

## VIII

### EXCAVATION AND FIELD SURVEY IN UPPER REDESDALE: PART IV

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*With a contribution by Alison M. Donaldson*

THE PROGRAMME of field survey work on the Otterburn Training Area was initially begun in 1975, when as their contribution to National Conservation Year, the Ministry of Defence asked the Field Research Group of the Newcastle Society of Antiquaries to report on the antiquities of the largest military training ground in Britain. The results of the survey together with field work and excavation elsewhere in Upper Redesdale, have formed the basis of this paper, which deals with corn mills and drying kilns, (fig. 1) and of three earlier articles.<sup>1</sup> We are greatly indebted to the Ministry of Defence for granting access and permission to excavate, but most of all for their willing co-operation and continued interest in the work.

Excavation of the Loaning Burn kiln was carried out between September 1980 and February 1981. Grateful thanks must be extended to Margaret Mitcheson, Ron Charlton, Douglas Robson and Irene Robson for their good-humoured assistance and to Mr. T. Carruthers the tenant farmer, for his support. The authors would like to thank Mrs. Alison Donaldson for the specialist report on the grain and wood samples recovered from the excavation, John Gall, Keeper of Rural Life at Beamish Open-Air Museum and Wally Austin of Lanchester for their useful comments on cereal cultivation and methods of drying grain. The authors are also indebted to Professor G. E. Russell of the Department of Agricultural Biology, Newcastle University, for his helpful advice.

#### *Water Corn Mills*

An examination of the documentary sources for Upper Redesdale and Coquetdale reveals a surprisingly large number of water corn mills in operation at a comparatively early date. The Border survey of 1604<sup>2</sup> lists eight mills—Harehaugh, Elishaw, Troughend, Elsdon, Whiskershiel, Kellyburn, Holystone and one in Harbottle demesne lands, while a century and a half later in 1748 the land tax assessments<sup>3</sup> record no less than thirteen water corn mills. The number of mills must be directly related to the quantity of grain grown in this rather bleak and barren upland area and may suggest that there was a greater reliance on cereal crops in the area than has previously been thought. That rig and furrow occurs in these upland areas at altitudes in excess of six hundred feet above sea level (200 m) has long been recorded, but it has been assigned to the Napoleonic era rather than any earlier

period. The operating dates for water corn mills in the area would suggest that much of the higher ploughing is somewhat earlier than the first decade of the nineteenth century as is borne out by the land tax assessments for 1806 which record only six corn mills in operation.

Although not referring directly to Upper Redesdale and Coquetdale much of Macdonald's article "*Agricultural response to a changing market during the Napoleonic Wars*"<sup>4</sup> also points to a much earlier date for the upland rig and furrow. As he states (p. 62) "Often it is assumed that evidence of ploughing on high land is likely to have been produced as a result of such extension during times of high grain prices, particularly during the Napoleonic Wars. The Northumberland material conflicts with this assumption". A number of writers comment on the early upland ploughing, notably Nathaniel Winch.<sup>5</sup> In 1819, he wrote of the landscape of south Northumberland that "an interesting phenomenon presents itself to view in numerous places: here the surface has been cast into equal ridges by the plough, though the land is now covered by heath, and agriculture has formerly flourished in situations so elevated as to preclude the possibility of obtaining corn crops from them at the present day. Record and tradition are alike silent respecting the era when, and the people by whom, these districts were subjected to tillage ... The most considerable elevation above the level of the sea at which wheat is now cultivated, does not exceed a thousand feet. Oats grow at nearly double that height; but in unfavourable years the sheaves may frequently be seen standing among the snow ... The stations of Barley and Rye are between those of Wheat and Oats; but Bigg, a more hardy grain than either of the former, is no longer cultivated". Even earlier, in a letter dated 26th November 1777,<sup>6</sup> Joseph Hutchinson, Lord Tankerville's land agent, stated of Wooler Common that it "has been Rigd & Furr-or Plowd some Hundred years egoe."

More specifically for the area under discussion, an indication of land usage can be obtained from the 1604 Survey.<sup>7</sup> In the parish of Elsdon the infields (winter-steeds) were divided into:

	<i>Freeholders</i>		<i>customary tenants</i>	
	<i>Acres</i>	<i>Roods</i>	<i>Acres</i>	<i>Roods</i>
<i>Meadow</i>	495		577	2
<i>Pasture</i>	4966		4960	2
<i>Arable</i>	761		790	2

But nowhere in the Survey is there any indication of the type or quantity of crop grown in the area at this time. In his *Agricultural Survey* published in 1797 Bailey comments that "the largest portion (of the mountainous districts) extends from the Roman Wall to the River Coquet (with a few intervening inclosed vales) and to the moors north of Rothbury ... being in general extensive, open, solitary wastes, growing little else but heath, and affording a hard subsistence to the flocks that depasture them."<sup>8</sup> It is John Hodgson who is most forthcoming on the agriculture of the Upper Rede and Coquet valleys. Writing in his *History* in 1825<sup>9</sup> he states that "The cultivated grounds are chiefly confined to patches along the valley, and

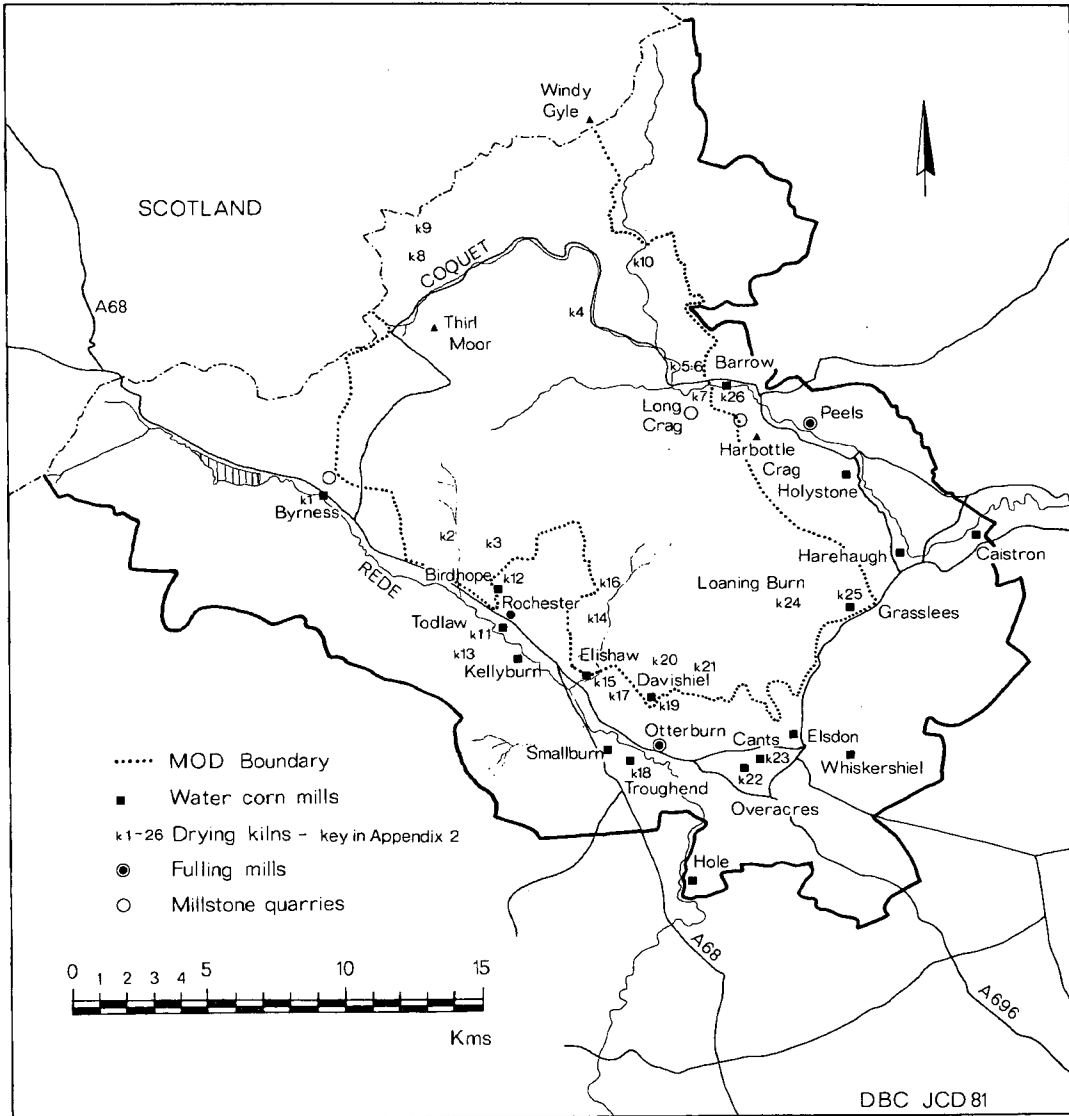


Fig. 1. Distribution map of water corn mills, corn-drying kilns, fulling mills and millstone quarrying sites in Upper Redesdale and Upper Coquetdale

the first slope of the lands that rise from the haughs that skirt the margin of the Rede, and of its tributary streams. Here, in favourable seasons, oats, barley, potatoes, and turnips, of excellent quality, are produced: wheat seldom answers well."

