

A Hoard of Fifteenth-Century Coins from Glenluce Sand-Dunes and their Context

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with a summary discussion of the coins by

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I. INTRODUCTION

THESE coins were found by us in July, 1956, on Torrs Warren, Glenluce sand-dunes, at a point (FIG. 91) just under one mile S. of Dunragit (or Droughdool) motte and $\frac{3}{4}$ mile WSW. of Low Torrs (grid reference NX/149554), 3 miles SW. of Glenluce Abbey.¹ Attention was first attracted by a few green corroded coins showing through the surface of the clean blown sand near the south end of a valley or throat eroded through a dune, just before it ended in a vertical drop at an erosion scarp presumably formed by sapping action of water (PL. XXIII, A). The coin-hoard was immediately excavated and the whole site investigated as fully as was possible in the circumstances with limited time. This showed that the coins had been deposited beside the site of a destroyed derelict building with a hearth. Further visits in 1957-8 added a little information and a few more finds. The site is now rapidly becoming covered once more by heath and blown sand, and will be hardly traceable in a few years.

The coin-hoard was almost certainly completely recovered. It had probably only just been exposed, and the main bulk of the coins were heaped closely together, several groups actually adhering together by corrosion. Only about a dozen were scattered for a foot or so from the main bulk, and their condition and proximity made it clear that they had been dispersed from the top of the hoard.

The hoard has proved of great interest numismatically (part III below). This is particularly because of its nature, not a hoard in the sense of savings, but a bag of money in current use, worth in all about 10 shillings at that time. The hoard of 112 coins contained 19 hitherto unrecorded varieties. There are also the

¹ We are most grateful to the Air-Officer Commanding, R.A.F., Freugh, and subsequently the Officer-in-Charge, R.A.E., Freugh, and his staff, for their kindness in allowing us to explore the area; and also, in particular, to Mr. Patrick Cotterell for his precise survey of the location of the site. The area is sometimes described as Genoch dunes, from which there are pottery and other finds in the Stranraer museum. We are grateful to Miss E. McCaig and Mr. Walson for their kind help at Stranraer; to Mr. R. B. K. Stevenson for his help in many ways; to Dr. D. B. Harden and Mr. A. S. Trotman (London Museum) and Mr. W. A. Seaby for much help; and to Dr. W. R. M. Morton, Anatomy Department, Queen's University, Belfast, for photomicrographs of the cloth.

