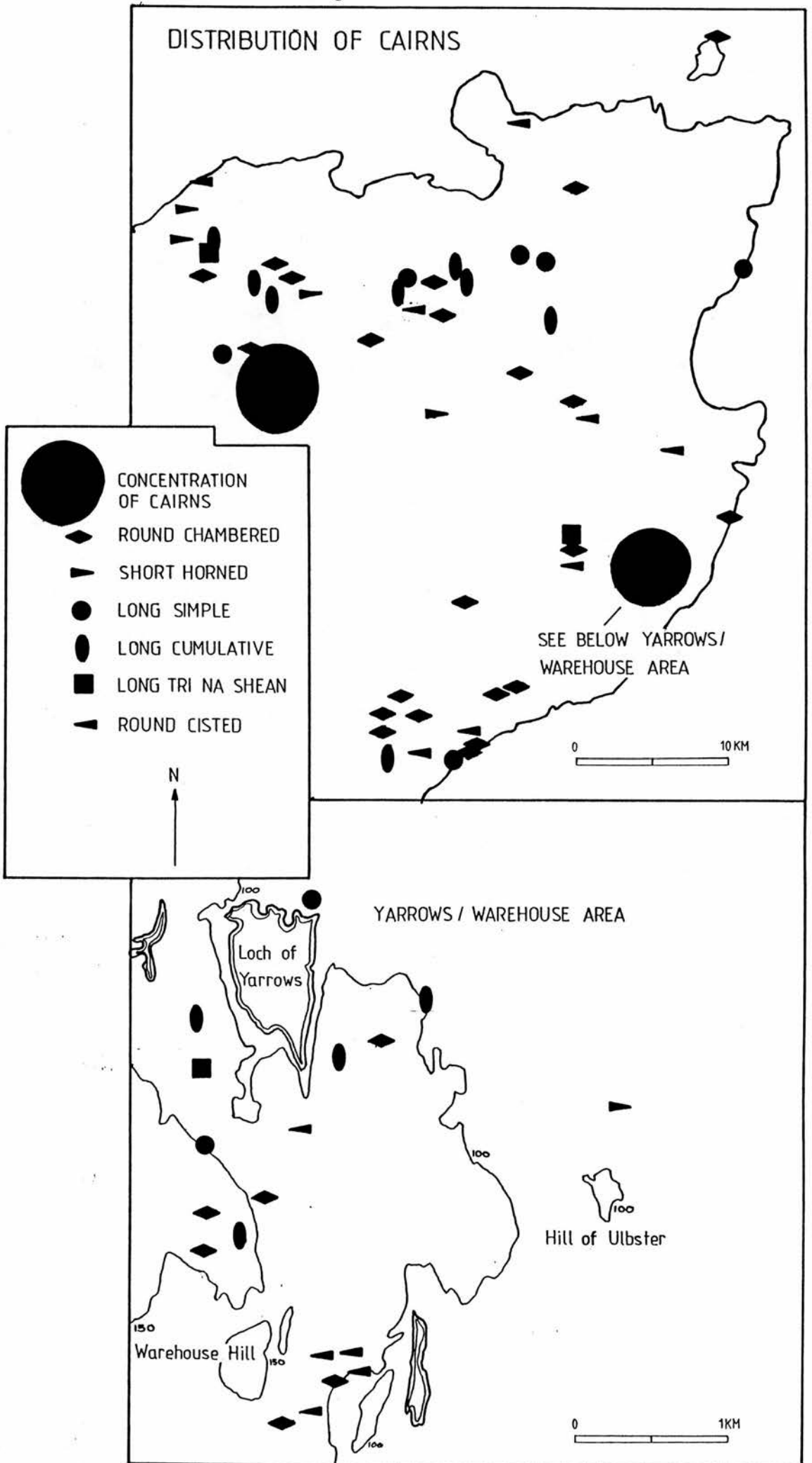
Brochs are a form of settlement sited close to arable land in riverine, coastal and lowland areas. While their distribution is clustered into these agriculturally advantageous settings, within these concentrations their distribution is dispersed and even. As is demonstrated above, there is a relationship between brochs and the major farmtowns of the pre- and post-Improvement periods, with names of Norse farm derivation. While one element of this association is the replacement of post-broch occupation by Norse farmsteads which have continued in use up to present, and re-use of optimal sitings for exploitation of the environment, the implication is that the inhabitants of the brochs may have farmed a similar area of land as the farmsteads/ farmtowns, possibly with a similar population as the pre-Improvement farmtowns all housed within the broch and its outbuildings unlike the farmtowns in which settlement was more dispersed in a scatter of longhouses and one major farmstead, the Mains. This would imply that a different form of land holding existed from that associated with the longhouse farms, possibly one with a more centrally organised farming system because of the greater centralisation of the population, rather than the proprietor/ tenant or proprietor/ tenant/ subtenant relationships in which part of the proprietor's control of the land was secondary or even tertiary ie. that part farmed by the tenants as opposed to the mains. Whether this implies that the brochs had a more hierarchically or communally based agricultural system could be debated: from patterns of settlement it is impossible to determine the basis of land holding as is demonstrated by the Norse and pre-Improvement systems wherein converse principles of land tenure produced a similar pattern of settlement.