Hodgson also noted that "The unsteadiness of the climate of Redesdale is not,

however, the only cause why agriculture cannot be profitably pursued within it. Its contiguity to the fine corn lands of Scotland, and a turnpike road through it, have been the means of introducing meal and flour into it at a lower price than they can, upon an average of years, be produced for on its own lands. [sic] Hence fewer ploughs are used here of late years than formerly were; and the eleven corn mills ... that existed within the parishes of Elsdon and Corsenside in 1663, were all either entirely ruined or disused, except that of Elsdon, in the beginning of the year 1825”.

An examination of the remains of the water corn mills in the area indicates that most were small structures (fig. 1). Two-roomed mills measuring 13 × 5 metres e.g. Todlaw, Overacres and Davishiel, predominate, although those which continued to work into the nineteenth century e.g. Grasslees and Elsdon, were more substantial. All are sited beside small, natural sikes or on man-made mill races. Many of the head races are of considerable length, that at Holystone for example, exceeds 900 metres, although the one at Cants Mill, which is more typical, is approximately 450 metres in length. Both were regulated by sluice gates and for most of their respective lengths have been stone revetted. Feeder ponds to supplement the water supply are shown on the 1866 OS map above Grasslees Mill, and a documentary reference indicates that there was also a feeder pond at Cants Mill in the late seventeenth century.<sup>10</sup>

With the exception of a reference to “the recently added over-shot wheel” at Holystone Mill,<sup>11</sup> the evidence to indicate the type of water wheel e.g. overshot, undershot, pitchback etc., at the other mills is now lacking. Even the number of millstones in use at each mill can no longer be determined. That two stones have survived in the ruins of Elishaw Mill, and four at Grasslees Mill does not really help. All six appear to be of local sandstone and no makers plate or mark has been found on any of them. Even the two French burr millstones, now used as garden furniture, at Elsdon Mill lack any indication of provenance, as do the two intact millstones and eighteen large fragments of local sandstone origin. The last corn mill operating in the area, the structure remains intact, although the building has been gutted of all machinery and converted to a private residence.

The printed evidence for barley and oat cultivation in the period from the seventeenth to the mid-nineteenth century is corroborated by the excavation report on the corn drying kiln at Loaning Burn and also from occasional references in archive sources. For example, William Apedaile writing in 1809 to his agent John Potts, commented that he had ordered a new belt to replace the one damaged “on the barley mill wheel” at Cants Mill.<sup>13</sup> The same correspondence provides details of leases for both Cants Mill and Elsdon Mill, but, as with other mill leases which have survived for the area,<sup>14</sup> provides no detail on the type or quality of grain to be ground in the mill. Towards the end of the nineteenth century the decline in the milling industry in this part of Northumberland is reflected in Seymour Bell’s survey of Holystone, undertaken in 1877.<sup>15</sup> In his report he stated that “all Holystone village belongs to Mr. Clennell including the water power flower mill—an old building grinding batches and makes flour.” A batch was a small quantity

of meal for family use, frequently an amount paid in kind to the agricultural labourer, who took the grain to the miller, to be made into batches.<sup>16</sup> The mill at Holystone is referred to again about this time, as being used "mostly for barley. For shel-ling the barley they [the millstones] were used perpendicularly, for oats, horizontally".<sup>17</sup>

All of the corn mills in the area were connected with small farmholdings which implies that it was not possible to make a living solely from grinding grain. Indeed the mill tenant is frequently referred to as "farmer and miller" in the Census returns and directories. Several families had long associations with the mills of Upper Redesdale and Coquetdale. The Dunn family for example were occupiers or tenants at Harehaugh Mill in 1721, Hole Mill between 1737 and 1741, at Davishiell in 1755, with one member of the family at Troughend Mill in 1760, and other relations at Todlaw Mill at least from 1760 to 1781. The two families however, who are most closely associated with milling in the area are the Halls and the Olivers. The Hall family, who eventually became owners of Elsdon Mill, appear to have been millers there from about 1760 to 1938. The Oliver family, after operating Birdhope Craig Mill between 1808 and 1810, Cants Mill 1814 to 1817 and Barrow Mill from about 1830 to 1841, are primarily linked, from 1818 to about 1914, with Holystone Mill.<sup>18</sup>

### *Millstones*

Considerable quarrying of coarse sandstone outcrops in Upper Redesdale and Coquetdale have been carried out in the past to obtain stone, not only for building purposes but for millstones, and presumably grindstones. As D. G. Tucker<sup>19</sup> states in his paper "there are numerous books and articles about windmills and water mills but little is ever said about the millstones ... yet the millstones were the whole point of the mills existence" (p. 1).

Beside the bleak Harbottle Lough (NT 899 047) are the extensive remains of shallow quarrying and some sixty whole and broken millstone roughouts are scattered about the hillside. The site, known as Millstone Edge, has a long history, "the digging of mylstones on Harbotle Cragg" being recorded in the 1604 Survey,<sup>20</sup> again in 1618,<sup>21</sup> and also in 1717.<sup>22</sup> The production of millstones appears to have ceased at the beginning of the nineteenth century as J. Hardy noted in his account of the Berwickshire Naturalists Club visit to Harbottle in 1887.<sup>23</sup> In a footnote to the article, R. Simmons recalled the use of the millstones from Harbottle at the mills of Holystone, Barrow and Netherton. The suitability of the sandstone for millstones is further attested by the location of a previously unrecorded small quarry and three millstone roughouts at Long Crag (NT 917 043) overlooking Linshiels Lake, and the name "Millstone Crag" on Byrness Hill (NT 774 033) on the western edge of the area surveyed (fig. 1).

### *Corn drying kilns*

References to small, rural kilns for drying agricultural produce in the upland areas of northern England are not common, nor as an archaeological structure have they received much attention unless attached to the larger nineteenth century mills.

The first modern article on the subject was by Sir Lindsay Scott<sup>24</sup> in *Antiquity*, 1951. Eleven years later J. Scott Elliot<sup>25</sup> published an excavation report on a grain drying kiln in Dumfriesshire. But it was Hermann Ramm<sup>26</sup> who first drew attention to the presence of this type of field monument in the upland areas of the Border Counties in *Shielings and bastles*, published in 1970. He recorded the remains of seven round corn-drying kilns in the parishes of Bewcastle and Askerton, five of which were associated with farmsteads dating from the sixteenth to the eighteenth century.

Contemporary documentary sources provide the present day researcher with little evidence other than noting the existence of a kiln. The earliest reference to a kiln in the area studied is pre 1717, when "a malt kiln, out of repair and not used" was recorded on the estate of George Rutherford of Biddleston, at Harbottle.<sup>27</sup> Bailey and Culley, writing their agricultural report in the 1790's<sup>28</sup>, fail to mention drying kilns, but the Commissioners enquiring into the management of the Greenwich Estate in 1805<sup>29</sup> make frequent references to water corn mills and to the existence of kilns, primarily for drying oats.<sup>30</sup> That at Newlands (NZ 091 555) is typical of the small rural mill and kiln (p. 155): "The Mill and Ground, containing 20A : 3R : 24P, is under lease to Stephen Thompson for 21 years, expiring in 1809, at £46.4.0 per annum. The buildings consist of a small dwelling-house, a mill with two pair of stones and an oat-kiln; the house and Mill-building are in tolerably good repair, but the water-wheel and the roof over it are in a state of decay ... during the dry months the mill cannot be worked more than one hour a day, which is in great measure owing to a deficiency of water ...". It is not clear from the Greenwich survey however whether the kilns were separate from the mill building, or as was more common from the early nineteenth century onwards, incorporated into the mill block itself.

In recent years the excavation of the Belling Mill in North Tynedale, Northumberland by Harbottle and Newman,<sup>31</sup> and John Philipson's paper on "The old British round kiln in Northumberland",<sup>32</sup> have thrown more light on the subject. Two distinct types of drying kiln have been located in the Upper Redesdale and Upper Coquetdale area. Firstly those which are a simple stone-lined bowl dug into a bankside, and secondly those which are freestanding stone-built structures. In either case there may or may not be associated buildings. Documentary evidence suggests that in many instances the bowl-shaped kilns were earlier in origin than freestanding kilns. One of the best examples of the earlier type of kiln is at Loaning Burn near Billsmoor.