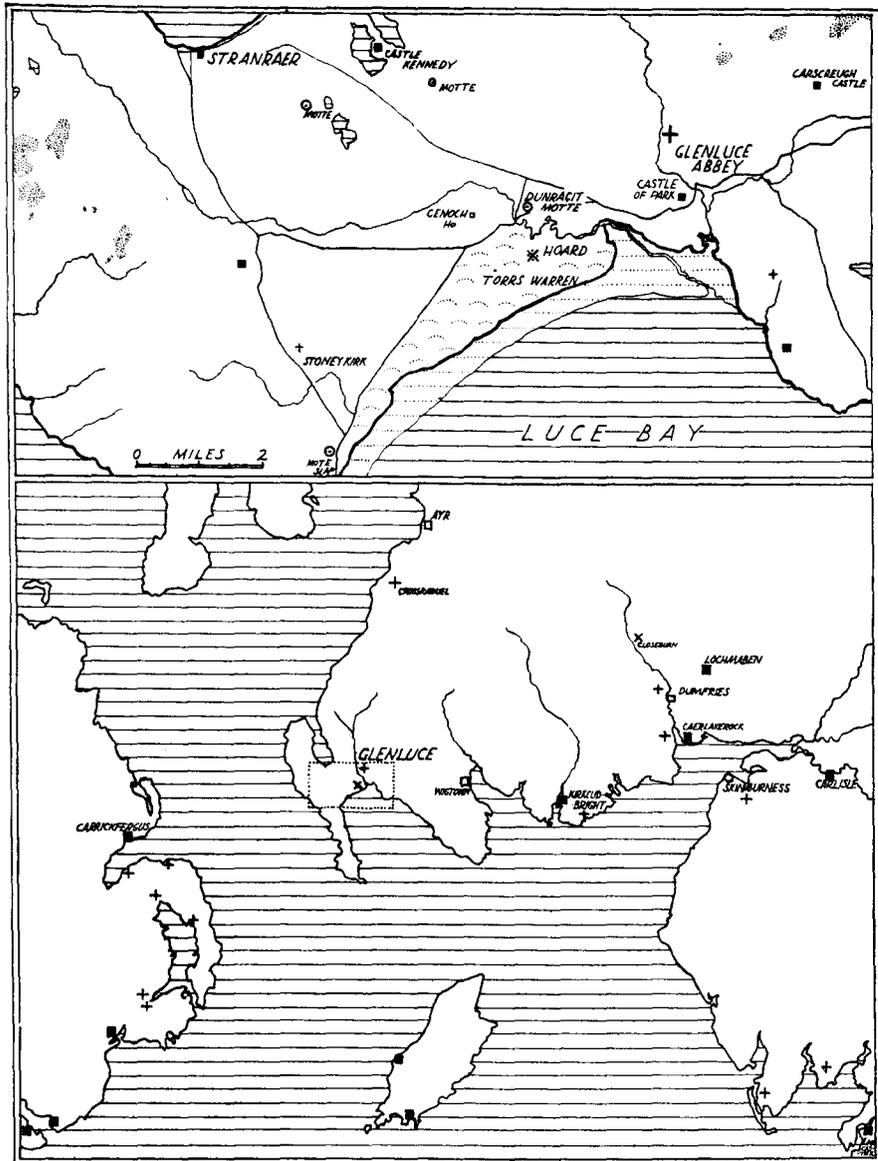


FIG. 91

Maps showing location of the site of the coin-hoard on Torr's Warren, Glenluce sand-dunes, Wigtownshire, and other places mentioned in the text. Crosses indicate the more important abbeys.

two fine portrait-type groats firmly shown by this hoard to be of James III and not James IV or V (PL. XXIV, B), almost the earliest examples of the renaissance three-quarter profile portrait on coins outside Italy.²

² The Scottish coinage shows, of course, the earliest examples of renaissance-style coins in the British Isles.

II. ARCHAEOLOGY OF THE SITE

THE BAG OR PURSE

One minute fragment of textile survived on one edge of a James II penny, presumably the last remnant of the container (PL. XXIII, B, C). Miss Elisabeth Crowfoot has most kindly reported on this as follows:

'Fragment 6 by 3 mm.; presumably linen, undyed. The thread varies considerably in thickness, Z-spun both systems. Plain weave, count *c.* 4 by 4 over 2.5 mm., i.e., *c.* 16 by 16 per cm. The thread varies so much in warp and weft, some threads being thick and soft, others fine and tighter spun, that it is tempting to think there may have been some decorative effect, but it is not possible to be certain from so small a scrap.'

This hint of a patterned weave suggests that the container may have been a purse rather than a mere bag, comparable perhaps (though undyed) with the purse without metal mounts from the London city-ditch (PL. XXIV, A).³ This in turn strengthens the interpretation of the hoard as the moneys carried by an individual.

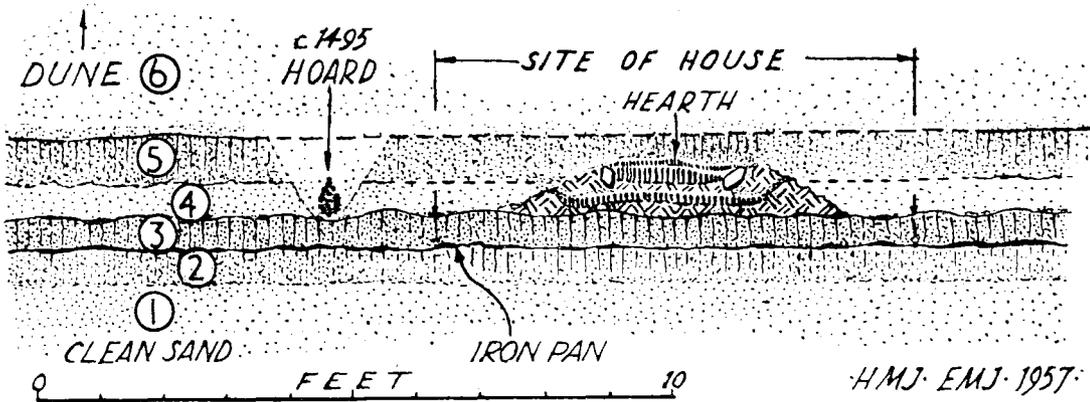


FIG. 92

Reconstituted W.-E. section through house-site, Glenluce, showing relation of hearths to coin-hoard, and heath-growth (pp. 261-4, 278)

CONTEXT OF THE COINS

The earliest hearth had been laid on a dark, sandy humus layer (3) ('grey dune') about 6-8 in. thick (FIG. 92), which could be traced extending horizontally for several hundred feet to the N., E. and W. This represents a general vegetation-cover of grassy heath (see Appendix II) over a wide area, covering a fair depth of blown sand (at least 40 ft.), the dark colour being probably contributed to by heath fires. The coins, however, were excavated from a layer (4) of blown sand, 6 to 12 in. thick, overlying this humus layer, and they hardly penetrated into later (3). Over this blown sand (4) was a grey, sandy humus layer (5). This represents a further growth of heath (this time with less grasses—

³ *London Museum Medieval Catalogue* (1940), pp. 160-1, fig. 49.

see Appendix II) over the blown sand layer (4). From this layer (5) water percolating downwards had leached out iron⁴ and deposited it as iron-pan concretion round objects and roots in layers (4) and (3), which were thus left as iron-pan casts.⁵ The main iron-pan deposit was at the base of layer (3), and the process had been going on to some extent when layer (3) was the grassy heath-land surface, as could be seen in layer (2), and a faint iron deposit at an interface with the original clean blown sand (1).