The degree of comparability between the distribution of brochs and pre-Improvement farmtowns did not extend to the basis of economy: brochs supplemented their agricultural products by hunting, gathering and, where relevant, beach-combing and fishing. Although the smallholders in the historical period added to their resources by fishing and hunting seals and sea birds (see above, Secondary Sources Chapter) the exploitation of wild game, while it may have occurred goes unrecorded because of its illicit nature: those writing about the tenants' life and economy were not in a position to describe the frequency of poaching.

Hut-circles have a tendency towards a highland situation in the South West and North West of the county, decreasing steadily in frequency towards the North and East as the land becomes of an increasingly lowland nature until almost absent from the Duncansby/ Canisbay area. The limits of their distribution is virtually the line running North West/ South East between the Thurso and Wick Rivers: it is a temptation to invest this division with a continuing and profound significance in the history of settlement in Caithness, as it also marks the boundary between the areas in which Gaelic and Norse place-names are respectively dominant. However its demarcation is more likely to be the highland and lowland zones of the county. The increasing scarcity of hut-circles is a result of increasingly intensive agricultural activity. If a historical parallel to the hut-circle distribution is sought, probably the closest is that of the farmsteads of the small tenants. However the marginal nature of the land on which hut-circles tend to survive militates against a close correlation either in population or economy although the comparability may be closer in less marginal areas. However such speculation with the absence of any hut-circles is meaningless.

The distribution of funerary monuments is complex: while tending towards land unsuitable for cultivation, there would also appear to be a conflicting pressure to be situated close to settlement for ease of access and to be visibly attached to a piece of land and for a prominent position in the landscape. Such locational trends were seen in Orkney, where the association of each cairn with one area of farmland and perhaps vice versa was implied with a symbolic link between the tomb and the land (Fraser (1983) 278). However unlike the situation in Orkney where there was a "pronounced tendency" to be close to the coast, interpreted as a reflection of the concentration of human activity in this sector, with high cliffs preferred to beaches (Fraser (1983) 312) there is less tendency for such a setting in the Caithness sample. Only on the strip of coastline from Noss Head to Clardon Head were there any tombs so situated: this may imply that Caithness tended to look inland than outward towards the sea or that where major river valleys penetrated the interior there was no need for such an emphasis on the shoreline as occurred in the Northern Isles: the area in Caithness where coastally sited tombs predominate has no such associated rivers. It is also in this area that coastally situated settlement concentrates: Freswick Links settlement, Skirza Head, Keiss Harbour, Nybster, Rattar I and II brochs. While not contemporaneous with the construction of the tombs, the siting of neolithic settlement may have occurred in a similar coastal setting because of the poor quality of the land in the interior which may have necessitated a greater emphasis on coastal resources. It may also indicate sea routes from the Northern Isles to Caithness: in some cases - for example the cairn at Dunnet Head and on Stroma - the cairn would appear to have been located not close to settlement but to be seen from the sea, possibly indicating a secondary function as land marks in a marine setting. When the monuments of

