
6 POST-MEDIEVAL CORN-DRYING KILN (AREA D)

6.1 Description

The corn-drying kiln was situated on the southern side of the cemetery in Area D (illus 12). It consisted of a circular stone-lined bowl (F36) (illus 12 and 24) and a teardrop-shaped fire-pit (F38), which were conjoined by a stone-lined flue. The stone-lined bowl was conical in shape and had been cut into the side of the knoll to a depth of 2.14m. It had an internal diameter of 2.7m at the surface, narrowing down to *c* 1m at the base. A thin layer of charcoal and grey carbonised material was identified at the base of the bowl and the natural subsoil beneath it had been baked hard by the intensity of heat from the flue. During the excavation, the backfill of the kiln was emptied, but the stone structure was left in situ.

The firepit (F38) for the kiln had been cut into the side of the knoll *c* 2m to the south of the bowl. It measured 4.5m north–south by 3m east–west and had been excavated to a maximum depth of 2m. At the northern end of the pit, the stones forming the entrance to the flue were uncovered. The entrance to the flue measured 0.8m in height by 0.5m in width. Just inside the flue, the natural subsoil had been baked solid where the fire had been lit and there was a considerable build-up of black, yellow, orange and white ash. Further accumulations of ash were present at the southern end of the firepit and probably constitute material that had been shovelled out of the flue entrance. The build-up of layers suggests that there had been numerous phases of emptying, and indicates that it was in use over a long period of time. Charred oats from the uppermost phase of emptying produced radiocarbon dates of 1450–1640 cal AD (2σ) and 1510–1800 cal AD (2σ), indicating a date between the mid 15th and late 18th centuries for the use of this structure (Table 10).

The flue had been constructed within a 1.5m wide by 2m deep cut, which ran a distance of 3.5m from the base of the fire-pit to the base of the bowl. On completion of the stonework, the cut had been back-filled using redeposited natural. Internally, the flue measured 0.48m in height by 0.45m in width and had a nicely constructed lintel at either end.

6.2 Slag, by Dawn McLaren

A total of 766.6g was recovered from Area D and consists of low-density, non-magnetic vitrified amalgams of earth, sand, gravel and ash, and nodules of burnt clay. This vitrified material is created when materials such as earth, clay, stones or ceramics are subjected to high temperatures, for example in a hearth. These range in colour from light grey to dark brown and are often glassy in patches. All of this material was associated with the corn-drying kiln, and represents debris from its use. Only one fragment, recovered from the main fill of the kiln, was magnetic. This may be a fragment of ironworking waste, but its size makes it impossible to confirm the process that produced it, and there is no evidence of in-situ ironworking.

Recovery of slag, burnt organic material and clinker from the interior of medieval corn-drying kilns is known from Dairy Park, Dunrobin, Sutherland (Close-Brooks 1980, 336, 338, 340), Don Street, Aberdeen (Cameron *et al* 1996, 919) and Castle Street, Inverness (Wordsworth 1982, 351–2). Little of this material has been subject to detailed analysis, and their significance in this context remains unclear.