It is significant that there was practically no iron-pan concretion round the coin deposit. This shows that unless the coins were protected from percolating water (e.g. by a stone slab), the bag must have been placed in a hole scooped through layer (5)⁶ into layer (4) after the leaching which caused iron-pan formation had already progressed—that is, after layer (5) had been heath-covered for some time. That the bag was placed in a scooped hole (and not, for instance, in the air-space under floor boards, blown sand then gradually gathering round it) is further indicated by a small piece of coarse pottery beside the coin deposit. The sequence would thus seem to be that the building was abandoned and its site encroached upon by a spread of blown sand, which was then covered by heath growth, before the coins were deposited in *c.* 1495. Heath growth, we know from the present regeneration, can be very rapid,⁷ and with this permeable sand and moist climate, leaching and iron-pan formation could have progressed far in, say, 50 years or less.⁸ The bag of coins was most probably deposited before the memory of the old house had entirely faded. Taking all the evidence into account (including the pottery) it would seem that the building was in use from the late-thirteenth or early-fourteenth century into the earlier half of the fifteenth, after which it fell into decay, and was partly overgrown by heath by *c.* 1495. Only after this did the piling-up of blown sand begin in this area of the dunes, transforming a fairly stable flat heath into the present hillocky unstable dune.⁹

This sequence in relation to the deposition of the coins about 1495 is of value in reconstructing the development and changing ecology of the dune area, and also as providing a later limit of date for the assemblage of objects associated with the building, particularly the window-glass and leading, and the later pottery, which is typical of the later middle ages in Scotland and of a type already being made in the fourteenth century at Carlisle.

THE BUILDING

The bag with the coins had been deposited by the site of some kind of building, for 10 ft. to the S.E. was a small mound about 1 ft. high of burnt sandy clay and turf ash (see Appendix II), the remains of two successive hearths. Scattered

⁴ The yellowish sand itself seems to contain a fairly high proportion of iron (about 1%) mostly as a covering to the quartz grains.

⁵ These casts projecting through the sand like the stumps of a miniature fossil forest are a common phenomenon of sand-dune sites.

⁶ And not for instance in bare blown sand gathered against the windward side of the house.

⁷ It has covered the bare sand with heath growth in 2-3 years.

⁸ We are grateful for discussion with Dr. V. B. Proudfoot, who concurs with this view.

⁹ For a summary of sand-dune morphology, see J. A. Steers, *Coastline of England and Wales* (1946), chap. XIII. Such flat sandy land can be seen today, used for grazing, to the east of Torrs Warren.

about this area were corroded iron clenched-nails with large square heads, other nails and iron fittings, a piece of window-glass and strips of H-sectioned leading, a bronze annular brooch and buckle and other bronze fragments, pottery, a few sheep bones (some burnt), and charcoal. No structural remains of the building could be found,¹⁰ and its extent can only be very roughly inferred (about 35 ft. N.-S. and 20 ft. E.-W.) from the extent of nail scatter and a lessening in iron-pan formation. The hearth was about centrally placed on the N.-S. axis and towards the S. end.

Any building here must have been a light timber-framed structure laid on a timber raft. The clenched-nails show the use of about 1¼-in. squared timbers (probably from doors), but the main members of the frame must have been of heavier scantling, presumably jointed and pegged. For buildings of any size which had to be built on blown sand, the raft of beams carrying the superstructure was usually (at any rate in Roman practice) laid on a clay raft piled over the sand.¹¹ At Glenluce the clay for the hearth was only about 6 ft. across and could hardly have carried the structure; yet all the evidence—ironwork and window-glass—points to a substantial framed building.

This house must have remained in use over a fairly long period, for although probably abandoned and in ruins by the time the coins were deposited about 1495, some of the pottery represents types in general use in SW. Scotland in the later-thirteenth and earlier-fourteenth centuries. It must be remembered that this house was set out on what was then flat land, as indicated by the horizontal humus layers ('grey dune') traceable over a wide extent. The area was thus more stable then than now and quite flat, the piling up of high sand-dunes in this immediate area being a more recent phenomenon. There would seem no reason why such a house, kept in reasonable repair, should not have remained in use for over a century.

It is difficult to define the purpose of such a building out on the sandy heathlands. No hint can so far be obtained from the scanty fourteenth- or fifteenth-century records of the area. The Torrs lands seem in practice to have been held with Genoch from the seventeenth century.¹² The window-glass and leading, even though this need have been from no more than a portable window panel such as were still noted among the movable properties of more well-to-do people at this time,¹³ indicates something more than a peasant dwelling, and the evidence below (Appendix II) shows that the dunes must have been as much waste heath then as they are now, though flatter. A small lodge, associated perhaps with fowling

¹⁰ The small ridges about 15 in. apart seen on the blown sand surface, with fine black charcoal in the troughs, were perhaps the result of wind action on the bare blown sand surface when it was deposited, though wind-blown ridges in this sand today have crests about 6 in. apart.