Fig. 66

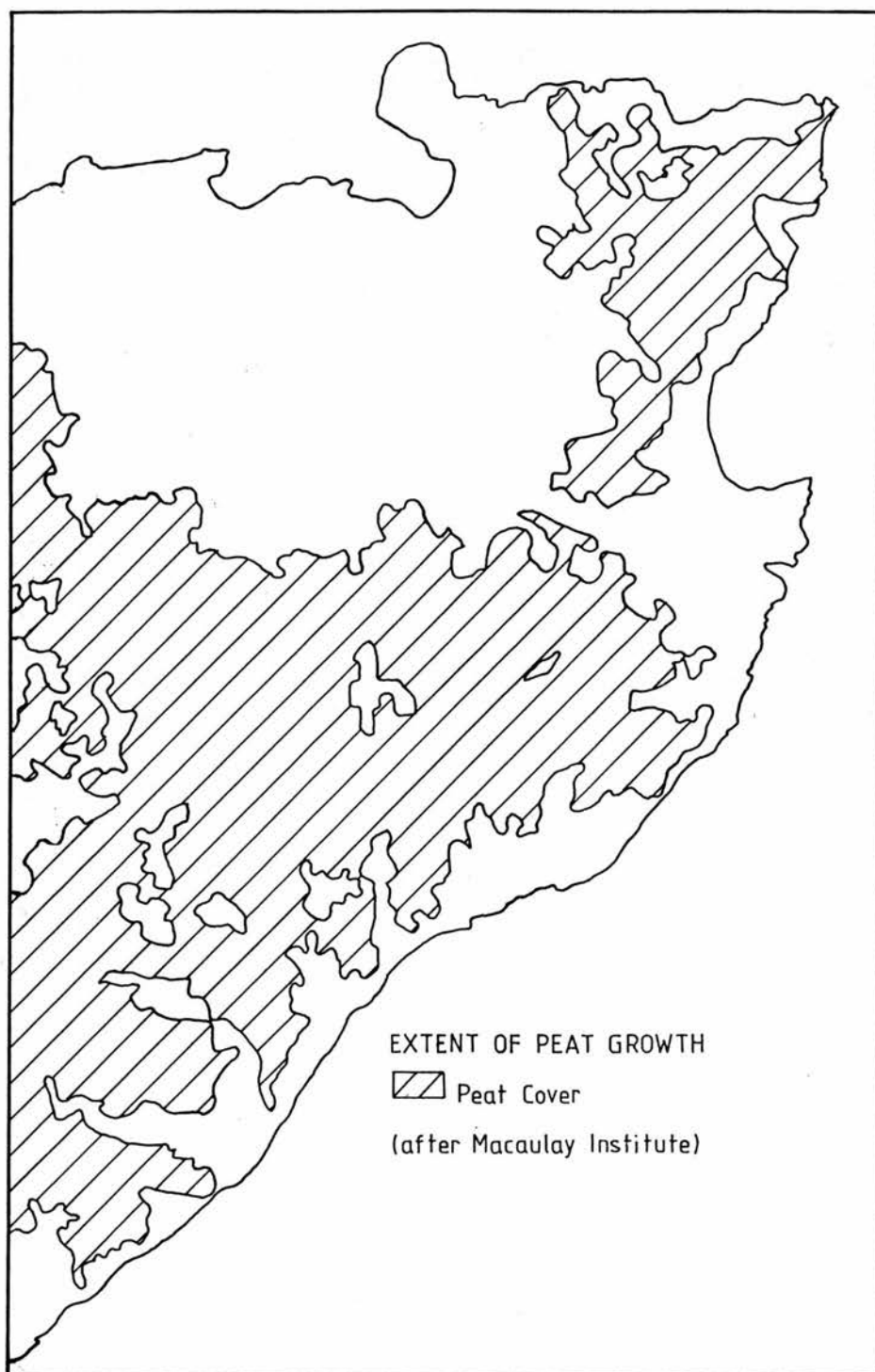


known structural form (ie. simple long, cumulative long, Tri na Shean long, short horned, round chambered and round cisted were plotted (see fig. 66), there appeared to be little pattern in their distributions, only monument clusters at Dunbeath, Sordale, Yarrows/ Warehouse, Shebster, Loch Calder and Dorrery. Even within these clusters there was little pattern, as in the Yarrows area (see fig. 66), although there round cisted cairns had a tendency to concentrate on the West slope of Yarrows Hill. Probably a larger sample of cairns of known typology is needed before any distributional distinctions, caused for example by chronological differences, can be appreciated.

While round cairns of all forms are scattered peripheral to settlement the long cairns would appear to be clustered together: at Shebster, Dorrery and Sordale Hill in the North West and in the Yarrows/ Warehouse area in the South East, although also appearing outwith these concentrations of cairns, both round and long. The reason for the greater degree of clustering in the case of the long cairns is not evident. All cairns have a tendency for location in prominent places, false crests often being built when natural ridges or hills do not occur (Mercer (1985a) 24-25). Such a siting is typified by the monuments on Sordale Hill where the cairns could be seen from the upper river valley over which they were built. Although by no means at the absolute summit of Sordale Hill, from the river valley, the area of land with which they are most strongly associated, they are silhouetted against the sky-line.

One major factor in the distribution of all monuments in Caithness is the existence and growth of peat (see fig. 67). The central area of Caithness appears to have been devoid of human activity in terms of structural remains. However as it is likely that later peat growth has obscured any traces of prehistoric settlement the avoidance of this area

Fig. 67



cannot be assumed: nevertheless in some parts of it the extreme remoteness and nature of the soil and environment must argue against such settlement. However on the periphery of the present day peat limit there are monuments which peat growth has been unable to smother. Often the subsequent formation of a peat cover has helped to preserve the structures as it has rendered impossible further agricultural activity: the Tormsdale brochs, for example, preserved to such an extent that outworks were visible; the Dirlot hut-circles, burnt mounds, cairns and stone-rows; the Camster brochs, hut-circles and cairns; Greysteil Castle near Loch Rangag, a broch so well preserved that the dimensions could be accurately recorded without excavation. Therefore, while the peat growth has probably obscured areas of settlement, it has also preserved other monuments on its fringes.