6.3 Other finds, by Sue Anderson

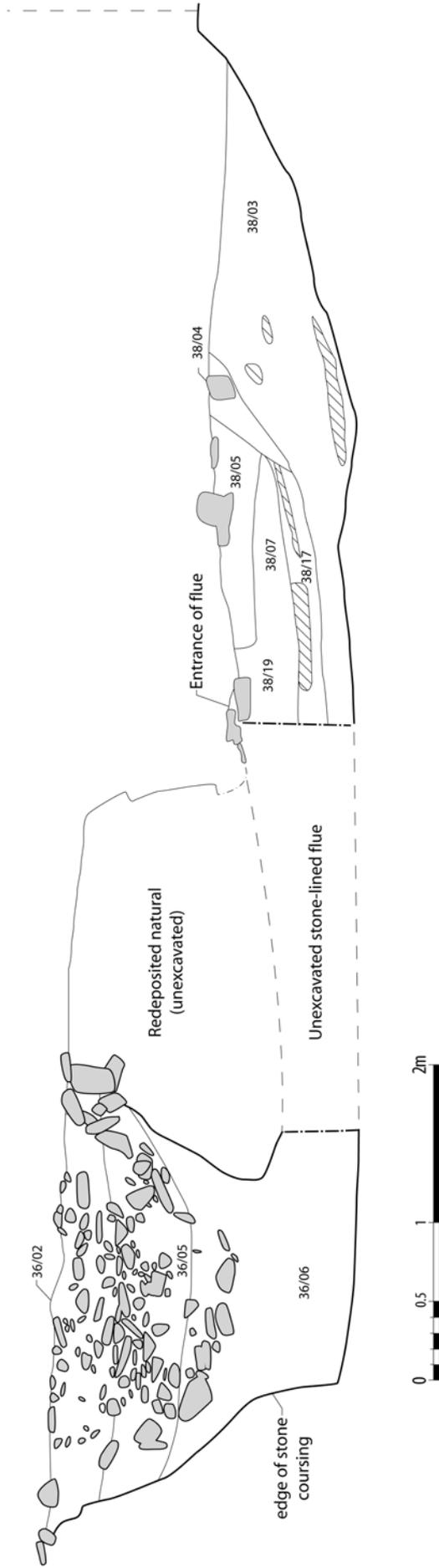
Four sherds of pottery included slipped redware and refined whitewares with transfer-printed decoration, all probably 19th-century in date. Two sherds of green bottle glass, one small fragment of clay pipe stem and two pieces of coal were all likely to belong to the same period of site use as the pottery. These were recovered from amongst the stones of the possible ring cairn (32/01), and from the upper fill of the corn-drying kiln (36/02).

6.4 Animal bone, by Jennifer Thoms

Eighty-one fragments were present of which only seven were identifiable to element. Of these seven fragments, five were identifiable to species and these were all horse. Another, a fragment of

Table 10 Radiocarbon dates from corn-drying kiln

SUERC Lab No.	Context	Type	Species	Date BP	Calibrated 1σ AD	Calibrated 2σ AD
19260	F38/02	Charred grain	Oat	270±30	1520–1670	1510–1800
19264	F38/02	Charred grain	Oat	355±30	1470–1630	1450–1640



Illus 24 Section of corn-drying kiln

Table 11 Summary of plant remains recovered from the corn-drying kiln

Context	Kiln bowl					Kiln flue			Fire pit					
	36/02	36/03	36/06	36/07	36/08	38/13	38/16	38/17	38/02	38/03	38/04	38/06	38/07 & 38/15	38/15
Cereals	+	+	+		+	++	++		+++	+++	++	+	+	+
Heather					++		++++	+++			+			
Wild taxa	+				+		+	+	+		+			

Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant

vertebra, derived from a large mammal which may have been a horse. There were no indications of the age at death of the animal, no teeth retained their occlusal (biting) surface, and there were no proximal epiphyses present on the one identifiable long bone fragment retrieved.

The unidentifiable fragments were all small (<30mm maximum dimension) and were generally in very poor condition. Four of them were burnt and calcified, giving them a white appearance. Such calcification indicates the bones were burnt at a high temperature. No signs of gnawing by carnivores was noted, though such evidence may have been obscured by the poor surface condition of the bones. Only one possible butchery mark was noted: one of the horse molars was cut through diagonally. It is probable that this was done during the excavation process, particularly since butchery of teeth is a pointless exercise, so this one mark should not be interpreted as evidence of butchery. No other taphonomic indicators were noted.

All the bone fragments were retrieved from context F36/02, the upper fill of the corn-drying kiln. The bowl of the conical pit had been lined with stones, and this may have provided the protection necessary for the survival of these few bone fragments in an area where bone would normally decay completely. The lack of the more common domesticates, such as sheep, cattle and pig, among the identifiable bone, indicates this is not a routine dump of domestic or butchery waste. The evidence suggests that the assemblage may represent the remains of a horse burial. The general poor state of the bone indicates acidic soil conditions and suggests that most of the burial has disappeared. The four small (<20mm) fragments of burnt bone may be intrusive, probably representing 'background' fragments of ashy bone deposits present in many agricultural soils. Alternatively, they may have derived from the nearby firepit for the corn-drying kiln. Other fragments recovered from lower down in the fill were identified as human and were probably redeposited from the surrounding cremation burials (Anderson [above](#)).

6.5 Charred plant remains, by Mhairi Hastie

Fourteen samples, of the thirty-two processed from Area D, contained carbonised plant remains,

all of which are associated with the corn-drying kiln.