¹¹ E.g. Cardnock Mile Fortlet, *Trans. Cumb. Westm. Antiq. Archaeol. Soc.*, n.s. XLVII (1948), 87-8; compare the towers and block-houses of the German *Limes* thus founded when on sandy terrain (C. Albrecht, *Das Römerlager in Oberaden* (1938), p. 20, pl. 16).

¹² J. Paterson, *Lands and their Owners in Galloway* (1870), pp. 177 ff., 193 ff.

¹³ M. S. Briggs, *Short History of Building Crafts* (1925), p. 274; cp. also, L. F. Salzman, *Building in England* (1952), p. 185. To judge from royal accounts, glazing was not common equipment of even larger residences in Scotland until the later fifteenth century; W. M. Mackenzie, *The Medieval Castle in Scotland* (1927), p. 164.

and hunting¹⁴ (suggested by the arrowheads), would seem possible. The place would in that case have been known to people of moderate means, such as might have carried a bag or purse of 112 coins, worth in all about 10s. What lay behind the act of concealing it can now hardly be known, but the numismatic discussion shows that, by contrast with most hoards (which, with their high proportion of silver, represent savings), this was a bagful of coins in ordinary day-to-day use, hence presumably hastily hidden in a personal emergency, or possibly after robbery.

Much has been learnt about the dune vegetation in the later middle ages, Dr. G. W. Dimbleby having most kindly investigated the pollen content of the humus layers immediately below and above the hearth and coin-hoard (Appendix II). The house seems to have been set directly on the old ground surface of the grassy heath growing on sand, though with little or no bracken.¹⁵ After this had become covered fairly evenly with about a foot of blown sand (layers (4)-(5)), a similar grassy heath (with higher proportion of heath species) grew up and sealed the site. This in turn became covered with 20 to 40 ft. of blown sand, forming the unstable dunes of today, over which heather, bracken and grasses now grow.

By contrast with the large amounts of heather and grass pollens, 33-50% and 43-28% respectively of the totals, tree pollen was very low in both layers. Apart perhaps from the hazel,¹⁶ it could have been wind-carried from outside the dune area, and hence in the middle ages the area was probably a treeless waste heath.

Percolation of water downwards from each of these heath-covered land surfaces in turn has leached out the iron from the sand to form a hard compacted impermeable layer of iron-pan at the base of the humus layer. That from the upper layer has percolated further and preserved the heather and plant roots as hollow casts, as well as much material in the blown sand on the earlier ground surface, including iron objects and wood fragments in the house area. The coins, however, bore no sign of this process (p. 262), and iron deposition seemed to be somewhat less in parts of the area of the house. Below the iron-pan was a layer of brownish sand about 7 in. thick, possibly a little less permeable than that above it, and hence the cause of slowing percolation and so forming the pan.

The context of this coin-hoard thus gives a firm date in the development of the Glenluce dunes and their vegetation. Similar ecological investigations on deposits associated with archaeological finds of earlier periods¹⁷ might be profitably made to extend this ecological information back into the bronze age or even earlier.

POTTERY (FIG. 93)

This (totalling about 20 pieces) may be divided into two groups of glazed pitcher sherds and a few fragments of coarse pottery, and need represent no more than five vessels. There are more pieces in the Stanraer museum ('from Genoch'),

¹⁴ Deer are to be seen sometimes even now on the dunes.

¹⁵ The more recent increase in bracken is a widely-observed phenomenon.

¹⁶ At the present time occasional clumps of willows can be found lurking in damp sheltered hollows on the dunes, but no hazel or other trees. The low admixture of tree pollen must be due to the prevailing winds off the sea.

¹⁷ E.g. *Proc. Soc. Antiq. Scot.*, LXIII (1929), 63-7; LXVI (1932), 375-6; LXXXVI (1952), 43-69. This is now in progress for one bronze-age site about 2 miles south-west of the coin-hoard.

some of which are from pots nos. 1, 2 and 4. This pottery does not seem closely matched among that from Glenluce Abbey, 3 miles away.¹⁸

(a) *Late-thirteenth to earlier-fourteenth century.* No. 2, three pieces of base, and of spout and rim junction, of pale pinkish buff, fine clayey fabric; though much abraded, retaining some fine, even, orange glaze (i.e., fired and cooled under oxydizing conditions). These are from a jug with parrot-beaked spout rising above the rim.¹⁹ The type is predominantly of the thirteenth or early-fourteenth century,