The main conclusions from this examination of land-use and settlement patterns are as follows:

The inhabitants of Caithness throughout prehistory would appear to have subsisted on a broadly based economy whereby arable and pastoral resources were exploited as well as the hunting of wild game, gathering of wild plants and use of littoral and marine resources. In marginal settlement there is evidence of shifting agriculture, exploiting resources as they became available. As they became exhausted or environmental conditions deteriorated from natural causes, such as climatic decline, they were abandoned, to be re-occupied either when conditions improved or as pressure on land resources was such that more marginal ends of the spectrum of land capability was necessarily utilised.

Where locational preferences were concerned, certain trends could be distinguished: the association of brochs with lowland arable, homesteads

and hut-circles with a more highland situation either because this was the original pattern of settlement or because it was in this area that structures survived. While predictable preferences were evidenced as regards aspect of site, the reliance on a favourable aspect was by no means as great as would have been anticipated. There was also a possible distinction between the aspects favoured by low and high altitude sites, although whether this is a function of selective survival of sites or representative of the original locational tendencies is uncertain. The association of particular settlement sites with specific categories of land was also marked, although in the case of funerary monuments and burnt mounds a different pattern was displayed, revealing that locational preference was made on a differing basis.

However the most outstanding conclusion to be made from this study is that the major influence on the settlement pattern of prehistoric sites in Caithness is that of subsequent processes of land-use: in particular those dating to the Improvement period and after where a re-shaping of the landscape and methods of its exploitation destroyed many monuments through ditching, draining, enclosure and road building and the introduction of the deep plough. This left only substantial monuments in lowland areas. If the countryside is to be viewed by the archaeologist as a palimpsest of past activity, the Improvement and post-Improvement periods scoured much of the traces of prior land-use from the parchment. Only in more highland areas does a fuller representation of former land-use and settlement survive, leading to a distortion of the image by laying emphasis on land-use of a more marginal character. In areas with an unusual history of land-use - for example the Forse Common (Mercer, forthcoming a), the density of monuments implies the number of sites that must have been lost elsewhere. Future research

must examine more recent agricultural patterns to determine the most profitable or representative areas of investigation which will provide a view of prehistoric land-use and settlement patterns less prone to distortion by subsequent formation processes.

CHAPTER 8: CONCLUSION

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The conclusions which may be drawn from this study of the land-use and settlement patterns in Caithness are as follows:-

In the historically documented period, the agriculture associated with the traditional and Improvement farming systems were examined. The traditional pattern of agriculture occurred in patches of rig-and-furrow centred, as one would expect on the coastal plain, along river valleys and on loch edges, becoming more dispersed and of smaller extent in upland areas, as seen on Roy's Military Survey. Not only the best quality land was cultivated but also that relating to the Macaulay Institute's land capability Zones 5 and 6. Thus either the prevailing method of farming or economic forces made the cultivation of these areas possible or necessary.

In the highland zones which were rented under mainly single or double tenancies, a money rent only tended to be demanded, though often this was paid in dairy produce or cattle, the most significant element of the economy in these areas. In more lowland areas where arable cultivation was of greater importance in the economy, the tenancies were more often multiple and the rent charged consisted of a money rent but also a combination of goods in kind and services. Such differences were the natural result of the differing bases of the agriculture and the poorer agricultural potential of the land in the uplands. From the secondary sources, the division between upland and lowland zones could be drawn between the highland parishes of Latheron, Reay and Halkirk and the remainder of the county.

Although the conversion of rents and services into a money rent was considered to be the first form of Improvement by contemporary authors, it could be seen that, as in the upland areas under the traditional form of land tenure, even when money alone was charged, payment continued in farm produce and services to the Mains. Thus such conversions would appear to be nominal, with traditional methods of payment persisting.

Other Improvements were implemented at a later date in some parts of the county than that suggested by contemporary sources. By the time of the O.S.A., ie. the late eighteenth century, Improvements were frequently reported as affecting only the Mains, a situation also current at the time of the N.S.A., although Improvements would appear to have been more widespread in some areas. Such a situation is also implied by the primary sources which indicate that in some areas by the mid-nineteenth century such basic and introductory Improvements as the excavation of leading drains and the use of the deep plough had not been extended to or used by the tenantry.

The progress of the Improvements made by the pioneering Sinclair of Ulbster on the Thurso and Halkirk parish estate reveal the chronology and indicate that the new forms of agriculture occurred after he wrote about Improved land management. Only after 1816 was there any mention of the construction of ditches and drains. Also in this account book spanning the years 1812 - 1820 there was mention of new strains of cultivars, though whether these were confined to the Mains or universally grown is not indicated. From the evidence of the secondary sources they were most likely only grown on the Mains. After a break in the accounts from 1820 - 1831 drains, ditches, hedges and enclosures were being built to subdivide properties. There were new intakes of land

for cultivation and new settlers introduced to these areas, who were also given some land already under cultivation and financial assistance.

