

A grain storage pit of the pre-improvement period at Inchkeil, Duffus, Moray

Ian A G Shepherd* and Alexandra N Shepherd†
with a contribution by Alan D Fairweather

ABSTRACT

A sub-conical clay- and stone-lined pit in the Laigh of Moray was found to contain quantities of carbonized oats (Avena sativa, but with an admixture of A fatua and A strigosa) and weed seeds (principally corn cockle, Agrostemma githago and hairy tare, Vicia hirsuta). A radiocarbon date indicated that the pit fell out of use between AD 1525 and 1705.

INTRODUCTION

The light sandy soils of the Laigh of Moray, the undulating coastal plain between the rivers Spey and Findhorn, have long been regarded as particularly suitable for agriculture. However, comparatively few features survive from the centuries before the agricultural improvements of the 18th and 19th centuries, while the evidence of prehistoric farming in this area is similarly scanty. In the Laigh, evidence for both the prehistoric and pre-improvement farmers has been recovered from one small area, centred on the farms of Easterton of Roseisle and Inchkeil (illus 1). Much of this area was observed and excavated in the 1890s by a local antiquary, H W Young. Unfortunately, his reports (eg Young 1896) do not give good descriptions of the actual locations of his discoveries, but Iain C Walker's paper (1968) represents a heroic attempt to rectify this.

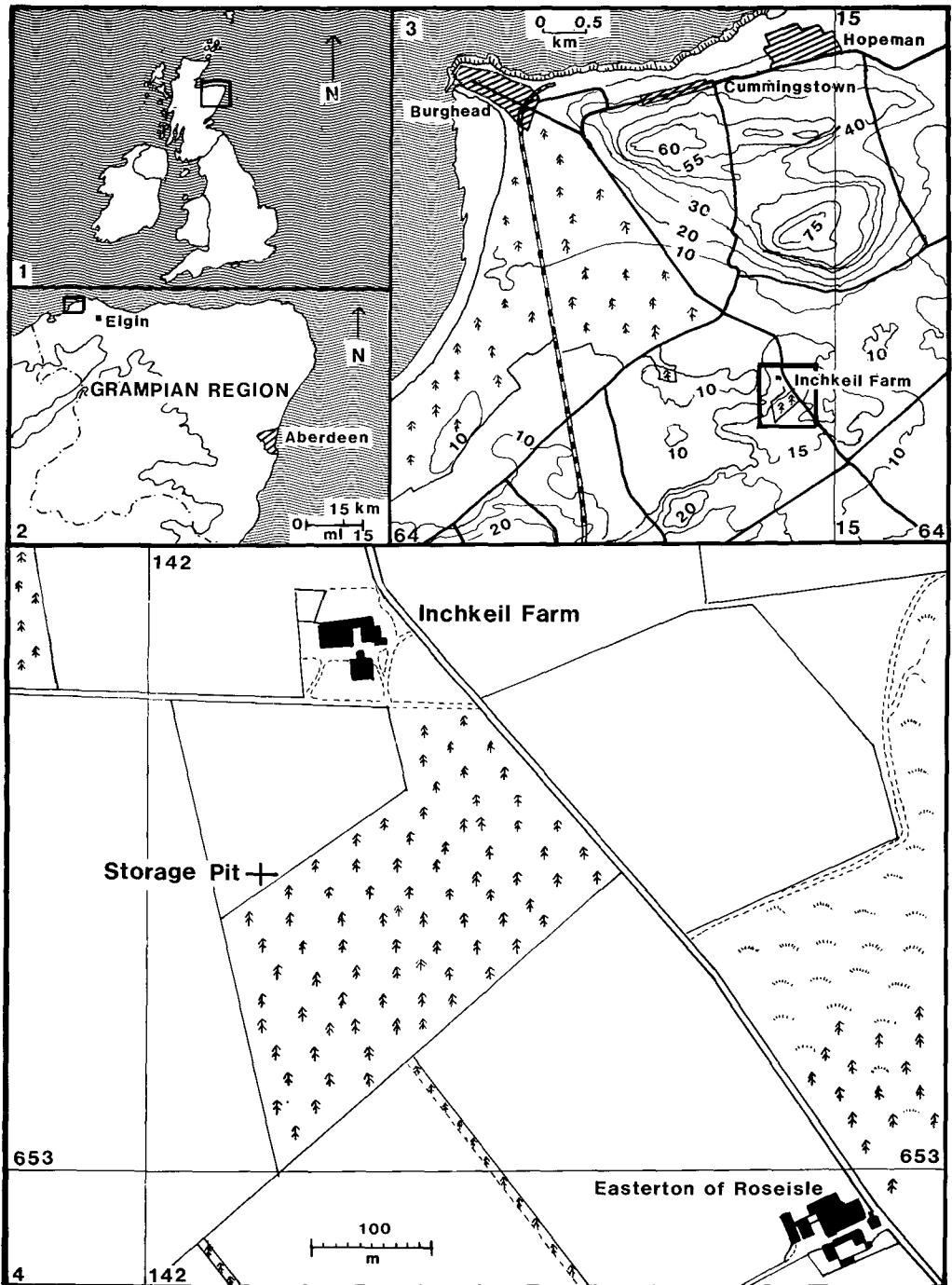
Of particular interest is Young's description (1896) of a pit he excavated at Easterton of Roseisle. Walker attempted (1968, 101) to locate this near the now-vanished hamlet of Starwood, which was in existence in 1662 at approximate NGR NJ 139 646. This position is c 900 m south-west of the pit whose description follows.