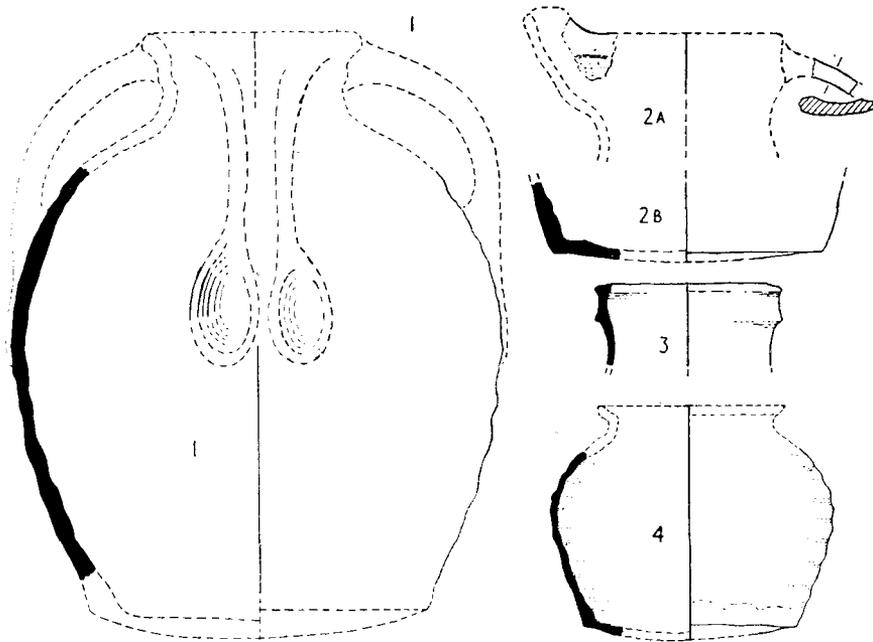


FIG. 93

Pottery from house-site, Glenluce, beside the coin-hoard. No. 1, fifteenth century; nos. 2-4, thirteenth or early-fourteenth century (the strap-handle is no. 2c (p. 266). Sc. $\frac{1}{4}$

and the fabric and glaze are typical of this period and may be fairly closely matched at Castledykes, Kirkcudbright (later-thirteenth century to 1308)²⁰ and in a thirteenth-century context at Carlisle,²¹ and at Carrickfergus, Ulster.²²

These pieces were lying on the sand surface: they may have been associated with the lower hearth layer, but this itself has produced no pottery *in situ*.

¹⁸ *Trans. Dumfries and Galloway N.H. Antiq. Soc.*, xxix (1952), 177 ff. A few more pieces from the Genoch area are in Edinburgh.

¹⁹ An un-bridged parrot-beak rising so high does not seem a common type (cp. Llantwit, Glamorgan, *Bull. Bd. Celt. Stud.*, xiv (1952), 17). Nevertheless it probably was un-bridged, for the scar on the inner surface is really too low for the bridge, which in any case were not usually insertions; a separate spout-beak was usually attached to an intact jug rim, appropriately perforated. The last remains of an attached band of clay can be seen on the outer face; cp. perhaps, Melrose, *Proc. Soc. Antiq. Scot.* LXXXVII (1953), pl. xx, top.

²⁰ *Proc. Soc. Antiq. Scot.*, XLVIII (1914), 381-394, and, for a full account of the pottery, see *Proc. Soc. Antiq. Scot.*, xc (1959), 117-138.

²¹ *Trans. Cumb. Westm. Antiq. Archaeol. Soc.*, LV (1956), 93.

²² *Ulster J. Archaeol.*, xxiv (1961), forthcoming.

A jug-rim (no. 2a) of this thirteenth-century type, a flat strap-handle (no. 2c) and a base fragment (as no. 2b) in Stranraer museum (labelled 'Genoch') probably came from this site, for with them are sherds which fit those from pot no. 1. The rim (no. 3) is of moderately hard fired, somewhat coarsely gritted fabric, brown with a thin black surface layer inside and out, rather lightweight and unglazed. There is also one piece with a black core and a 1-mm. outer surface layer of pinkish white covered with an olive glaze. The black is due to carbonized organic matter in the clay, and the pink-white, where this has burnt out, is due to penetrating air.²³ The olive glaze indicates a second firing under reducing conditions, except for glazing.

It is at the moment not clear how long this thirteenth-century-type pottery (of English inspiration) remained in current use in Scotland, but it is doubtful if it really continued into the second half of the fourteenth century.²⁴

(b) *Later medieval*. Seven pieces of hard fine fabric with a fine sandy surface, dark grey all through, with an olive-green (in places dirty brown) lead glaze on outside. Two of these were excavated from the upper hearth layer and so may be associated with the later stages of occupation; there are three more pieces from the same pot in the Stranraer museum (labelled 'Genoch'). It was a large jug about 10 in. across at full girth (no. 1). The reconstruction cannot be certain, being composed of three overlapping profiles, with no base or rim, but there can be little doubt of the general style of the pitcher. The regular internal rilling indicates that it was made by throwing on a fast wheel. One piece shows the remains of the usual well-marked thumb-impressions at the lower junction of the handle.