#### *Loaning Burn corn-drying kiln (NY 931 978)*

The deserted farming settlement of Loaning (Loning; Loaming) Burn (NY 935 974) in the parish of Elsdon, lies approximately 820 metres due south of the bastle at High Shaw (fig. 2). The earliest reference to the settlement occurs in the 1604 Border Survey<sup>33</sup> and the latest on the 1866 first edition of the six inch OS map. The site is marked but not named on the second edition of the map published in 1898. The 1604 Survey refers to the settlement as Loningeborne, with four cottages being noted. It is with one of these that the kiln is associated, being about 600

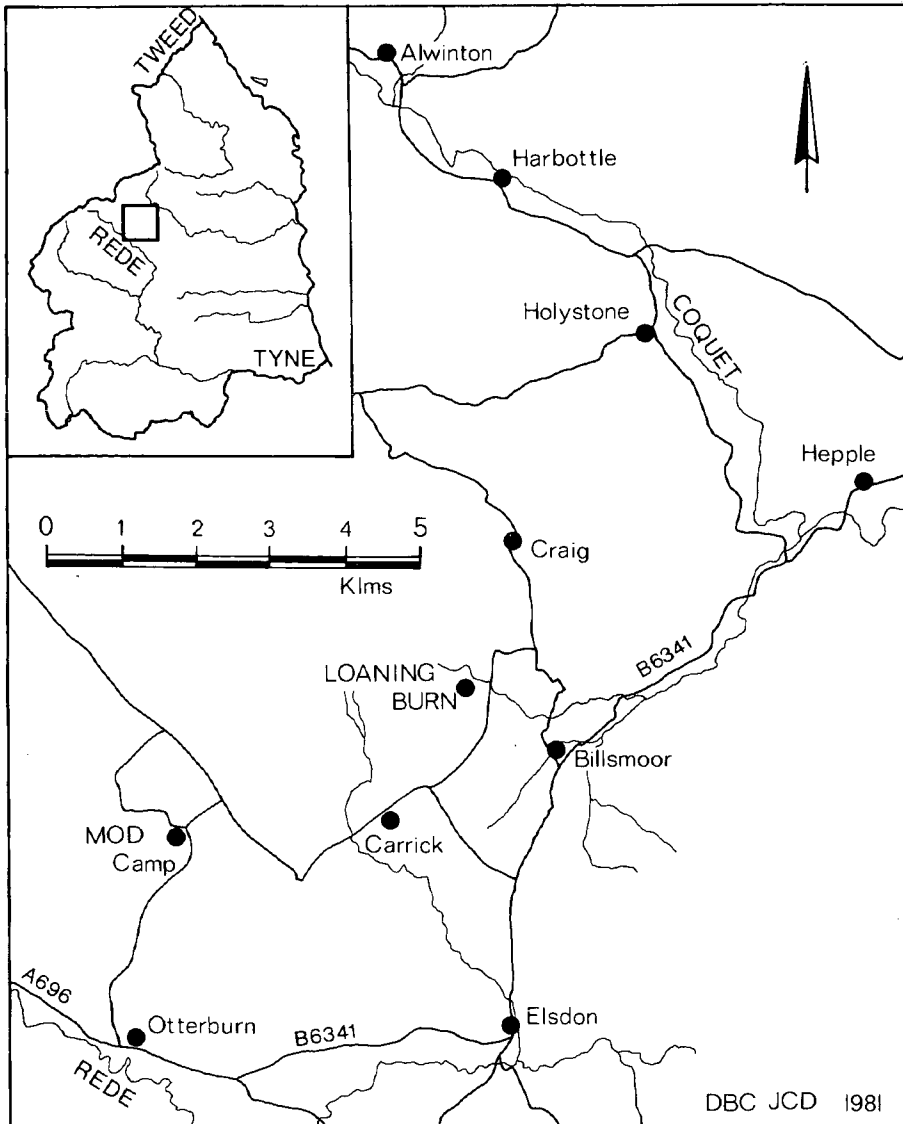


Fig. 2. Loaning Burn

metres north east of the main settlement (NY 931 978), near the confluence of the Besom Sike and Watty's Sike. A low earth and turf bank encloses an area of 27 hectares, within which are the bracken-covered remains of two rectangular stone buildings and the bowl-shaped kiln (fig. 3). Even before excavation it was possible to see that both buildings were crudely constructed of boulders and small

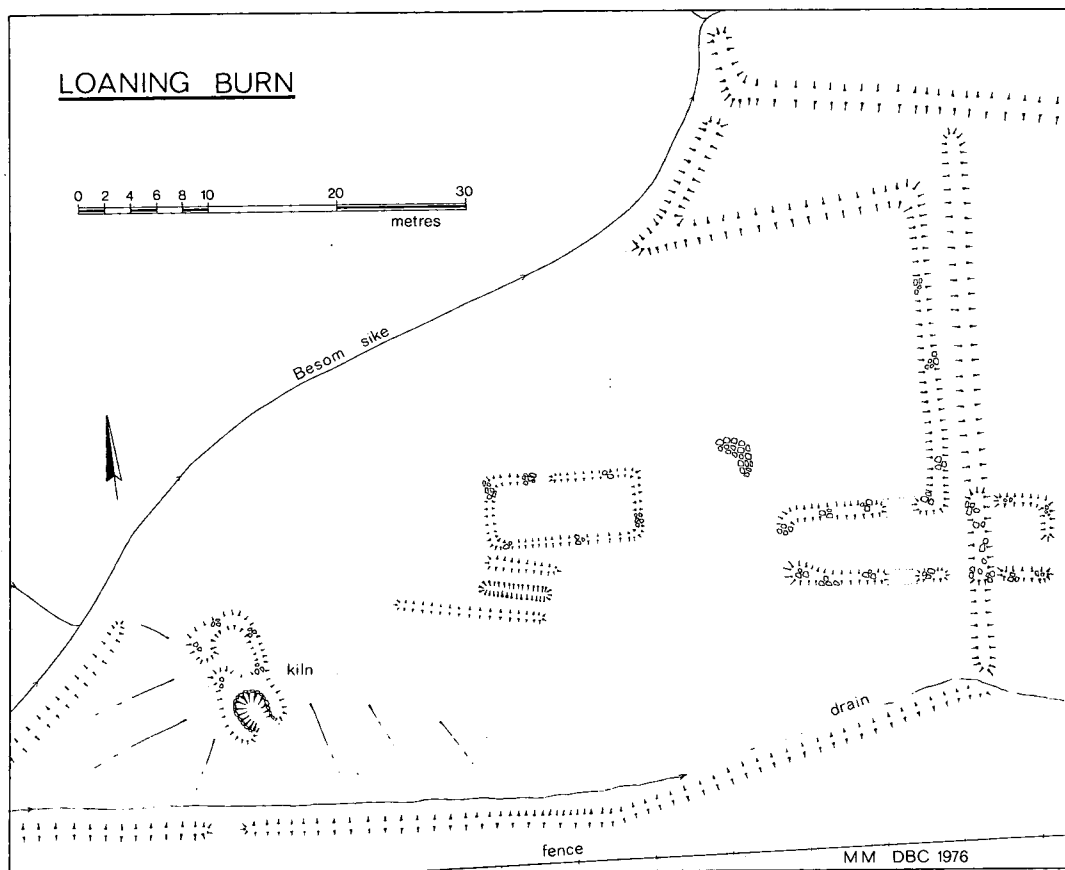


Fig. 3. Loaning Burn settlement

stones, the walls surviving to a maximum height of 25 metre. One building measures 11 by 5.5 metres externally, with a doorway on the north wall. The other, more vestigial, is 13 by 5.9 metres. There appears to be a small extension 6 metres by 6.2 metres to the east of this second building which is later than the perimeter bank, since the west wall overlies the bank.

#### *The excavation*

It was decided to excavate the kiln for two reasons. First, intensive field survey of small agricultural settlements in Redesdale and Coquetdale has produced much evidence for simple bowl-shaped kilns associated with both known corn mills and small isolated settlements in upland areas (Appendix 2). This would seem to indicate that arable farming was practised at much higher altitudes in the past than has hitherto been recognized. Secondly, only one similar kiln in Northumberland has been excavated to date and the results from that proved inconclusive.



On the surface, the kiln itself was no more than a shallow, turf-covered depression .45 metre deep and 3 metres in diameter, which had been dug into a natural slope beside the settlement. The opening for the flue was on the downward side. At the top of the slope and butting on to the north end of the kiln were the grass-grown foundations of a small, almost square building with an opening in the west wall. An area 13 by 7 metres was deturfed to uncover both the kiln and the building (fig. 4).

The excavated building measured externally 5 metres from north to south, by 4.75 metres from east to west. Of three walls, only the first course of loosely set boulders survived and these lay immediately on the clay sub-soil. No attempt had been made to dig a foundation trench. The stones were bonded with earth and clay. Up to three courses remained of the north wall which stood to a height of .3 metre, and several of these stones had been roughly dressed. The opening in the west wall was a doorway, 1 metre wide. Patches of tightly packed small stones set into the sub-soil suggested that a cobbled path had led to the doorway. On the south side of the doorway, close to the inner face, was a shallow post-hole .15 metre deep by .2 metre in diameter, packed with stones. This had probably supported a timber upright for a door. In the north east corner of the building was a raised area of earth and clay, which could have been a storage platform. The only other internal feature was a pit .23 metre deep by .65 metre in diameter which had been dug .5 metre north of the rear wall of the kiln itself (fig. 4a, Plate IXa). Its function is uncertain, as the brown soil fill was quite clean and the three large boulders in the pit appeared to have been robbed from the back wall of the kiln and thrown in later. Apart from the odd fleck of carbon, the yellow clay floor was clean, yielding no firm evidence of the purpose of the building. The most obvious explanation is that it was used as a store room for the grain before it was ripened and dried off in the kiln.