Preservation of the plant remains within the kiln deposits was extremely good, with delicate buds and florets of heather surviving. The majority of plant remains were from the kiln flue and firepit, although occasional cereal grains and other wild taxa were also present in the fills of the kiln bowl (summarised in [Table 11](#)).

The cereal assemblage was dominated by oat grains, a small quantity of which still had their palea and lemma bases attached, and were identified as black oat (*Avena strigosa*). Occasional grains of barley were also present and one grain of bread/club wheat (*Triticum aestivo-compactum*) was recovered from the back fill of the firepit (F38).

Buds and floret fragments of heather were present in large quantities, particularly within ash deposits at the base of the flue. Small quantities of other wild taxa were also encountered, including hemp-nettle (*Galeopsis* sp.), corn spurrey, corn marigold (*Chrysanthemum segetum*) and grass (Gramineae indet.)

Only small quantities of charcoal were recovered from the fill of the kiln, including occasional small fragments of birch, heather and willow.

6.6 Discussion of the corn-drying kiln, by Mhairi Hastie

A corn-drying kiln, similar in diameter to other medieval/post-medieval kilns, was uncovered in Area D. It was stone-built and had a bowl with a maximum diameter of 2.7m. Such kilns were a common feature in Scotland particularly during the medieval and post-medieval periods, and some were still in use until the 20th century especially in Orkney ([Fenton 1999](#)). Traditionally these round kilns were regarded as 16th- and 17th-century (post-medieval) in date, yet excavations at Abercairny and Capo ([Gibson 1989](#)), and Chapleton ([Pollock 1985](#)) indicate that they were in use from at least the 13th century.

In the Highlands of Scotland kilns were built onto the ends of the farm barn, however, in Lowland areas the kiln was either a free-standing structure built half into a slope or formed part of a small kiln barn built separately from other structures. Each kiln, used to parch the grain prior to threshing, grinding

and/or malting, would have served a single family or family group. These kilns were used in mainland Scotland until the 18th century, when agricultural improvements brought the development of commercial meal-mills with adjoining large drying kilns (Gibson 1989).

The majority of grains recovered from the kiln were black oat; this species formed the main crop cultivated during the medieval and later periods in Scotland. Fenton (1999) notes that a kiln of similar dimensions to that uncovered at Lockerbie would have held about four sacks of oats, spread to a depth of 3 inches (8cm), during each drying session. Occasional grains of barley were also recovered from the kiln. These may have been grown along with the oat either as a deliberately mixed or 'maslin' crop or as a weed of the oat crop, alternatively the grain may have been burnt during a previous drying session.

Of some note is the presence of a grain of bread wheat within the firepit of the kiln. High rainfall, characteristic of the west coast of Scotland, can result in premature germination of wheat (Britnell 2004), and it would have been difficult to cultivate in the west of Scotland due to cold temperatures and a short growing season. The statistical accounts (*Statistical Accounts of Scotland 1791–99*) indicate that even in the 18th century only oat and barley were being cultivated in this area of Dumfriesshire. Large quantities of bread wheat were recovered from

excavations at the monastic settlements of Hoddum (Holden 2006) and Whithorn (Hastie 2003), suggesting that bread wheat was being imported into the region.

Traditionally, dried peat was used to heat the drying kiln (Fenton 1999) as it was less likely to spark than wood and hence limit the chance of the kiln catching fire. This would have produced corn that had a tang of peat-smoke in the taste. The practice of using turf as the main fuel was eventually replaced with the use of chaff, removed from the cereal grains during threshing, as this removed the peaty tang. A high concentration of heather florets and buds, along with damp/acid-loving species such as sedge, and rhizome fragments (underground stems) was recovered from the bowl and flue of the kiln, suggesting that in this case turfs were being used to stock the kiln.

The largest quantity of weed seeds recovered from the whole of the excavated area was recovered from the fill of the kiln. The seeds comprised small-grained species such as corn spurrey, corn marigold and hemp-nettle, which were all common elements of arable fields prior to the introduction of herbicides. Indeed, corn marigold was such a prevalent weed of medieval crops that laws were passed in the 13th century stating that if a farmer allowed so much as a single plant to produce seed in amongst his crop then he would be fined a sheep (Dalrymple 1776).