This ware and the whole process of firing and cooling under reducing conditions are characteristic of the later middle ages in Scotland and parts of the north of England. Its beginnings can hardly be traced among the pottery from Castledykes, Kirkcudbright (later-thirteenth-century to 1308),²⁵ though this ware is found in levels apparently of the fourteenth century at Carlisle, and was being made there.²⁶

The appearance of this ware, so characteristic of the later middle ages in north Britain, has resulted from reducing conditions in the kiln during cooling and probably during part of the firing as well. The dark fabric is due to carbonized organic matter (and perhaps smoking), and the green glaze due to ferrous iron. This must have been a general northern practice, clamping the kiln mouth, compared with the predominating oxydizing conditions more commonly used during the later stages of firing by potters in the south. By contrast, copper, which will give a green colour to the glaze even under oxydizing conditions which yield reddish or cream-buff fabrics (depending on their iron content), is rarely used to

²³ This emphasizes the later part of the explanation in *Trans. Cumb. Westm. Antiq. Archaeol. Soc.*, LV (1956), 103-4.

²⁴ *Cp. Proc. Soc. Antiq. Scot.*, LXXXVI (1952), 161, 170, no. 56; LXXXIX (1956), 68.

²⁵ See n. 20 above.

²⁶ *Trans. Cumb. Westm. Antiq. Archaeol. Soc.*, LV (1956), 85. Re-examination of the two sherds from Closeburn, Dumfriesshire, found with a bag of coins deposited a little after 1344, shows that they were not of this ware, but sandier and brown.

colour glazes in Scotland,²⁷ though as a freckling very common in the midlands and south of England.

(c) *Coarse pottery*. Two fragments from this site (and seven more in Stranraer museum) are from a small cooking-pot (no. 4) of fairly hard, creamy white fabric with quartz particles 0.5–1 mm. across in the fine matrix; it has been tool-trimmed round and under the base when leather hard, and the body shows wheel-rilling: the rim is not preserved. There seems to be a predilection for these white fabrics in the north (cp. some of the cooking-pots from Hawick motte). These smaller cooking-pots are typical of the thirteenth and fourteenth centuries in the north.²⁸ There are three other unglazed fragments (one from the coin-hoard), of friable brown fabric with moderately coarse grit. Cooking-pots are comparatively rare on most Scottish medieval sites so far investigated (whether of English or Scottish occupation),²⁹ which may mean that much cooking was done in metal cauldrons or in skins suspended over a fire.³⁰

WINDOW-GLASS

One piece of window-glass was found, and there were also a number of pieces of H-sectioned leading. Dr. D. B. Harden describes the former as 'a fragment of broad glass 3 mm. thick with traces of sanding on one side, "diamond" cut and partly grozed. It is clear watery green and has more or less spherical bubbles, but is flat and well made. This could be of the fifteenth century but is hardly likely to be much later, as window-glass tended to be thinner from Tudor times onwards'.

The glass has been cut by scoring with a sharp implement and then snapping, giving a characteristic bulge at one end of the edge profile. The earlier method of shaping window-glass was to crack it by application of a hot iron, then to trim by grozing. It is uncertain when this scoring and breaking method was introduced. The surface of this glass can scarcely be scored by a hard steel point, though it can, just, by flint; it would really seem to need a gem-stone to score a deep enough line at one run for breaking this tough 3 mm. glass sheet to give the excellent straight edge seen here. Diamonds are not thought to have been introduced for this purpose before the seventeenth century,³¹ but other gems could have been used. Window-glass of comparable date has been found on the island site in Castle Loch, Mochrum,³² 7 miles to the east.

Lead strip of H-section had been in use for fixing window-glass since late-

²⁷ Mr. R. W. Feacham has shown us a piece of pottery from a site in Stirlingshire with an opaque red glaze: this is due to the use of copper, but fired under reducing conditions to give opaque red cuprous oxide suspended in lead silicate (cp. red enamel).

²⁸ E.g., Ayr, J. D. A. Thompson, *Inventory Brit. Coin Hoards* (1956), pl. 1 b; Kintyre, *Proc. Soc. Antiq. Scot.*, LXXXIII (1939), 225; cp. *Ulster J. Archaeol.*, xvii (1954), 133.

²⁹ For instance, there are remains of only two cooking-pots among the pottery preserved from Castledykes, Kirkcudbright, though this might be due to selective preservation.

³⁰ See, for instance, J. Derricke, *Image of Ireland* (1581), ed. J. Small (1883), pl. iii, representing the MacSweynes at dinner.

³¹ M. S. Briggs, *Short History of the Building Crafts* (1927), p. 274.

³² *Trans. Dumfries and Galloway N.H. Antiq. Soc.*, xxviii (1951), 59.

Saxon times in England.³³ Here the ends of the lead strips had been used to fix the window to the glazing bars (iron or wood) by twisting.

