Excavation and environmental archaeology of a small cairn associated with cultivation ridges in Aberdeenshire

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INTRODUCTION

In northern Britain, the small cairn, whether it be part of a 'cairn-field' or an isolated field monument, is a ubiquitous feature of the upland landscape. The function of these small mounds has for long been a matter for debate. The essential problem hinges on whether they performed a funerary function as burial cairns and/or whether they are heaps of stones resulting from field clearance (Graham 1956; Jobey 1968; Fleming 1971; Feachem 1973). An equally important problem is the age of these cairns. They may be found in association with many monuments whose likely ages span the Neolithic to Iron Age periods (eg Jobey 1968; Fairhurst & Taylor 1970; RCAHMS 1978). Association, however, is not proof of contemporaneity and good dating evidence is rare. In the latter connection, the investigations of small cairnfields in Northumberland may be particularly noted (Jobey & Tait 1966; Jobey 1968). Here cairns directly associated with cists have been found, as well as one producing a bronze pin of possibly 2nd-century bc date, and another from beneath which charcoal yielded a radiocarbon age of 2890 ± 90 bc (Gak–1507).

In this paper, the age of small cairns lying in close proximity to a field and settlement system with Iron or Dark Age affinities is questioned, particularly since they appear to be associated with traces of possible medieval cultivation ridges. The data to be presented involve pollen, phosphate and radiocarbon analyses of an excavated small cairn.

THE SITE

The study site lies amongst the field walls of the Old and New Kinord field and settlement systems in the Howe of Cromar, Aberdeenshire (fig 1). The Howe is an undulating lowland area about 70 km west of Aberdeen on the Grampian Highland edge. The antiquities of Cromar have for long been the subject of considerable attention (Stuart 1853; Michie 1910; Ogston 1931) and are most recently investigated by Edwards (1975, 1978).

The small cairns lie on a patch of grassland partially colonised by birch trees to the south-east of Loch Davan and at an altitude of about 165 m OD (NGR NJ 446004). The Old Kinord and more easterly New Kinord groups both consist of the stone foundations of hut-circles, enclosures, field walls and souterrains (Abercromby 1904; Ogston 1931). Close examination of the land surface in the vicinity of the cairns revealed the faint though distinguishable signs of ridge and furrow. These old cultivation ridges are aligned approximately east-west and their shallow relief amplitude of less than 8 cm is perhaps testimony to their age, intensity of use and thinness

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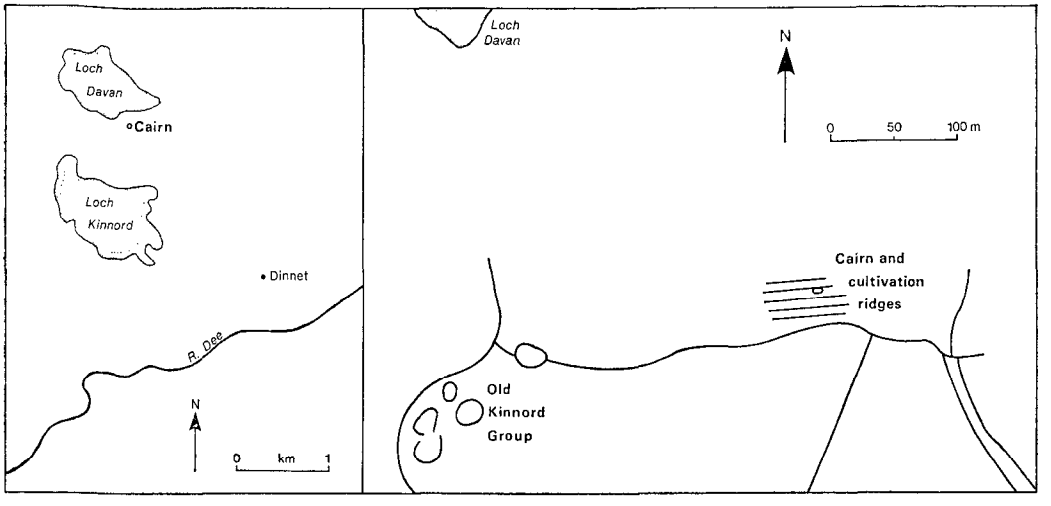