LOCATION (illus 1)

The feature first came to notice in March 1977 when Mr James Gill of Inchkeil, Duffus, disturbed some stones and an area of burning while ploughing. The site lay on the north-facing crest of a small natural rise at c 15 m OD and NJ 1430 6555, some 8 km north-west of Elgin. The sandy ridge sloped away to the west, north and east. A short preliminary investigation by IAGS took place on 21 March 1977, followed by a fuller excavation by both writers between 29 and 31 March 1978.

* Grampian Regional Council, Woodhill House, Aberdeen

† 509 King Street, Aberdeen



ILLUS 1 Inchkeil: location

THE EXCAVATION (illus 2–3)

A 3 m-square was cleared of 250–300 mm of light topsoil to reveal a circular stone-lined pit, 1.80 m in diameter, in the form of an inverted, truncated cone, 1.50 m in diameter at the base, with 1.10 m of depth still surviving. It had been constructed by sinking a pit into the sandy subsoil and lining it with clay. The base consisted of closely-set flat stones set in clay; clay also sealed the angles between the wall and the floor. The bottom course of the wall consisted of a series of orthostats, from 0.40 m long by 0.30 m high to 0.55 m long by 0.20 m high. The upper courses were formed by smaller stones interspersed occasionally with turves, both set in the clay lining. A stepping stone, 35 cm by 30 cm by 40 cm tall, stood against the side of the pit in the south-east quadrant to facilitate access.

A north–south section revealed that the fill in the upper half of the pit was extremely varied, with some lining stones and burnt clay nodules lying alongside areas of clean sand and dirty, silty sand with charcoal flecks. This was probably disturbance caused by the plough collapsing the uppermost courses of the stone- and clay-lined pit over the years. Against the south side of the pit there was a thick tip-line of silty, dark grey sand and ash which thinned towards the centre of the pit. Beneath this were ashy layers with, particularly in the eastern half of the pit, pockets of reddened clayey material. All these layers suggested tip lines of surface material coming from around the top of the pit after it had fallen out of use. Underneath these layers, in the lower third of the pit, was a 10 to 12 cm-thick band of burnt grain (chiefly oats: see grain report, below) and ash with pieces of charcoal up to 300 mm long and c 60 mm in diameter which at times looked as though they may have been lying in lines. The grain layer was hard-up against the stone lining, suggesting that it had been burnt *in situ* and not tipped in later. It consisted of a solid deposit of compacted grain, with occasional large pieces of charcoal in it. A sample of the charcoal has been kindly identified as Scots pine (*Pinus silvestris*) by Mr Donald Paterson of the University of Aberdeen.