In comparison with the store room, the kiln was more carefully constructed (fig. 4b, Plate VIb). A semi-circular hole with sloping sides had been dug into the bank and lined from the bottom upwards with partially dressed sandstone embedded into the yellow clay sub-soil. As many as fourteen courses survived at the highest point, each course being stepped back about an inch to form the batter of the sides. The sides themselves sloped outwards at about 30° from the almost circular flagged floor, 1.2 by 1.45 metres, to the top of the bowl which measured 3 by 3.5 metres across. Around the rim of the bowl there remained a single course forming the inner face of a crude wall .9 metre wide by .25 metre high. The bowl of the excavated kiln was 1.5 metres deep. The clay from the hole had been cast up against the outer face of the wall of the kiln, on both sides of the flue, to produce a revetment .5 metre high. To prevent this slipping, small stones were set into the surface of the clay upcast. The sides of the flue were lined with large stone slabs. Similar slabs, presumably the springers for an arch which had subsequently collapsed, blocked the flue completely. The floor of the flue was also flagged. There was no evidence of any fire in the flue itself, but the clay sides of the stoke hole leading up to the mouth of the flue were

# LOANING BURN Corn-drying Kiln

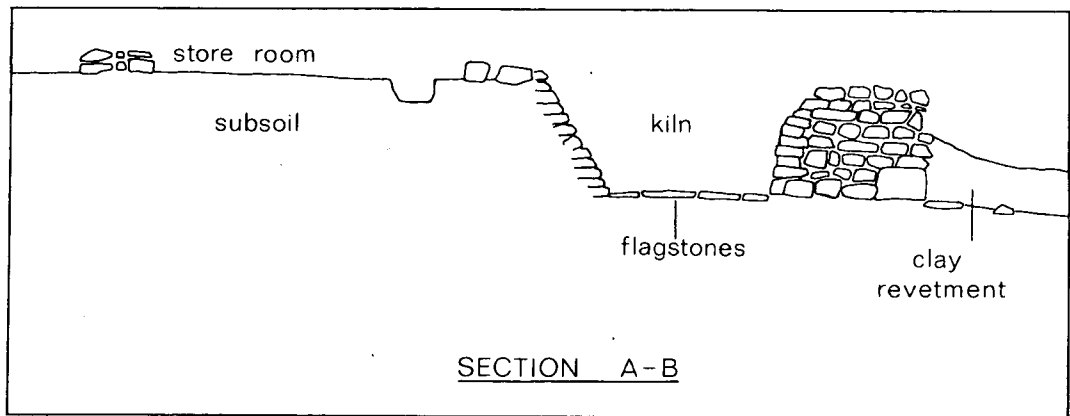
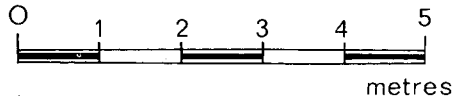
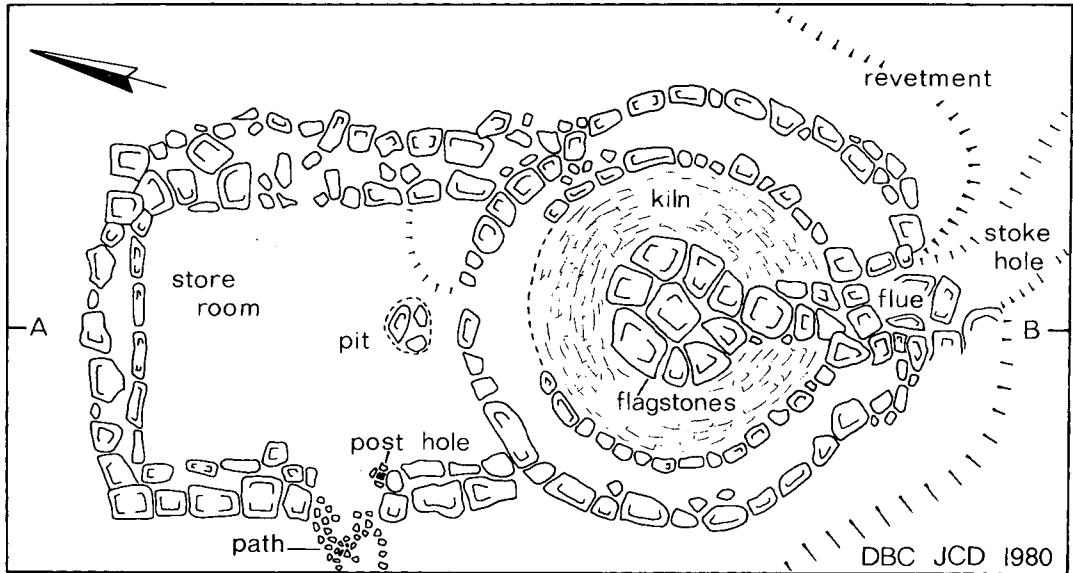
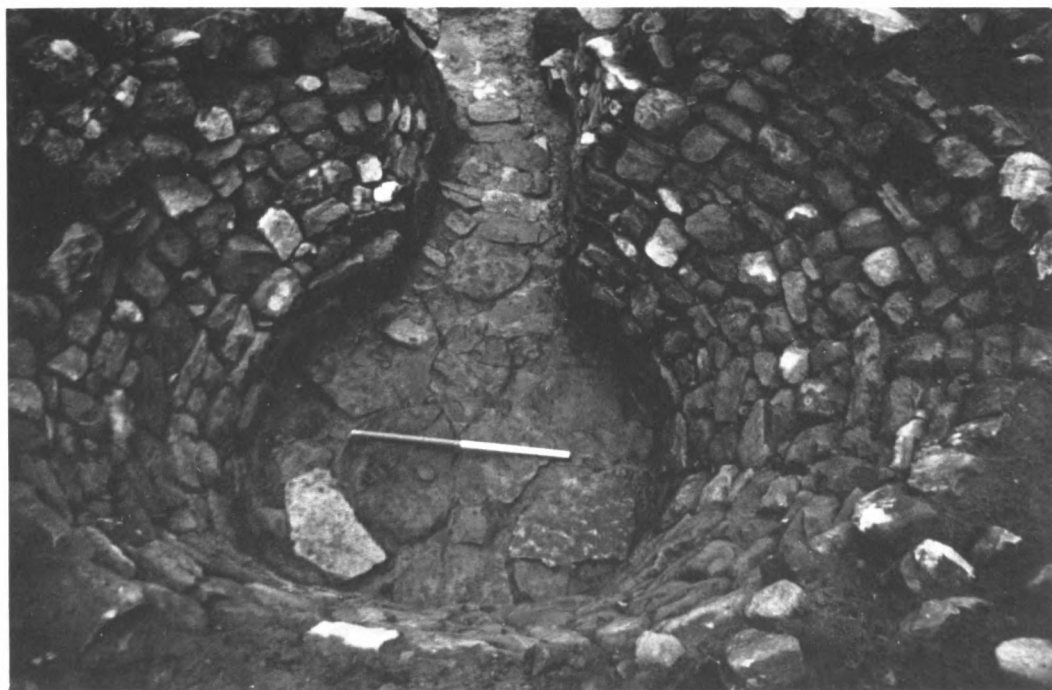


Fig. 4. Loaning Burn kiln: plan and section



a. Loaning burn: store-room and kiln



b. Loaning Burn: bowl of kiln

heavily burnt. In the kiln at Machrins, Colonsay,<sup>34</sup> some stone on the side of the flue had been reddened and cracked by fire. Water seeping in from all directions made it impossible to trace and empty the total length of the stoke hole, the section which was excavated however, comprised a narrow, curving channel .4 metre wide by .28 metre deep, filled with burnt, gritty debris.

The kiln had silted up to within .45 metre of the top. Beneath the grey silt and the tumble which had come mainly from the wall round the rim, was a thin layer of carbonized wood—birch, oak, and alder, straw and cereal grains, lying immediately on the flagstone floor. The burnt material varied in depth from .01 to .02 metre on the floor of the kiln to .03 metre on the floor of the flue. Samples weighing 2 kilograms were collected for analysis. The presence of grain, verified as such by Mrs. Donaldson, confirms that the Loaning Burn kiln was used for drying cereal crops. Similar structures in Ireland, Wales,<sup>35</sup> northeast Cumbria<sup>36</sup> and the Hebrides<sup>37</sup> have been interpreted as corn-drying kilns, although in southern parts of the Lake District<sup>38</sup> the more favoured explanation is that they were used to make potash for the manufacture of soap. But the problem which is raised by the Loaning Burn kiln is the method of drying the corn. It would not have been dried on the flagged floor but rather on a raised platform which would allow hot air to circulate underneath without any danger of the structure catching fire. However there were no projecting stone lugs within the bowl to support a timber slatted floor accessible for loading from the store room. Nor was there any evidence of sockets in the walls to suggest where floor timbers might have been wedged. Had there been an iron grille, one would have expected some trace of that to have survived. In the absence of any conclusive evidence for a drying floor, it is conceivable that a horse-hair mat presumably stretched on a wooden frame, was laid across the top of the kiln. Sheaves of grain lying on witheys<sup>39</sup> would be placed on the mat to dry. When the kiln was finally abandoned, the "kiln hair" may have been burnt or more probably, as a valued possession,<sup>40</sup> was removed for use elsewhere. One other theory is possible, that the drying floor was of branches supported on wooden joists.