FIG 1 The study area

of the local iron podsol soils. The ridges could be followed for about 100 m and a schematic plan diagram of the ridges (based partly on extrapolation where land surface relief was indistinct) together with the overlying cairns is shown in fig 2. Field inspection of the cairns revealed no signs of plough-trimmed edges which could have suggested a possible pre-ridge date (cf the Hare Law complex in Lanarkshire, RCAHMS 1978, 67). The possibility that the cairns were overlying a relict portion of medieval or recent cultivation ridges and were therefore related to post-prehistoric land use encouraged the author to investigate one of their number.

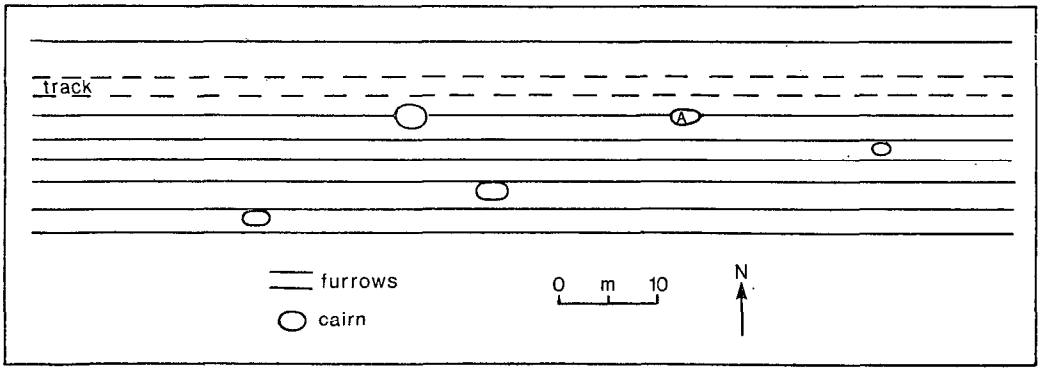

FIG 2 Schematic diagram of the small cairns and cultivation ridges

EXCAVATION

The cairn chosen (cairn 'A' figs 2, 3) is 3·5 × 2·0 m in plan dimension and 0·4 m in height. The north-west quadrant was excavated and revealed a turf-covered cairn of semi-rounded and partially rotted boulders of granite, quartzite, schist and gneiss. These rock types are common constituents of the local fluvioglacial drift deposits. They were mostly around 12 cm in diameter but ranged in size from 5 to 24 cm in diameter. The boulder iterstices, particularly at the base

of the heap, were filled with peaty material. The boulders overlay a dark brown organic horizon 3 cm in depth and below this was a lighter brown horizon underlain by an iron pan. This buried profile is similar to the iron podsols of the local area.

After excavation, the cairn and land surface were restored to their original condition.