Such processes were charted on the estate plans, particularly that of Shebster which showed initial enclosure in some parts of the township by leading drains, although the land cultivated within them remained in patches. This grid was subsequently infilled and the system extended to cover the entire cultivated area of the township, the cultivation by that time being extended and respecting the field boundaries. Tenants' steadings built on these areas were deserted. On the upper area of the township, the area of West Shebster, there was a different sequence of events. During the Improvements, the tenants farmsteads were associated with irregularly shaped enclosures before being abandoned, implying that there was an attempt at stock rearing, probably of sheep, before the estate was converted to sheep-farming under the direct management of the proprietor.

The evidence from Shebster links with that from other townships about differences in the composition of the holdings prior to and after Improvements. In the traditional system, the holdings possessed a share of all types of land but during the Improvements the holdings tended to be of either arable nature or pasture, with greater standardisation of the size of arable holdings. This may be supported in the evidence of West Shebster where the holdings were of pastoral nature.

Shebster also exemplifies that different processes of Improvement occurred in the highland and lowland areas of the county. In the lowland region, the tenants would not appear to have been immediately affected by the Improvements and the traditional systems of agriculture persisted until around the early-mid nineteenth century. In the upland zone the tenants were affected by the conversion of farmtowns to sheep-farms,

with the clearance of tenants from the land. In the lowland, as witnessed in the Ulbster records, there was a rise in population associated with newly settled land and, in the Thurso River Valley, the flagstone industry, followed by a decline in the mid-late nineteenth century. In the upper reaches of the Thurso River Valley there was no such increase, but rather a process of desertion of steadings and farmtowns.

In the Upper estate of the Freswick property, the population decline was dramatic during conversion to sheep-farming, an event accompanied by disturbances on the part of the tenantry afraid of being displaced from their holdings. In lowland estates there was a less drastic fall in tenant populations, but rather a decrease to levels slightly lower than those prior to the rise in population that heralded the start of the Improvements.

The most problematic aspect of the historic study was that of the yields achieved by the farmers, revealed in both primary and secondary sources as being very low indeed. While the number of relevant references and documents is small, it is difficult to assume that all the evidence, particularly that of the primary sources, is inaccurate or abnormal in character. Further investigation of the agricultural productivity of traditional and Improved farming systems is necessary to clarify the problem.

There was little change in certain aspects of the economy between the traditional system and the Improved methods, most notably in the distribution of the farm produce to the Mains, the farm labourers, minister, school-master and merchants.

The pre-Improvement farmsteads, which were more sophisticated and less basic than was implied by some "Improving" authors, continued in occupation into the Improvement period. Those built during the

Improvements revealed a similar range of farmstead types although building materials and methods were altered, in particular with the association of the later structures with a foundation trench, which may be considered a diagnostic feature. There were certain units of differing function in use due to new farming techniques - turnip stores, carhouses and shearing sheds.

In a study of the deserted farmsteads in the Latheron area, two main forms of structure were identified: the byre dwelling, whose original function was of byre and living area and the crofthouse where the original unit was for residence only. The differences between these two types of farm was chronological, the byre dwelling being the earlier form. The crofthouse may be seen as the ultimate result of an increasing separation of animal housing from living area. However the linear addition of units to the original structure was prevalent with the frequent association of crofthouses with byres indicating that the basic farming unit of the county consisted of a byre and dwelling.

The longhouses could be divided into three classes as to function: whether they were for residence or whether producing or processing occurred on them.

Those for residence only were crofthouses with no additional units, though often small annexes were attached, their function being little more than toolsheds from their size. These were occupied by farm labourers or craftsmen and probably produced on a personal basis as they were often associated with kailyards.

Those with a producing function consisted of byre dwellings and crofthouses with byre attached, interpreted as being occupied by crofters or small tenants. When the added units were constructed as a separate range from the residence in the case of crofthouses, the extra units,

generally a byre and barn, were built at right angles to the residence. While such a layout occurred in the case of byre dwellings, they were more frequently arranged in parallel pairs. The parallel arrangement is therefore interpreted as the earlier form also implied by its depiction in estate plans dated to the time of the Improvements. Also pertaining to this group of farmsteads is the large byre dwelling which possessed more original units than simply a byre and living area. Sited in the upland zone, it is thought to relate to a farming economy with an emphasis on stock raising, where more animal accommodation was required.

Processing units were only in existence when producing units, such as animal housing, were also present and were associated with the most complex farmsteads: one processing unit was the winnowing barn, built at right angles to the main axis of the steading to obtain the most efficient draught. It was more frequently associated with byre dwellings than crofthouses unlike horse-walks whose association with crofthouse steadings was stronger, implying that the latter is probably a later form of processing. In association with crofthouse residences were complex farmsteads, arranged in a courtyard layout, all of which possessed processing equipment. It is likely that these processing farms employed labourers from their large size.