Floors of this type were used in early eighteenth century kilns in Scotland. "Beams or baulks were laid on the top of the stone sides of the kiln and small sticks or laths were laid across them. Upon these was laid three or four inches of drawn straw, on top of which either sheaves of oats or threshed grain were spread. The fire, usually of peat or wood, was kept up for about twelve hours, the sheaves or grain being turned several times so that drying might be as uniform as possible. The straw often caught fire and the precaution was taken in many cases of building the kiln at some distance from the other farm buildings".<sup>41</sup> Unfortunately the Loaning Burn excavation produced no clues as to how any kind of floor may have been supported. The drying floor may well have been at the same higher level as the loading platform in the store room, and since the top of the kiln no longer survives, all trace of the drying floor has vanished. Indeed it seems that the site was stripped on abandonment as not one find was recovered other than the burnt wood and grain.

## DISCUSSION

Though comparatively early as a permanent habitation, Loaningburn, would seem to be a typical Northumberland upland settlement. In the 1604 Survey<sup>42</sup> Lonigeborne was one of seventy-four wintersteeds in Elsdon parish. It was held under customary tenure by four members of the Anderson family—Gabriell, George, John and Jenkin, each with a cottage. Between them they farmed thirty-four acres, more than half of which was rough grazing. Five acres were laid down to meadow and nine to arable land. They also had the right to graze their cattle on the adjacent common land. The family is listed in the 1618 Rental<sup>43</sup> paying 20/8d per annum, and a Ralph Anderson is listed as a freeholder for Loaningburn in the 1710

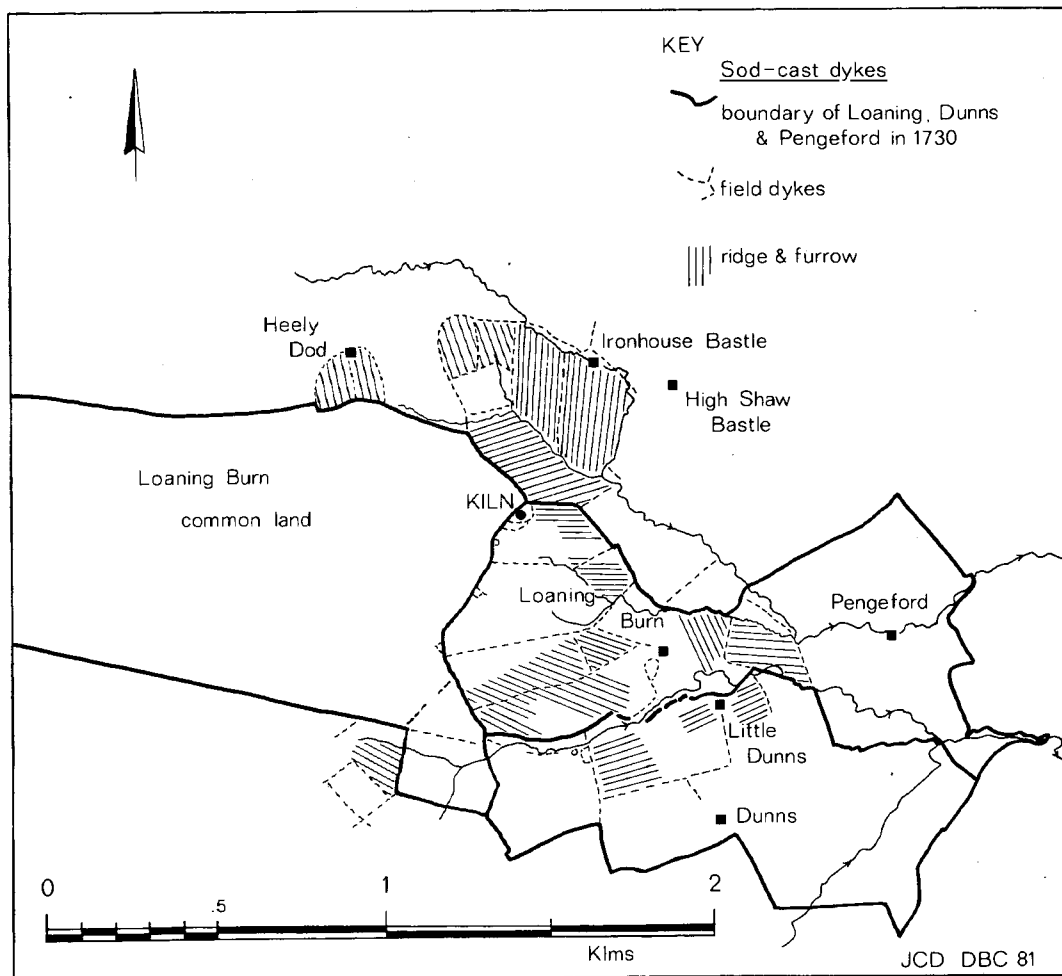


Fig. 5. Loaning Burn: Rig and Furrow areas, based on enclosure divisions of 1731

Northumberland Poll Book. The cottage near the kiln was apparently unoccupied by 1729, as it is not named or marked on the Elsdon Inclosure award or map.<sup>44</sup> The owner of Loaningburn received 376 acres of common land from the award, with the instruction “dykes to be built delineating divisions and must link up with the existing antient lands”.<sup>45</sup> The sod-cast dykes referred to are still clearly visible and define the “antient” infield area where crops would have been cultivated (fig. 5).

A further indication of when the kiln was in operation may be gained by examining the working dates of the corn mills in the area. This can be ascertained from the documentary sources. If the number of mills is directly related to the amount of grain produced in Upper Redesdale and Coquetdale, then it would seem that cereal production was at its height from the mid-seventeenth century to the mid-eighteenth century rather than in the early nineteenth century as has hitherto been generally accepted.

*Number of corn mills listed in operation*

1604 Survey	7 (8?)	
c. 1660	12	various sources see Appendix 1
1748 Land tax assessments	13	
1778 Land tax assessments	12	
1806 Land tax assessments	6	
1841 Census returns	6	
1871 Census returns	3	

The whole of the Loaning Burn tenure, together with the surrounding area lies between the 700 and 1,000 foot contours and today it is all marginal land. The high proportion of oats in the sample analysed, suggests that this was the main crop grown. Oats were the easiest grain to cultivate on poor soil and probably served a dual purpose—feeding both livestock and humans. It is not recorded how oats were originally prepared for human consumption—they may have been eaten raw after pounding between two stones and only at a later date were they dried first. While oats were mainly grown to feed the livestock, barley formed the staple diet of these farming communities.<sup>46</sup> The six-row barley, *Hordeum poly-stichum*, identified by Alison Donaldson, is the oldest cultivated form of this cereal and was grown in North Britain from Prehistoric times up to the mid-eighteenth century.<sup>47</sup>

There are several types within this main variety. The type found at Loaning Burn could be *Hordeum vulgare*, also identified at Machrins,<sup>48</sup> and known as Bere or Big—derived from “byg” the Scandinavian word for barley, since this grows successfully on less fertile soils and at higher elevations than other native varieties.<sup>49</sup> “Bere barleye or bigge, woulde be sowen upon lyghte and drye grounde, and hathe eare thre ynches of lengthe or more, sette foure-square pycke whete, small corne and lyttel floure, and that is the worste barley”.<sup>50</sup> Barley is essentially a light-land crop and the small number of grains in the kiln indicate that it may have been grown in a small, well-tilled plot or been brought in from elsewhere. Without pollen samples

and soil analysis, it is impossible to ascertain where the barley or indeed the oats may have been cultivated, but there is visible evidence of five metre rig and furrow in the vicinity of the Loaning Burn settlement, and the adjacent early farmsteads and bastles of Ironhouse High Shaw and Heely Dod.

BOTANICAL REPORT BY ALISON M. DONALDSON

A sample of burnt material was received, taken from the floor of a corn-drying kiln associated with a 16–17th century farming settlement. Nearby rigg and furrow is probably associated with the farm.

The following were identified:

*Avena* sp., including *Avena sativa* (the common cultivated oat)—several thousand carbonized grains.

*Hordeum polystichum* (hulled, 6-row barley)—approx. 200 carbonized grains.

*Quercus* sp. (oak)—charcoal fragments

*Betula* sp. (birch)—charcoal fragments

*Alnus glutinosa* (alder)—charcoal fragments

Some twenty oat grains still had lemma bases attached and could be identified to species.

The barley was poorly preserved but would seem to be a hulled variety. The separation of 2 row and 6 row forms is based on the proportion of asymmetric grains. It was difficult to assign most of the material to a symmetrical or asymmetrical type, but a number of asymmetric grains were certainly present suggesting a 6 row form. Modern varieties are nearly all 2 row types.

It is not possible to deduce whether barley was separately cultivated and dried or whether it was a weed or “relict” in fields of oats.