IRONWORK (FIG. 94)

All the ironwork was very much corroded or obscured by iron-pan concretions, which had, however, sometimes preserved the form of the associated woodwork. It nevertheless yielded much information, especially about *nails*, of which several different kinds were found. There were a number of clench-nails: some of these (nos. 1, 2) had large square heads about 1·1 in. square, and square shanks about 1¼ in. long ending in a smaller flat square washer, similar ones

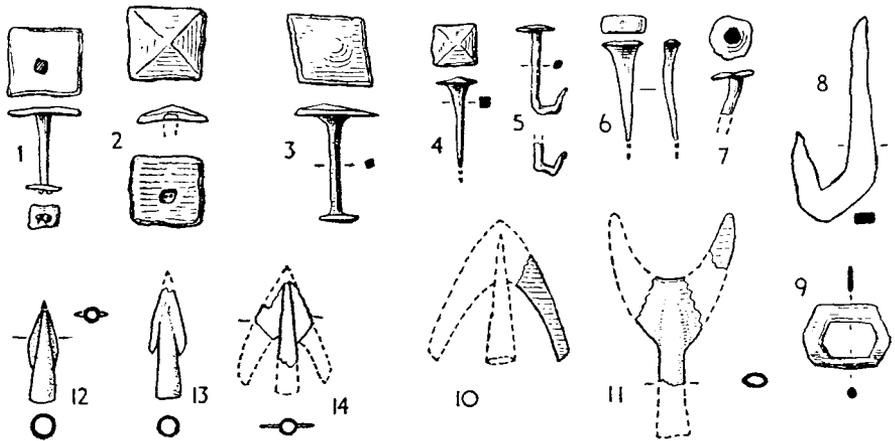


FIG. 94

Ironwork from the house-site, Glenluce, beside the coin-hoard (p. 94 f.). Sc. ½

(with slightly rhomboid heads) being found at the Edwardian castle (Castledykes), Kirkcudbright.³⁴ In some cases the smaller washer was apparently fixed by splitting the shank and bending over the two parts (no. 1). Other nails (no. 3) had smaller square or rounded heads (and shanks) and had been clinched over at 1 to 1¼ in. Many of these square heads seem to have had flat pyramidal tops, presumably for ornamental rows on a door or panel surface. Clench-nails were typical of shipbuilding,³⁵ but were also used in building-work, particularly for doors, and not only 'clinchers', but sometimes even shipwrights were employed to do the work.³⁶ Others (no. 6) had thick tapering shanks of oblong section with small heads, a typical joiner's nail. Among the wood impregnated with iron

³³ D. B. Harden, in *Essays on the Study of Building History, in memory of B. H. St.J. O'Neil* (ed. E. M. Jope, 1961).

³⁴ *Proc. Soc. Antiq. Scot.*, xci (1960), 137-8. Similar nails have also been recorded at Castle Hill, Folkestone, by Pitt-Rivers (*Archaeologia*, XLVII (1882), pl. xviii, 3, 4, 15), and at Criccieth Castle (B. H. St.J. O'Neil, in *Archaeol. Cambrensis*, xcvi (1944), 41, pl. x).

³⁵ E.g., H. Arbman, *Birka* (1943), pp. 469-470, pl. 281 (grave 1137, a boat-burial) and 269 (grave 750, not a boat-burial); S. Grieg, *Viking Antiquities in the British Isles*, II (1940), 99.

³⁶ L. F. Salzman, *Building in England* (1952), p. 309.

concretion there is one fragment with two pieces of boarding having the grain at right angles, perhaps again from a door, for from the thirteenth century onwards it was usual to make them up with two thicknesses of crossed boarding. These nails reveal the nature of some timber details, doors or panelling, $\frac{1}{4}$ in. boards being nailed to 1-in. square rails, and doors being made about $1\frac{1}{4}$ in. thick. The main timber frame of such a building would presumably have been of heavier scantling, jointed and pegged rather than nailed.

Among the other iron fragments were a hook, a ring, some pieces of strips and rectangular-sectioned bars (some of them probably fragments of door hinge-straps, cp. *Ulster J. Archaeol.*, xvii (1954), 139), part of a much-corroded handle,

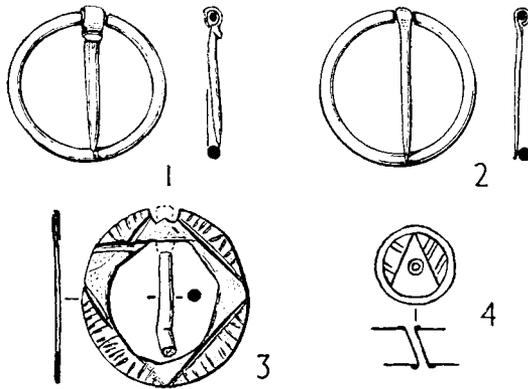


FIG. 95

Small bronze objects: nos. 1, 3-4 from Genoch area, Glenluce sand-dunes (pp. 269-71); no. 2, Deddington castle, Oxon. (p. 269). Sc. $\frac{1}{4}$

probably from a bucket, and a few parts of hunting arrow-heads (nos. 10-14). Three of the arrow-heads from this area are in Stranraer museum (nos. 12-14), two being late medieval barbed hunting-arrows and the third perhaps for a cross-bow bolt.