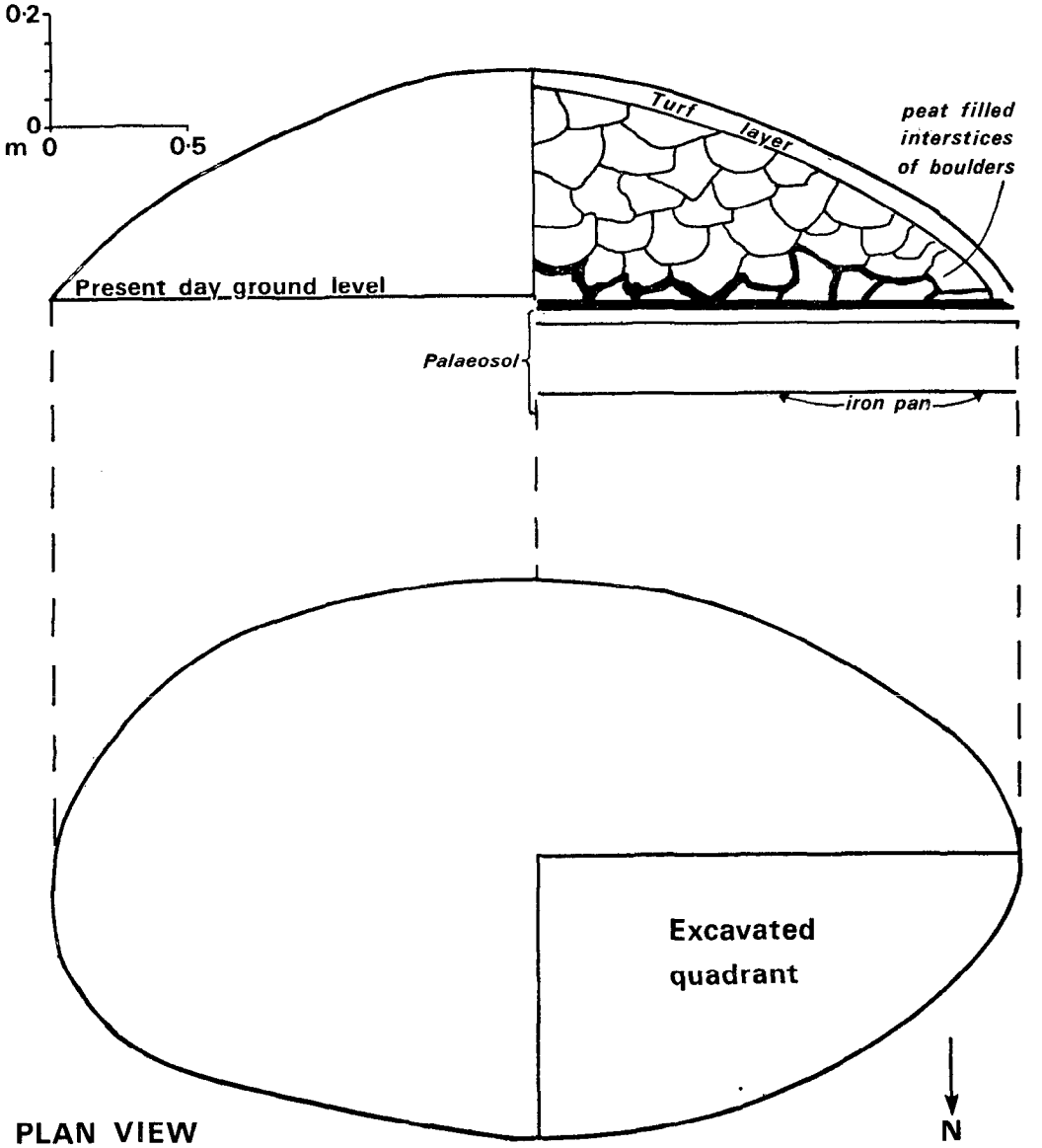

FIG 3 Partial excavation of small cairn near the Kinord groups

PHOSPHATE ANALYSIS

The lack of any major visible profile disturbance in the buried soil argues against a burial function for the cairn, but as a check the buried soil was subjected to a phosphate analysis

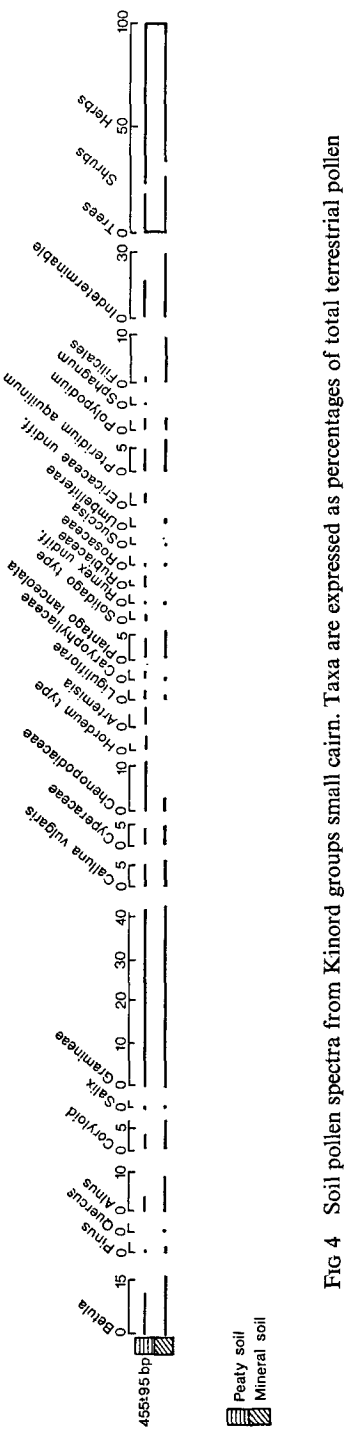

FIG 4 Soil pollen spectra from Kinord groups small cairn. Taxa are expressed as percentages of total terrestrial pollen