KEY TO BIBLIOGRAPHICAL REFERENCES USED IN APPENDICES

APR	Alwinton parish register. 1720–1812. Transcript. Newcastle Central Library.
Armstrong	Map of Northumberland. 1769.
Bain	Bain, J. <i>ed.</i> Calendar of Border papers. Vol. 1. 1560–94. 1894.
BCR	Birdhope Craig Presbyterian Chapel register. 1728–1850. (baptisms only). Typescript. Newcastle Central Library.
BNC	Berwickshire Naturalists' Club. Vol. 1– . 1831–to date.
Census	Microfilm of returns for 1841; 1851; 1861; 1871. NRO.
DT	Tithe award maps. NRO.
EPR	Elsdon parish register. 1672–1812. 1903.
Feod	Feodary's book in 1568 <i>in</i> Hodgson, J. <i>Magnus rotulus pipae</i> . Part 5. 1835.
Fryer	Fryer, J. A map of the County of Northumberland. 1820.
Greenwood	Greenwood, C. & J. Map of the County of Northumberland. 1828.
Hodgson	Hodgson, J. History of Northumberland. Part 2. Vol. 1. 1827.
HPR	Harbottle parish register. 1803–56. (marr. only). Typescript. Newcastle Central Library.

IPM	Inquisitions post mortem. Public Record Office printed calendars.
NCH	Northumberland County History. Vol. XV. 1940.
NRO	Northumberland Record Office.
QRA & QRD	Inclosure awards and maps. NRO.
QRP	Land tax assessments 1748–1820. NRO.
Rate Book	Rentals and rates for Northumberland ... 1663 (column 4) <i>in</i> Hodgson, J. History of Northumberland. Part 3. Vol. 1. 1820.
Rates	Rentals and rates for Northumberland ... 1663 <i>in</i> Hodgson, J. History of Northumberland. Part 3. Vol. 1. 1820.
Rental	Rental of the antient principality of Redesdale. 1618. <i>In</i> Archaeologia Aeliana. Series 1. Vol. 2. 1832. p. 326–38.
SS	Northumbrian documents of the 17th and 18th centuries comprising the register of the estates of Roman Catholics. Surtees Society. Vol. 131. 1918.
Survey	Sanderson, R. P. <i>ed.</i> Survey of the debateable and border lands ... 1604. 1891.
Warburton	Warburton, J. A new map of the County of Northumberland. 1716.
Watson 10	Instit. of Mining. Watson Collection. Shelf 10. Vol. 36. Papers relating to Raw, Rookan and Garretshiels, 1803–30.
Whellan	Whellan, W. History, topography, ... of Northumberland. 1855.
ZAN	Bell Collection. Soc. of Antiquaries section. NRO.
ZHE	Bell Collection. W. P. Hedley section. NRO.

#### APPENDIX ONE—LITERARY SOURCES FOR WATER MILLS

Cdk refers to Appendix two where details of corn drying kilns will be found.

The dates attempt to cover the *working life* of the mill, references to farms of the same name have been ignored unless otherwise noted.

#### CORN MILLS

BARROW MILL NT 9136 0632 MOD survey number 634  
1712–1812 APR; 1717 SS; 1748–1820 QRP; 1815 Zan 60.1 Valuation of Barrow Mill and Farm; 1821–52 HPR; 1841 and 1851 Census; 1855 Whellan; 1861 Census notes a shepherd only at Barrow and in their visit to the area in 1863 the Berwickshire Naturalists BNC Vol. 5 p. 385 stated “mill in ruins”; 1980 vestigial foundations of mill, 13 × 5 metres, 2 r 2 rooms (?); mill race shown on 1st ed. 6”—approx 300 m head race, and same for tail race; Same map (1866) names a “Malt barn” at (Nt 918 063) Cdk 25.

BIRDHOPE MILL/BIRDHOPE CRAIG MILL NY 8291 9900 MOD survey number 637  
(n.b. the two names feature alternately in the Land tax returns and there is no family overlap in the parish registers)  
1705–78 EPR; 1729–52 BCR; 1748–79 QRP; 1760 BNC Vol. 12 1912–15, p. 222 will of Edw. Laing leaving his interest in the mill to his son; 1769 Armstrong; 1777 ZHE 48.32 sale notice; 1779–1817 BCR; 1804 Watson 10. “old”; 1979 West bank of Sills where Roman road fords stream, vestigial grass grown foundations—part washed away by Sills Burn; Cdk 12: possible mill race.



## BYRNESS MILL NT 7718 0223

1687 EPR; 1748–53 QRP; 1811 Alnwick Castle (Bell Coll.) 404/439 Elsdon folder. Map of coal road from High Green, Rookan to Byrness marks "site of mill"; 1820 Birriness miln (?); 1980 Field to east of chapel and immediately south of cafe, grass grown foundations single roomed building 7.4 × 3.8 m; Cdk 1; possible mill race.

## CAISTRON MILL (probably a corn mill) NU 0025 0115 (??)

1632 NRO 782/11 map of lands belonging to the earl of Newcastle; 1663 Rates—Prop. Wm. Hall, 6d rates, £10 rental; 1743 NCH, XV 1940, p. 394—conveyance of Caistron Mill to rector of Ebchester (n.b. land to south of Coquet noted as Ebchester glebe—DT 84, 1846; 1979 site destroyed by gravel workings).

## CANTS MILL NY 9210 9292

1689–1800 EPR; 1731 Elsdon encl. award QRD; 1748–1818 QRP; 1803–9 ZHE 73—letters re leasing and repairs of property; 1820 Fryer; 1828 Greenwood—"ruin". 1841 and 1851 Census only lists farmer, no buildings shown on 1866 OS 6" sheet; 1980 extensive grass grown foundations and sod casts; Cdk 23; mill race 450 m, stone revetted in places. n.b. 1689 EPR "Cants miln dam".

## CLENNELL'S MILL (site not located)

1726–40 APR—includes a John Anderson 1732–9, perhaps the same person as at Barrow corn mill 1749–85 (the Clennell family did not obtain Harbottle and demesne until 1731 NCH XV, 1940, p. 478; Holystone Mill in the possession of the Selbys during the period covered by the Alwinton Register above).

## COTTONSHOPE MILL (Byrness Mill ??) (site not located)

1803 BCR—bapt. Mary d. of Jno. Hindmarsh.

## DAVISHIEL MILL/HOPEFOOT MILL NY 8870 9493 MOD survey number 636

1695–1785 EPR; 1731 Elsdon encl. award QRD; 1748–1818 QRP; 1755–1829 BCR; 1769 Armstrong; 1820 Fryer; 1840 DT 164 (marked but not named); 1861 and 1871 Census returns show a farmer only 1978 extensive grass grown foundations and sod casts; Cdk 19; mill race approx. 170 m Mill appears to have been a two roomed structure 12.5 × 5 m

## ELISHAW MILL/SHITTLEHEUGH MILL NY 8646 9511

1604 Survey; 1671–1718 Alnwick Castle (Bell Coll.) 404/439—history of the Reed Estate (Shittle.) which includes Elisha corn mill; 1673–1752 EPR; 1731 Elsdon enclos. award; 1744–58 BCR; 1748–79 QRP; 1758–69 EPR; 1785–92 BCR; 1805 APR; 1814 BCR; 1827 Hodgson p. 147n; 1828 Greenwood; 1840 DT 164; 1841 and 1851 Census returns list Arch. Anderson, farmer, only; 1980 stone foundations of mill building still standing 1 m high on west bank of Durtrees Burn; Cdk 15; mill race—revetted in places—head race 85 m; tail race 250 m; two coarse, dressed sandstone millstones (96 m diam.) lying in old mill building.

## ELSDON MILL NY 9364 9375

1604 Survey; 1618 Rental; 1687–1789 EPR; 1730–40 BCR; 1731 Elsdon enclos. award QRD; 1748–1818 QRP; 1795 ZHE 73—letters re leasing mill; 1828 Parson and White Directory; 1841–71 Census returns; miller listed in all directories up to Kelly 1914—farmer only listed

1934 & 1938 Kelly's; 1981 Mill building intact, but gutted of all machinery. Revetted head race 160 m; now used as garden furniture—2 French burr millstones, each 1.3 m diameter; 2 sandstone millstones, each  $\times$  .8 m diam., 18 large fragments incorporated in rockery steps and border, all appear to be of local stone. No evidence for an early form of drying kiln, presumably one of the present adjacent buildings served as a kiln in the later working period.

**GRASSLEES MILL** NY 9541 9791 MOD survey number 635

1671 ZHE 73 will of James Wanless bequeathing his land and mill in Girsleys to his son William; 1687–1780 EPR; 1731 Elsdon enclos. award QRD; 1748–1818 QRP; 1757 NRO 692 Box 10 (Hedley papers) will of Wm. Hedley placing mill in trust for his son Thomas; 1807 APR; 1820 Fryer; 1828 Greenwood; 1827–9 HPR; 1841 & 1851 Census returns—Wm. Stephenson, miller; 1871 Census—Lancelot Brown, miller; 1898 2nd ed. OS 6" mill marked but not named; 1976 grass grown foundations of mill 22  $\times$  6 m, and outhouses, including free standing corn drying kiln; mill ponds, mill race; 4 dressed, sandstone mill-wheels in mill building, 1.25 m dia. Head race c. 250 m; tail race c. 150 m; Cdk 26.

**HARBOTTLE MILL** (site not identified)

some confusion exists as the demesne lands of Harbottle Castle include Peels—(NCH XV, 1940, p. 445); 1604 Survey—John Waïnebye—a water corn mill on the Coquet, value £13 6s 8d; 1604 Survey—John Waibie, freeholder, The Peale; 1635–7 NCH XV, 1940, p. 477—the earl of Suffolk . . . sold the castle, demesne, park, tithes and water corn mill of Harbottle . . . to Roger Widdrington; 1650 Widdrington's forfeited lands as a Royalist including "all the demesne lands of Harbottle with a corn mill and fulling mill"; see also Peels fulling mill—after list of corn mills n.b. malt kiln recorded c. 1717 "out of repair and not used"—SS Vol. 131, 1918, p. 36.