Beneath the grain in the south-east quadrant were further large pieces of charcoal, lying almost at right angles but at different levels from each other, approximately 60 cm down from the top of the



ILLUS 3 Inchkeil storage pit from east

stones. The possibility exists that these large pieces may have come from a horizontal framework set approximately 35 cm above the floor of the pit. A small recess which might have served such a function can be seen on the section (illus 2); this inference would explain both the charred wood lying at an angle against the lower north side of the pit and the chunk near the very bottom of the pit. However, it has to be said that the pieces were not linked in any way, nor have any evidence of pegging or other signs of conversion been found on the charcoal pieces.

The stones lining the pit showed marked signs of burning in the form of cracking, reddening and blackening, as if they had been subjected to regular heat, rather than to one big fire. This would perhaps indicate attempts to sterilize the pit fairly regularly in order to remove traces of cereal disease or other contamination. Comments on this possibility may be found in the grain report where Mr Fairweather concludes from the state of the carbonized grain that the pit may have been cleaned by fire.

A radiocarbon date was obtained from a sample of the carbonized grain. On a Libby half-life of 5568 years it is 335 ± 45 bp (ie AD 1615 \pm 45; δ C13 = $-25.3 \pm 0.05\%$ GU-1017). Applying two standard deviations, this would indicate that the pit went out of use sometime between AD 1525 and 1705.

After sampling the grain the remaining half of the pit-fill was carefully covered with polythene and the pit was then backfilled.

THE GRAIN

Alan D Fairweather

The full report is on fiche 4: E1–9. The sample is *Avena sativa*, cultivated oat, with an admixture of *A fatua*, wild oat, and *A strigosa*, bristle oat and occasional grains of *Hordeum*, barley, and *Triticum*, wheat. Other species represented are few (only eight species), but the majority of ‘seeds’ found were large and in a size-class similar to the grains and hard to remove. These species were corn cockle (*Agrostemma githago*) and hairy tare (*Vicia hirsuta*). The absence of many small light weed seeds suggests that they had been winnowed out (although soil conditions and rigorous weeding may have kept a clean crop). The proportions of the different species present are shown on table 1 (fiche 4: E6).

The grain had been threshed and raked or winnowed to remove straw and parts other than florets. Much of the sample was fused into lumps and compressed and distorted. Many grains also showed signs of germination; all these features indicate damp storage before carbonization, probably at a moisture content above 24% (safe long-term storage of grain needs a moisture content of 14%). It is possible that such fused grain masses may have been discarded and burned as being inedible. Certainly, carbonization occurred before ‘shellin’ (the removal of lemma and palea by parching). Carbonization may be the result of burning discarded material or cleaning the pit by fire.

DISCUSSION

The grain storage pit at Inchkeil joins a small group of structures, architecturally modest in themselves, which provide important insights into pre-improvement agricultural practices. The pit at the nearby site of Starwood has already been referred to; this was rather larger than the Inchkeil example, being 10 ft by 9 ft (3.05 m by 2.75 m) at the top, but the sheer quantity of burnt oats that it contained (and the fact that they had been burned from above) prevent it being interpreted as a kiln (Young 1896, 239–40). It should be accepted as a storage pit, probably very close in date to Inchkeil. However, it is not possible to interpret the two stone-lined features of Neolithic date from nearby Easterton of Roseisle (Walker 1968, 98) as storage pits (*pace* Fenton 1983, 572); rather they should be

seen as Yorkshire-type crematoria (Kinnes 1985, 40). The available details of the 'numerous black patches' at Meft, Urquhart, Moray are probably insufficient to indicate storage pits of whatever date (Morrison 1872, 255). Further afield, Complex A within the deserted township of Rosal, Sutherland, contained a stone-lined storage pit of not dissimilar dimensions to Inchkeil (Fairhurst 1968, 148–9, fig 5).

Other simple structures which supply evidence of medieval and pre-improvement crop-processing are corn-drying kilns, the most recently excavated being at Barbush and Abercairny, Perthshire and Capo, Kincardineshire (Barclay *et al* 1982; Gibson 1988). The two latter excavations have pushed the dating of such structures back to the 13th century. Feachem's note on kilns and pits still repays study (1957). The most important result of the discovery and examination of the Inchkeil storage pit is the information gained from Mr Fairweather's study of the carbonized grain. It is perhaps no surprise to find that oats comprised the bulk of the sample, but the presence of barley and even some wheat in a 16th- or 17th-century crop is worthy of note. Furthermore, the relative absence of weeds of cultivation indicates either careful maintenance of the seed bed or painstaking winnowing of the harvested crop. Such pains are perhaps also reflected in the evidence of regular burning of the pit in an attempt to sterilize it in order to store the '25 or 30% of the average harvest that was retained for seed' (Smout & Fenton 1965, 74).