(Hesse 1971; Provan 1971; Proudfoot 1976). Total phosphate values of 140–180 mg/100 g P_2O_5 were found, whereas typical values for unburied soils in the vicinity of the cairn are over 200 mg/100 g P_2O_5. On the face of it this would suggest that there was no indication of the enrichment expected from a cremation or when bone disintegrates in acidic soils (Johnson 1956; McCawley & McKerrell 1972). It is possible, of course, that the higher phosphate values for the surrounding soils may result from more modern additions of manure or fertiliser though there is no evidence for this. In any case, the phosphate content of the palaeosol is low in comparison with those of similar regional soil types today (cf Glentworth & Muir 1963).

POLLEN ANALYSIS

In an attempt to find out something about the vegetational and agricultural history of the site, soil pollen analysis was carried out on the buried surface layer of the palaeosol as well as on basal peaty material from the boulder interstices. Samples were digested using standard acetolysis and hydrofluoric acid methods (Faegri & Iversen 1975) and the polleniferous residue was mounted in silicone oil. Pollen and spore counts based on a total sum of 500 land pollen are shown in fig 4.

The two pollen spectra are very similar with *Gramineae* (grass) as the dominant taxon, and indicating some *Betula* (birch), *Alnus* (alder) and perhaps *Corylus* (hazel) woodland in the area. They differ, however, insofar as the pollen content of the peaty material includes *Hordeum* (barley) and significant amounts of pollen from such arable weeds as *Chenopodiaceae* (cf fat hen) and *Artemisia* (cf mugwort). The two samples also contained the pollen of taxa typically associated with pasture grassland such as *Gramineae*, *Plantago lanceolata* (ribwort plantain) and *Pteridium aquilinum* (bracken). This may suggest that the peaty material was contemporaneous with a period of mixed farming whereas the soil layer was the humic horizon of a pasture soil. The palaeosol spectrum has greater tree and fern (*Filicales*) pollen and spore frequencies which may indicate a less open and more wooded local landscape than was the case in the inferred phase of mixed farming.

Soil pollen spectra are typically dominated by the pollen of local vegetation communities and there are many problems in their interpretation (Dimbleby 1961; Havinga 1974). The taxa found in the site under discussion are common in north-east Scotland through much of the prehistoric and later periods. For all these reasons, the author did not consider it worth while to attempt a comparison with the radiocarbon-dated pollen diagram produced from the lake sediments of nearby Loch Davan (Edwards 1978).

RADIOCARBON-DATING

The peaty material and the humic layer of the mineral soil profile were examined with a view to radiocarbon-dating. The soil horizon, which might be expected to provide the latest date for cairn construction was too carbon-poor for ^{14}C-dating. The basal peaty material was more humic and appeared to be more promising. Its origin though is open to debate. It may have formed *in situ* during the course of cultivation, perhaps as a result of local impeded drainage and waterlogging in response to agriculture (Moore 1975). It may post-date the cultivation ridges by many years, or it may even be contemporaneous with or earlier than the ridges if it represents a surface peaty soil collected along with the boulders during ridge construction. In the absence of dates from similar contexts and despite the uncertain origin of the material, it was considered justified to attempt an assay on the sample. It yielded sufficient carbon for a date determined at a

counting pressure of one atmosphere. The radiocarbon age expressed in terms of the conventional half-life of 5568 ± 30 years, was 455 ± 95 bp (UB–2084). This is 1495 ± 95 ad or a central date after correction to calendar years (Clark 1975) of about 1440 AD.