Differences in the nature of the surviving type of farmstead may be indicative of varying processes of land-use. This could be seen at West Shebster where all upstanding deserted farmsteads were of byre dwelling form, implying that their desertion due to conversion to sheep-farming occurred before the construction of crofthouses was current. In the Thurso River Valley, however, the upstanding abandoned farms were of crofthouse type, inferring that the Improvements to arable and

establishment of the flagstone industry resulted in the destruction of byre dwellings and the construction of crofthouse farms.

Throughout the mid to late nineteenth and twentieth centuries, as is evidenced by Ordnance Survey maps, few new farmsteads were built and there was a process of retreat from the uplands to the lower slopes, a process of depopulation that continues in the agricultural areas of Caithness today.

Furthermore there was evidence on the economic basis and success of the Improvements in Caithness. The Sinclair of Ulbster papers demonstrate (fig.10 p78) the variability of amounts of money spent on Improvement projects both in percentage and absolute terms. There were peaks of expenditure in 1833-4 and from 1870-76, although it should be noted that there is a twenty year break in the records. It is tempting to associate the decline of expenditure from 1876 to the end of the records in 1880 with the economic depression that affected British agriculture at that time. Although no comparative material from Caithness was located, it would be of value to determine whether the pattern of fluctuating expenditure, discussed above, is replicated on estates elsewhere in Scotland. Such a study would permit consideration of a longer timespan than that available from the Ulbster papers. The expenditure peak of 1833-4 reinforces evidence presented in this thesis that in Caithness Improvements were implemented at a later date than has been traditionally advanced. It was also shown that considerable sums continued to be used for Improvements until the 1870s. Such a long duration is of interest in the light of evidence which shows that the returns from this investment were not necessarily great - in so far as the accounts are reliable and representative. An example of this was obtained from the accounts of Philips Mains farm on the Sinclair of Mey

estate. While profits here were minimal, at West Canisbay, a nearby farm also under Improvement, a small loss was incurred.

In terms of the destruction of earlier monuments, the impact of the Improvements was difficult to quantify, although it may be suspected that it was considerable. This may be demonstrated by the example of Forss Common where an early plan (SRO RHP 2951) illustrates seventeen cairns. Of these only three survived to be located by recent field survey (Mercer (1981); Hill (1985) 143). Equally in some areas there is evidence that the pre-Improvement landscape of farm buildings has been substantially destroyed. This could be seen at the farmtown of Hoy. Here a number of tenants' steadings, marked on maps of 1820 and 1835, had disappeared in the process of land enclosure by 1853 to judge by further map evidence. Again, modern field survey failed to identify any trace of these structures.

These examples, supported by maps of pre-Improvement agricultural holdings, reveal that the Improvements could entail considerable change to the structural record. However from available data it is unclear to what extent these changes characterised other areas of the county. Nevertheless there seems good reason to infer that this re-shaping of the agricultural landscape affected the original distribution of monuments of earlier date.

In the Norse period, it could be seen that Caithness was dominated by Norse colonists, with their language, culture and political organisation prevailing in the county. It is considered that this process was not necessarily peaceful. Norse land-use systems became established in Caithness, as evidenced in the place-names and measurement of the land in pennylands. The presence of udal tenure was also inferred from the

frequent association of Norse farm-name generics further defined by personal names.

It would appear that the extent of land cultivated in pre-Improvement times was also farmed by the Norse although from saetr names, indicative of Norse shieling sites, whose derivatives form the names of pre-Improvement farmtowns, it might be considered that the limits at one stage of the Norse occupation were less extensive than those reached under the pre-Improvement system of agriculture. There was a correlation between brochs and farmsteads with Norse derived names, as witnessed in the Thurso River Valley implying that the Norse speakers acquired land previously occupied by the native inhabitants and also their settlement sites.

For future research there is a need to understand the reasons that an indigenous population might adopt Norse place-name nomenclature and possibly their language rather than assume that a name of Norse derivation necessarily indicates a Norse colonist. Repeated surveillance of zones of coastal erosion may lead to the discovery of further Norse sites similar to that at Freswick Links. Also, the excavation of a major farm with a name of Norse derivation might demonstrate continuity of settlement from the Norse period and if the chosen farm has a name of topographical nature, as these are considered to be the earliest form of naming, information may be provided about the native-Norse interface.

In the consideration of the prehistoric period, a database was formed with information pertaining to the locational and mensurational data of the monuments. The major monument types were brochs, hut-circles and cairns, with burnt mounds, homesteads and hill- and promontary forts forming smaller groups.