Finally, it is surely not too fanciful to see in the pit's eventual abandonment owing to the dampness of the grain (even in the temperate Laigh of Moray) a reflection of the increasingly hostile climate of the later 16th and 17th centuries. In the second half of the 16th century the grain harvest failed approximately 17 times, while between 1600 and 1660 harvest failure was widespread on 15 to 20 seasons and during the next 50 years there was dearth in 1674–5 and 1690, culminating in the very severe crop failures of 1695–1700 (Smout & Fenton 1965, 74–5). It is to this still imperfectly understood period, which has been described as one of agricultural stagnation and decline (Whyte 1979, 2), that the Inchkeil storage pit and its soggy oats belong.

LOCATION OF SAMPLES AND ARCHIVE

Samples of the grain and charcoal will be deposited in Elgin Museum and the site archive in the Grampian Regional Council Sites and Monuments Record.

ACKNOWLEDGEMENTS

We are grateful to the late Mr James Gill of Inchkeil for reporting the discovery and to him and his wife, Mrs Gill, for much cheerful assistance on site. We should also like to thank W J Lindsay through whom the feature was reported, P J Ashmore and the HBM for arranging the C14 date and Mr Fairweather's report on the grain, Mr Fairweather himself, Coinneach Maclean for an initial opinion on the grain, Donald Paterson for examining the charcoal, Mr J P Shepherd for assistance with research and Mrs M K Greig for preparing the archive report on which this account is based and illus 1 and 2.

Alan Fairweather would like to thank Dr David Habeshaw of the East of Scotland College of Agriculture for confirmation of identifications and for discussion on cereal storage problems.

REFERENCES

- Barclay, G J, Brooks, M & Rideout, J 1982 'A corn-drying kiln at Barbush Quarry, Dunblane, Perthshire', *Proc Soc Antiq Scot*, 112 (1982), 583–6.
 Fairhurst, H 1968 'Rosal: a deserted township in Strath Naver, Sutherland', *Proc Soc Antiq Scot*, 100 (1967–8), 135–69.

- Feachem, R 1957 'Corn-drying kilns'; 'Limekilns, stone-lined pits and fox-conduits', in Feachem, R, 'Castlehill Wood dun, Stirlingshire', *Proc Soc Antiq Scot*, 90 (1956-7), 45-51.
- Fenton, A 1983 'Grain storage in pits: experiment and fact', in O'Connor, A & Clarke, D V (eds), *From the Stone Age to the 'Forty-Five*, Edinburgh, 567-88.
- Gibson, Annemarie 1988 'Medieval corn-drying kilns at Capo, Kincardineshire and Abercairny, Perthshire', *Proc Soc Antiq Scot*, 118 (1988), 219-29.
- Godwin, H 1976 *History of the British Flora*. Cambridge.
- Kinnes, I 1985 'Circumstance not context: the Neolithic of Scotland as seen from outside', *Proc Soc Antiq Scot*, 115 (1985), 15-57.
- Morrison, J 1872 'Remains of early antiquities, in and on the borders of the parish of Urquhart', *Proc Soc Antiq Scot*, 9 (1870-2), 250-63.
- Salisbury, E 1961 *Weeds and Aliens*. London.
- Smout, T C & Fenton, A 1965 'Scottish agriculture before the Improvers - an exploration', *Agr Hist Rev*, 13 (1965), 73-93.
- Walker, I C 1968 'Easterton of Roseisle: a forgotten site in Moray', in Coles, J M & Simpson, D D A (eds), *Studies in Ancient Europe*, Leicester, 95-115.
- Whyte, I 1979 *Agriculture and society in 17th century Scotland*. Edinburgh.
- Young, H W 1896 'Easterton of Roseisle', *Reliquary Illus Archaeol*, n ser, 2 (1896), 237-41.

*This paper is published with a grant from
the Historic Buildings and Monuments
Directorate (SDD)*