DISCUSSION

Excavation, phosphate determinations and pollen analyses suggest the cairn to be a field clearance heap associated with former mixed farmland. If the radiocarbon date is considered to be contemporaneous with the construction of the cairn then, taking into account the questions raised regarding the origin of the peaty material, the date of the ridge and furrow system might hopefully be accommodated within the time spread of the ^{14}C-date error terms. The two standard deviation age spread (95% statistical certainty) is 1305–1685 ad (or *c* 1350–1610 AD after correction to calendar years).

The literature on Scottish ridge and furrow and runrig field systems was examined to see if it could corroborate the radiocarbon-dating evidence which itself is of obvious interest to the antiquity of cultivation ridges in north-east Scotland. The relationship between ridge morphology and age has been investigated (Bowen 1961; Jackson 1961) but within Scotland the dating evidence prior to the mid-18th century is tenuous (Parry 1976). The ridges under discussion in the present paper range from about 2–4 m in width with a mean of 2·7 m and a general relief amplitude of less than 8 cm. These values would conform with the type 2a typological category of Parry (1976) for south-east Scotland which unfortunately may only intimate abandonment after about 1800. This limited information does not, of course, contradict the dating evidence presented earlier.

Ridge and furrow cultivation was frequently an integral part of the agrarian system known as 'runrig' (Whittington 1970). It is possible that the Kinord ridge and furrow unit was part of a fragmented runrig holding. Matley (1966) examined the linguistic evidence for the term runrig and concluded that it was non-celtic in origin and was certainly associated with the Scottish lowlands from 1437 AD onwards. The early Scottish Parliament Acts of 1661 and 1695 encouraged the removal of proprietary runrig in favour of enclosure, though tenant-held runrig persisted long after this (Dodgshon 1972; Whittington 1973). The radiocarbon date from small cairn A is not inconsistent with the cited documentary dates.

The research presented in this paper would tend to support the recent historical age of the small cairn together with an agricultural function. Although there is no doubt about the antiquity of many small cairns it might be supposed that careful field observations would also suggest the relatively recent origin of some of the cairnfields, though this is not apparent in the literature. This may be due, in part, to the fact that much of the surviving field evidence is difficult to interpret because of degraded or overgrown structures. In the final analysis only excavation and scientific analysis will be able to clarify the chronological and functional relationships.

There remains an interesting point concerning the location of cairns on good agricultural land thereby reducing the cultivable area. The Kinord cairns might have been expected to be located on peaty or marshy land to the north which would have been largely useless for crop cultivation. Scott-Elliot and Rae (1967, 102) similarly find difficulty in explaining some Dumfriesshire sites where cairnfields are found on harder dry soils when wet ground is found alongside. In the Lanarkshire *Inventory* (RCAHMS 1978, 9), it is remarked that if some of the cairns are the result of field clearance then it is perplexing that adjacent marshy patches and river banks were not selected as dumping places. On the assumption that present-day relative soil fertility and drainage relationships pertained at these sites in the past, then it might be necessary to enquire as to the

arable-pastoral mix in the economy. If the balance was strongly in favour of animal husbandry then it might be considered more important to leave pasture or meadowland unincumbered with boulders where injuries to animals might easily result. There are several possibilities concerned with the social organisation of early communities. Individuals desirous of cultivating field crops may have been directed to keep gathered stones away from nearby land held in common. Perhaps erstwhile landowners or chiefs insisted that their tenants retain boulders on land paid for with money or in kind and that the poverty of the tenant forced him to pay only for the fair land. While it might seem reasonable to suppose that religious conventions encouraged some communities to bury their dead on good land in order to ensure good luck, the many small cairns which are solely clearance heaps would presumably owe their location to a continuing superstition relating cairn existence to luck, or the agricultural and economic considerations discussed above.

ACKNOWLEDGMENTS

I would like to thank Mr Marcus Humphrey who kindly permitted me to work on his land. The radiocarbon-dating was carried out in the Palaeoecology Laboratory of The Queen's University of Belfast under the supervision of Mr Gordon Pearson. Diagrams were drawn by Miss Maura Pringle of the Queen's Geography Department. Dr David Chester, Mr Rod Gunson, Mr Ian Ralston and Dr Graeme Whittington are all thanked for their assistance.

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