Brochs in Caithness, when compared to those in the rest of the country, present a greater diversity than those of any other region and belong to the average range in all measurements. Percentage Wall Base, which may be used as a reflection of the height or stability of the structures (Fojut (1981) 223), indicated that brochs with large central courts, as they had a wall width similar to those with smaller interiors, were either of lesser height or lesser stability than their smaller counterparts or that the wall width needed for the larger structures was used in the smaller examples. There was an indication of the importance of flagstone as a building material: in both Caithness and Shetland there were dimensional differences between brochs built on areas of flagstone and those built away from this resource, the latter tending to be smaller than the former. Thus the idea that flagstone is an ideal material for construction of monuments is reinforced. Also, as the dimensional differences occurred within regional groupings, the view of regional differentiation and differing development as seen by Fojut (1981) was supported.

In the study of the measurements of all sufficiently surviving hut-circles in the county, the trimodal groupings achieved by Mercer (1985) were also evidenced, although less clearly. There was an implication in a comparison of the internal floor area of the hut-circles with the roofed area of the longhouse farmsteads that either less space was required for the agriculture associated with the hut-circles or that several hut-circles of differing function formed a farming unit.

In a consideration of long cairns, those that were simple mounds were generally oriented North West/ South East, while with the cumulative monuments an orientation of North East/ South West was more common although the significance of this difference in orientation is unclear.

Although there were difficulties in such an exercise, there were indications that simple mounds were smaller than cumulative, while those of the Na Tri Shean group were longest. In the case of round cairns, those containing chambers were larger than those with cists.

In altitude, brochs formed a range restricted to the lower lying land, while hut-circles tended to survive up to a higher limit. The dearth on lower land, apart from small structures on dunes, may imply that less solid examples were destroyed by later processes of land-use. Cairns showed a similar pattern to the hut-circles but did not occur at such high levels. As there was a tendency for the cairns to be situated on the upper or lower edges of cultivation, there is an implication that the limits of cultivation associated with the cairns were lower than those relating to the hut-circles. Homesteads were the most altitudinally restricted form, occurring as a strictly upland monument class.

The relationship between prehistoric monuments and the aspect of the land on which they were built is ambiguous as, while frequently the most favourable aspects for settlement were most popular, less optimal situations were also well represented. Future research may determine the significance of this pattern of locational preference.

In a consideration of the type of land on which the sites were constructed, the settlement groups were distinctly tied to one type of land - brochs to cultivated land and hut-circles, burnt mounds and homesteads almost exclusively to the moorland category. Cairns were not tied to one particular quality of land and it is considered that other factors than land type predicated their situation besides a general avoidance of cultivated land yet construction relatively close to settlement, prominence in the landscape being suggested.

All settlement was closely linked to a source of water, burnt mounds most closely, it being necessary to their function. This was followed in descending order of proximity by homesteads, brochs and hut-circles.

Distributionally, brochs favoured a lowland situation on arable land with a link to farmsteads with a Norse-derived name, implying their farming of a similar area of land. Hut-circles predominated in the upland region of the county, steadily decreasing in number towards the North and East in their present distribution. Homesteads were most restricted distributionally, confined to the South West upland area of Latheron parish. It was seen that there was less dependence on a coastal location than in Orkney - although sites may await discovery on the coastal margins of Caithness - except in areas where there were no river systems to penetrate the interior and permit inland agriculture, forcing greater concentration on littoral and marine resources. Monuments also avoided areas of peat growth, although this is not likely to be a genuine distribution but rather to be caused by the swamping of areas of settlement by peat.

The prehistoric settlement apparently relied on a broadly based economy, with exploitation of domesticated and wild pastoral and arable resources. Marginal land would seem to have been cultivated whenever practicable on the highland and coastal extremes of the county on the fringes of more permanent cultivation.

Due to the availability of surviving field remains for study of settlement and related land-use, this thesis has necessarily involved the consideration of a broad, discontinuous chronological period and has broached questions concerning the survival of archaeological field monuments. It is hoped that this approach, applied to an extensive area of Northern Scotland has indicated avenues of future research.

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APPENDIX I: OLD SCOTS WEIGHTS AND MEASURES

The quantification of the old systems of weights and measures is difficult to ascertain with any exactitude. Below are the local measures of capacity, weight and land measurement with estimations of their equivalents. However, it should be noted that there probably were slight variations: in a statement of the bear crop of 1823 sent from Freswick to Dunbeath (GD 136/ 917) a calculation was made to allow for the difference between the measuring equipment of these places.

Scottish Grain Measure (Capacity):

4 lippies	= 1 peck	One Scots boll was
4 pecks	= 1 firloft	approximately 4-6 English
4 firlofts	= 1 boll	bushels or 256-285 pints or
16 bolls	= 1 chaldar	140 lbs converted to weight.

Orkney Butter and Oil Measure:

24 merks	= 1 lispound	One lispound weighed
10 lispounds	= 1 barrel	approximately 28 lbs.
12 barrels	= 1 last	

(After Shaw(1980)203)

Scots Acre: The Scots acre equalled 1.26 statute acres measured by the fall, not the pole. The fall equalled 6 ells (18 1/2 English feet). The Scots acre equalled 160 square perches, based on a perch of 18 feet.