**HAREHAUGH MILL (Hepple Mill ??)** NY 9751 9986

1604 Survey; 1632 NRO 782/11 "West Heppall Mill"—map of lands belonging to the earl of Newcastle; 1721 APR; (1763–76 APR—the 1763 entry is to John Anderson, someone of this name recorded at Holystone Mill in 1717. Possible confusion at this later date between Harehaugh and Holystone ??); 1980 vestigial grass grown foundations on north bank of tributary to east of Harehaugh Farm.

**HATHERWICK MILL** (site not identified)

1755 BCR—bapt. Bettie dau. Wm. Johnston.

**HOLE MILL/CRESSWELL LEES MILL** NY 8985 8909

1698–1708 NRO 542 (Hedley Coll.) Kirsopp-Reed papers, various leases; 1736–88 EPR; 1737 BCR; 1748–53 (Cresswellees Mill) 1765–79 (Hole Mill) QRP; 1820 Fryer; 1828 Greenwood; 1858 Post Office Directory only lists Jas. Atkin, farmer; 1980 site appears to have been destroyed by modern hay shed built over a substantially revetted stone water channel—mill race?—adjacent to an old stone building, now used as a byre.

**HOLYSTONE MILL** NT 9548 0269

1539 NCH XV, 1940, p. 469—100 acres, ten houses and a mill leased to J. Heron; 1604 Survey—Perc. Pott, tenant; 1663 Rates; 1717 SS; 1748–1820 QRP; 1823–34 HPR; 1841–71 Census returns, Oliver family, millers; 1876 AA3 Vol. 4. 1908, p. 125 Selby Estate sold; (1875 ZAN 59.10 newspaper cuttings reaction of Estate—mill bought by Forster for £860); 1890–1914 Kelly's Direct. Oliver family, millers; 1901 ZSA 26/123 (Sample Coll.) valuation of Olivers Mill and cottages in village—£37 per ann.; 1921 Kelly no miller listed. Description

of mill in 1887 from BNC Vol. 12, 1887–9, p. 48 “On entering the adjacent mill, the original purpose of the holed stone was soon apparent; for a similar but heavier stone of a coarse grit was attached by a rope to a portion of the mill works, as a weight to regulate the flow of water: . . . The fittings in the interior of the mill were much older than the recently added over-shot wheel. The fanners were of an old fashion. The tin basin for moulter was there also. The flag-slated roof has fallen in, and everything is going to wreck; there being no longer use for a mill here.” Fanners—winnowing machine. Moulter—malt (kiln). Illustration of mill c. 1900 in D. D. Dixon *Upper Coquetdale*, 1903, p. 282; 1980 supposed mill building pointed out, now stripped and converted into a workshop. Extensive, stone revetted head race with sluices 900 m; tail race 220 m.

**KELLYBURN MILL (Caleybourne) NY 84 95**

1604 Survey; 1686–1728 EPR; Deserted village site examined January 1982. None of the buildings identified as a mill, no corn drying kiln found.

**LINBRIDGE (Township) and Whiteside (site not located but see Cdk 5 and Cdk 6)**

1663 Rates Mill rate 6d

**OVERACRES NY 9140 9242**

1742 EPR; 1785 ZHE 48.1 map of Overacres farm, marks “site of old mill” and “Mill Field” and “East Mill Field”; 1980 vestigial grass grown foundations of a two roomed building 12.5 × 4 m; Cdk 22; short mill race; stack stand.

**SMALBOURNE MILL NY 86 93**

1604 Survey “A mill decayed John Dague and Edw. Dun, freeholders”; Site not located. Smallburne Crofte named on map in Newcastle Central Library (L912.4282/97023) in triangle between Dargues–Garret Shiels–Dunns Houses, to east of A 68. Not named on Enclosure map for Garretshiel, 1809. ZHE 48.4.

**STOBBS MILL/TODLAW MILL NY 8291 9750**

1748–79 QRP; 1760 EPR; 1779–81 BCR; 1787 EPR; 1789 BCR; 1980 range of grass grown foundations. Mill building 13 × 5, divided into 2 rooms; Cdk 11; silted mill race, head race 300 m; tail race 75 m.

**TROUGHEND MILL NY 8778 9290**

1604 Survey; 1678–1748 EPR; 1748–79 QRP; 1760 BCR; 1810 ZHE 48.4 Plan of Garretshiel Common Troughend Mill Ground marked as is Mill with a comment “burnt down”; 1979 vestigial grass grown foundations; Cdk 18; race not clearly distinguishable from later (?) sod cast dykes.

**WHISKERSHIEL MILL NY 9528 9275**

1604 Survey; 1618 Rental; 1696–1784 NRO 692 Box 15 (Potts family papers) various leases and deeds relating to property; 1687–1749 EPR; 1731 Elsdon Enclosure award QRD; 1748–1779 QRP; 1820 Fryer—named; 1828 Greenwood—named; 1841 Census return—farmer only; 1980 site destroyed by forestry planting. In addition to the water corn mills in the area during the eighteenth and nineteenth centuries there are references in the documentary sources to fulling or walk mills. Two, with a possible third, have been identified and the occupations of weaver, fuller, dyer, bleacher and handloom operator feature in the parish registers and Census returns from as early as 1695. Details of the fulling mills located are added here to prevent any error of identification with the corn mills of Upper Redesdale and Coquetdale. (fig. 1).

## FULLING OR WALK MILLS

## HARBOTTLE (site not identified)

1650 NCH. 1940. p. 477—Widdrington lands included a corn mill and a fulling mill; n.b. in 1663 Sir E. Widdrington owned Peels township—see Peels Mill below.

## OTTERBURN WALK MILL NY 8880 9275

1728–62 EPR—refs. to Beighatt family; 1748–1816 QRP; 1786–1807 BCR—1786 Jos. Bighet; 1821 Waddell family from Jedburgh—N/B Gazette 4.3.66, Supp. p. 6; 1841 & 1851 Census—Wm. Waddell sen., and jnr., Jas. Waddell and six workmen listed; 1861 Census 10 persons listed for the mill; 1871 Census Wm. Waddell manager, 9 men, 4 boys, and 2 girls listed; Bulmer Directory 1886; 1914 Kelly Directory—became Otterburn Mill Ltd. 1980—whilst all the weaving machinery, etc. is still in situ the mill ceased to produce material in 1977, although the premises are still used as a showroom, shop and warehouse.

## PEELS WALK MILL NT 9421 0484

1663 Rates—Peels Mill (fulling ?) 1/- rate; 1719–65 APR; 1748–52 QRP (thereafter included with township tax). 1981 grass grown foundations of 4 roomed mill building adjacent to farm outhouses. Mill race partly by stone channel from feeder pond, approx. 250 m; large millstone and metal spindle discarded nearby.

No.	Name of site	Grid ref.	Overall diam. (m)	Present depth	Attached build.	Associated buildings Earliest documentary sources	Ploughing visible in area	OD (m)	MOD No.
<b>KILNS DUG INTO BANKSIDES</b>									
1	Byrness Mill	NT 7718 0223	5.5	4.5		Mill: EPR 1687	Yes	230	
2	Bellshiel Burn	NT 8060 0084	2	1m	6 × 5	Farm: IPM 14th C. 1663 Rental	Yes	230	524 (309)
3	Sills Burn (Pity Me?)	NT 8219 0169	4.5	.35		Farm: 1850 ZHE 14/1	Yes	230	525
4	Dumbhope	NT 8590 0979	5.5	.9	4 × 3	Farm: 1604 Survey		300	526
5	Linshiels	NT 8910 0710	5	3m		Farm: 1242 (see AA5, Vol. VII, p. 219n)	Yes	230	528
6	Linshiels Mediaeval Vill.	NT 8945 0688	6	1m	12 × 6	Village:	Yes	210	529
7	Calf Lee	NT 8980 0578	4	.6		Farm: 1618 Rental		230	
8a	Buckham's Walls	NT 8020 1095	4.25	.75	5 × 3	Farm: Warburton 1716	Yes	410	522
8b		70m west of 8a	oval 5 × 6	.6					
9	Rennies Burn	NT 8032 1190	4.5	.6		Farm: pre 1st ed OS		380	523 (121)
10	Usway Burn	NT 8767 1049	4	.3		Farm: pre 1st ed OS		270	527 (160)
11	Todlaw/Stobbs	NY 8291 9750		2m		Mill: QRP 1748		180	