Pennyland: One pennyland equalled approximately 8 acres, but as it was a measure of land value rather than of area, it might equal up to c16 acres.

(After Adams(1970)passim)

APPENDIX II: GLOSSARY

barrel - measure of capacity, division of last, used for butter, oil etc. (See Appendix I)

bear - strain of barley, a staple crop of Caithness

benlin (stone) - weight at the end of rope used to retain thatch

boll - measure of capacity, used for grain (See Appendix I)

couple (roof) - cruck

cramery-ware - stall-holder's or pedlar's goods

farthingland - measure of land quality, division of pennyland (See Appendix I)

feal - turf

firehouse - living area/ kitchen part of longhouse

firlot - measure of capacity, division of boll, used for grain (See Appendix I)

garron - native horse

gaul - block used for hole in mill dam to allow water to reach the lade

grubber - farm implement used for harrowing

infield - area of arable under constant cropping

last - measure of capacity, used for butter, oil etc. (See Appendix I)

lippie - measure of capacity, division of boll, used for grain (See Appendix I)

lispound - measure of capacity, division of last, used for butter, oil etc. (See Appendix I)

merk - measure of capacity, division of last, used for butter, oil etc. (See Appendix I)

mulching - covering land with manure or peat to prevent soil erosion or fertilise it

octo - measure of land quality, division of pennyland (See Appendix I)

oddle hole - drainage hole in longhouse

outfield - area of arable under a rotation of cropping and fallowing

peck - measure of capacity, division of boll, used for grain (See Appendix I)

pennyland - measure of land quality (See Appendix I)

plaidin - plaid

proofing - method of measuring grain quantity by threshing a sample of the crop

purlin - main cross piece of roof

quatel - share of produce given as part of rent

quoy - heifer or pastureland

scarifier - farm implement used to break up soil to a shallow depth

scuffler - drill harrow

simmon - heather rope, weighted with stones, used to retain thatch

steelbow - form of tenure whereby proprietor provided money, stock and/or equipment for a new tenant for an increased rent

stirk - young bullock or less frequently a heifer after weaning, kept for slaughter at the age of two or three

stot - castrated bullock in its second year or more

tathe - manure

teind - tithe

vicarage - share of crops paid to the minister, part of rent

wedder - wether, ram

wintering - keeping and feeding the cattle of the Mains farm on tenants' farmsteads over winter, part of rent

Some references from Robinson (1985).

APPENDIX III: BROCHS

List of thirty-one brochs used to form database of dimensional information.

NGR ND - Grid Reference

ED - External Diameter (m)

ID - Internal Diameter (m)

WW - Wall Width (m)

PWB - Percentage Wall Base (%)

Broch	NGR ND	ED	ID	WW	PWB
Greysteil Castle	180417	21	12.1	4.45	42.38
Dunbeath	155304	16.7	8.2	4.25	50.90
Appnag Tulloch	212359	18.2	10.6	3.8	41.76
An Dun	103247	14	7.4	3.3	47.14
Burg Langwell	103218	14.6	8.52	3.04	41.64
Ousedale Burn	071188	15.86	7.32	4.27	53.85
Thrumster	331451	20.1	10.9	4.6	45.77
Cairnhill	324493	17	9.1	3.95	46.47
North Watenan	318414	18.5	11.5	3.5	37.84
Brounaban	323435	16	8.7	3.65	45.62
Little Thrumster	338459	17.2	9.3	3.95	45.93
Cairn of Elsay	387519	19.2	8.84	5.18	52.96
Hillhead	376514	17.05	9.14	3.96	46.42
Wester	339583	16.2	8.2	4	49.83
Norwall	327545	16.1	7.9	4.2	50.61

Skitten	323565	19.2	10	4.6	47.92
Keiss Road	349615	17.7	10.4	3.65	41.24
Keiss Harbour	353611	18.8	11.5	3.65	38.83
Whitegate	354612	16	8	4	50.00
Nybster	370631	14.62	6.1	4.26	58.28
Cogle	266576	19.2	8.8	5.2	54.17
Bail a'Chairn	228517	17.6	9.1	4.25	48.29
Hill of Works	291626	16.7	8.8	3.95	47.30
Ness	382666	15.9	6.7	4.6	57.86
Freswick Links	376676	16.9	9.9	3.5	41.42
Skirza Head	398688	15	7	4	53.33
Everley	370683	18.28	8.84	4.72	51.64
Carn na Mairg	134511	15.8	9.4	3.2	40.51
Achlochan Moss I	139531	21.8	10.6	5.6	51.38
Achvarasdal	NC 983647	18	10.1	3.95	43.89
Crosskirk	025702	18.3	9.6	4.35	47.54