APPENDIX TWO: CORN DRYING KILNS

No.	Name of site	Grid ref.	Overall diam. (m)	Present depth	Attached build.	Associated buildings Earliest documentary sources	Ploughing visible in area	OD (m)	MOD No.
12	Birdhope Craig	NY 8291 9900	4.75	.5		Mill: EPR 1705	Yes	200	637
13	Evistones Bastle	NY 8300 9686	4.5	.55		Village: Feod. 1568	Yes	195	
14	Wanlass Durtrees	NY 8589 9725	6	1.25	4 × 3	Farm: 1618 Rental	Yes	240	530
15	Elishaw	NY 8646 9511	6.5	.8		Mill: 1604 Survey	Yes	170	
16	Steward Shiel	NY 8675 9890	5.5	.5		Farm: Bain 1583	Yes	220	531
17	Shittleheugh Bastle	NY 8687 9506	6	.5		Bastle: 1618 Rental	Yes	230	
18	Troughend	NY 8778 9290	4.5			Mill: 1604 Survey	Yes	155	
19	Davyshiel/ Hopefoot Mill	NY 8870 9493	4	.3	7 × 2	Mill: 1663 Rates	Yes	180	636
20	Davyshiel	NY 8875 9618	4	.35		Farm: 1710 Poll	Yes	200	532 (364)
21	Summer Walls	NY 8971 9640	4.5	.5		Farm: 1618 Rental	Yes	245	533
22	Overacres	NY 9140 9242	3.8			Mill: EPR 1742	Yes	150	
23	Cants Mill	NY 9210 9292	6.5	.55		Mill: EPR 1689	Yes	160	
24	Loaning- Burn (Referred to as Ironhouse Kiln in MOD Report)	NY 9310 9785	5	.75	6 × 5	Farm: 1604 Survey	Yes	240	534

FREESTANDING KILNS

25	Barrow Mill	NT 9136 0632	5.5	2m high		Mill: APR 1712		160	634
26	Grasslees Mill	NY 9541 9791	5.5	2m high	two rooms 10 × 5	Mill: ZHE 73 1671	Yes	120	535 (635)
27	Elsdon Mill (See Mill entry Appendix 1)								

NOTES

<sup>1</sup> Charlton, D. B. and Day, J. C., "Excavation and field survey in Upper Redesdale" in *AAS*, Vol. VI, 1978, pp. 61-86; Part 2 in *AAS*, Vol. VII, 1979, pp. 207-33; Part 3 in *AAS*, Vol. IX, 1981, pp. 267-98.

<sup>2</sup> Sanderson, R. P., ed. "Survey of the debateable and border lands . . . taken in 1604", 1891.

<sup>3</sup> "Land tax assessment returns", 1748-1822, *Northumberland Record Office QRP*, Vols. 2-69.

<sup>4</sup> Macdonald, S. Agricultural response to a changing market during the Napoleonic Wars in *Economic history review*, 2nd Ser., Vol. XXXIII, Feb. 1980, pp. 59-71.

<sup>5</sup> Winch, N. J. An essay on the geographical distribution of plants, through the counties of

Northumberland, Cumberland and Durham. Read to the Literary and Philosophical Society, Newcastle, May 4th 1819. 1819. p. 19.

<sup>6</sup> Tankerville MSS. NRO 424. Box 1, Series E. Bundle 2. (previously 1/D/2).

<sup>7</sup> Sanderson, R. P. *op. cit.* pp. 86-102.

<sup>8</sup> Bailey, J. and Culley, G. General view of the agriculture of the county of Northumberland. 1797. pp. 4-5.

<sup>9</sup> Hodgson, J. History of Northumberland. Pt. II. Vol. I. 1827. pp. 83-4 Hodgson's figures of the number of working mills do not agree with those from other contemporary sources—see Table 1.

<sup>10</sup> Elsdon parish register. 1689. Two children drowned near the "miln dam".

- <sup>11</sup> Berwickshire Naturalists Club. Vol. 12. 1887–1889. p. 48.
- <sup>12</sup> Permission to examine the mill building was very kindly given by the present occupiers, Mr. and Mrs. Renton.
- <sup>13</sup> ZHE 73 six letters from Apedaile, 1795–1809 referring to Cants and Elsdon Mills.
- <sup>14</sup> Leases at Northumberland Record Office in addition to above—ZALD 21 Troughend Mill 1711; NRO 692 Potts Coll. 1696–1784 Whisker-shiel Mill.
- <sup>15</sup> ZAN Bell 59-8 Papers on Holystone Common.
- <sup>16</sup> Heslop, R. P. Northumberland words. Vol. 1. 1892. p. 40.
- <sup>17</sup> Berwickshire Naturalists' Club. Vol. 12. 1887–1889. p. 42.
- <sup>18</sup> Information from ecclesiastical registers, particularly Alwinton, Harbottle, Elsdon and Birdhope Craig chapel; Land tax assessments; Census returns and Northumberland directories.
- <sup>19</sup> Tucker, D. G. Millstones, quarries and millstone-makers in Post mediaeval archaeology. Vol. IX. 1977. pp. 1–21.
- <sup>20</sup> Sanderson, R. P. *op. cit.* p. 105.
- <sup>21</sup> Rental of the principality of Redesdale. 1618. in *AA*<sup>1</sup> Vol. 2. 1832. p. 337.
- <sup>22</sup> Register of the Estate of Tho. W. Selby. 1717. in *Surtees Society*. Vol. 131. 1918. p. 34.
- <sup>23</sup> Hardy, J. Report of meetings for 1887 in *Berwickshire Naturalists' Club*. Vol. 12. 1887–9. p. 42.
- <sup>24</sup> Scott, Sir L. Corn-drying kilns in *Antiquity*. Vol. 25. 1951. pp. 196–208.
- <sup>25</sup> Elliot, J. Scott. A grain drying kiln, Rue Farm, Dumfriesshire in *Trans. of Dumfriesshire and Galloway Natural History and Antiquarian Society*. 3rd Series. Vol. XXXIX. 1962. pp. 80–82.
- <sup>26</sup> Ramm, H. *et al.* *Shielings and bastles*. 1970.
- <sup>27</sup> Northumberland documents of the 17th and 18th centuries; comprising the register of the estates of Roman Catholics in Northumberland. *Surtees Soc.* Vol. 131. 1918. p. 36.
- <sup>28</sup> Bailey, J. and Culley, G. *op. cit.* pp. 65–76.
- <sup>29</sup> Evidence from a report of the proceedings ... on a view of the Estate belonging to the [Greenwich] Hospital. 1805.
- <sup>30</sup> *Ibid* Whitley Mill p. 111; Dilston Mill p. 132; Whittle Mill p. 147; Throckley Mill p. 150.
- <sup>31</sup> Harbottle, B. and Newman, T. Excavation and survey in North Tynedale 1973–5 in *AA*<sup>5</sup> Vol. 5. 1977. pp. 121–154.
- <sup>32</sup> Philipson, J. The old British round kiln in Northumberland in *AA*<sup>5</sup> Vol. 5. 1977. pp. 155–162.
- <sup>33</sup> Sanderson, R. P. *op. cit.* p. 101.
- <sup>34</sup> Ritchie, J. N. G. A kiln at Machrins, Colonsay, Argyll in *P.S.A.S.* Vol. 110. 1978–80. pp. 528–530.
- <sup>35</sup> Scott, Sir L. *op. cit.* pp. 196–208.
- <sup>36</sup> Ramm, H. *et al.* *op. cit.* p. 44.
- <sup>37</sup> Mercer, J. Roomed and roomless grain-drying kilns: the Hebridean boundary in *Trans. Ancient Monuments Society*. Vol. 19. 1972. pp. 27–36.
- <sup>38</sup> Davies-Shiel, M. A little known late mediaeval industry. Part 1. The making of potash for soap in Lakeland in *C & W 2*. Vol. 72. 1972. pp. 85–111. Part 2. The ash burners in *C & W 2*. Vol. 74. 1974. pp. 33–64.
- <sup>39</sup> Information from John Gall, Keeper of rural life at Beamish Open Air Museum.
- <sup>40</sup> Barley, M. W. A stone-built kiln in the trench north of the churchyard in The Roman town and villa at Great Casterton, Rutland. Third report. 1961. p. 55.
- <sup>41</sup> Findlay, W. M. Oats, their cultivation and use from ancient times to the present day. 1956. p. 169.
- <sup>42</sup> Sanderson, R. P. *op. cit.* p. 83 as Coningeborne.
- <sup>43</sup> Rental ... 1618. *op. cit.* p. 331. The entry in the 1618 Rental is unfortunately partly obscured, it is nevertheless clearly Loaningburn "... vingburne Sibespourfeild: Jenkyn Anderson, Robert Anderson, Gabriell Anderson, Robert Anderson Crippe—xxs viijd."
- <sup>44</sup> QRD 3. 1731—map; 1729—award. Loaningburn pp. 25–9.
- <sup>45</sup> Later references to Loaningburn all seem to be to the more recent farmstead (NY 935 974)—the site is marked on Fryer's Map—1820; Greenwood's Map—1828; 1st ed. 6" OS 1866 sheet but not on the 2nd ed. sheet in 1898.
- <sup>46</sup> Macdonald, S. *op. cit.* p. 64.
- <sup>47</sup> Wright, Sir R. P. *Standard cyclopedia of modern agriculture and rural economy*. Vol. 2. [1914]. p. 52.
- <sup>48</sup> Ritchie, J. N. G. *op. cit.* 528–30.
- <sup>49</sup> Hunter, H. The barley crop. 1952. pp. 51–2.
- <sup>50</sup> Fitzherbert. *The boke of husbandry*. 1523. Reprint edited by R. Vansittart. 1767. p. 14.