BRONZE (FIGS. 95-6)

Nos. 1, 3 and 5 were found in 1956-7 at the house site; the rest (apart from no. 2) have been found at various times in the area.

a. (FIG. 95, no. 1). Small circular buckle, 2 cm. across, of round section, having a pin (with tooled moulded necking) folded round a recess cut back on the ring. The pin is bent a little to lie slantwise across the ring; this was evidently inherent in the manner of use, for on one from Deddington, Oxon. (FIG. 95, no. 2) the recess has been cut to give this slant to the pin. Found on the sand surface 12 ft. west of the hearth. This is of a type³⁷ now shown to have been used in the fourteenth century for attaching the medieval hose to the 'breke-belt' or 'brygyrdyl', though no doubt used for other purposes as well. Use of hose fastened

³⁷ *Antiq. J.*, xxxvi (1956), 218-221, pl. xvi.

in this way began to go out of fashion with the tendency to shorten the tunic from the later-fourteenth century onwards, and these small buckles seem to occur mainly in earlier contexts (the one from Deddington was in a later-thirteenth-century context). Before this, hose were fastened with simple cords or thongs.

b. (FIG. 96, no. 5). Beside (*a*) was a paper-fastener type of rivet or staple, of the sort sometimes used for joining bronze sheeting. It is a twin-tapering strip of thin bronze 0.3 cm. thick and 2.8 cm. long, doubled over and then folded concertina-wise (cp. the repair on part of a bronze vessel from a thirteenth-century level at Clough Castle, Co. Down³⁸, and fragments from Viking levels at

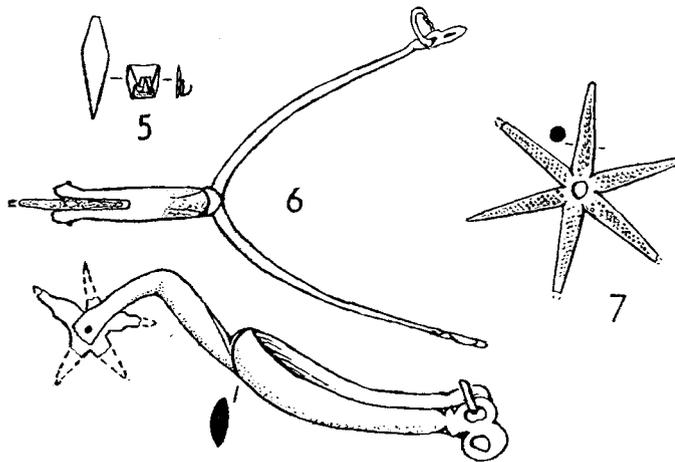


FIG. 96

Bronze objects (no. 7 gilt): no. 5, 'paper-clip' rivet (from house-site, Glenluce) used for fixing repairs to beaten metal vessels (p. 270); nos. 6-7, spur and rowel of spur from Genoch area, Glenluce sand-dunes (pp. 277-8). Sc. $\frac{1}{2}$

Jarlshof, Shetland,³⁹ and Freswick, Caithness⁴⁰). Other parts of bronze or bronze-mounted vessels are in the Stranraer museum.

c. (FIG. 95, no. 3). Small crude annular brooch, 2.3 cm. across, of thin sheet bronze with lapped joint, with remains of round-sectioned pin; some remains of rough chiselled cross-hatching on the upper surface. From beside the hearth, but from which layer is not clear.

d. In Stranraer museum, labelled 'from Genoch' (Anderson coll.), are the following items of interest, some of which may have come from this site:

i. A small decorative rivet (FIG. 95, no. 4) consisting of two thin discs, 0.9 cm. across, joined by a slender bronze tube, 0.5 cm. long, one disc being engraved with hatching; probably for leather ornament.

ii. A fragment of tooled cast bronze in the shape of a dog's head, with attachment-lug protruding from its mouth.

³⁸ *Ulster J. Archaeol.*, xvii (1954), 141-2.

³⁹ *Proc. Soc. Antiq. Scot.*, LXIX (1935), 297-9.

⁴⁰ *Proc. Soc. Antiq. Scot.*, LXIII (1939), 102, pl. L, no. 8.

iii. A cast bronze spur with five-pointed iron rowel (FIG. 96, no. 6), early-seventeenth-century, and a six-pointed gilt-bronze rowel (FIG. 96, no. 7), probably sixteenth-century. These are reported on in Appendix I by Mr. W. A. Seaby, and are included to illustrate continuing activity over the dune area, and to draw attention to the marked contrast between the traditions of spur-making in the later middle ages in England, where tinned iron was usual,⁴¹ and in Scotland and Ireland, where cast bronze was the normal material.

There are also many other bronze fragments, as well as the needles and pins (some with wound wire heads) so usual on sandhill sites.

This area of the dunes has also yielded several objects of Roman age—a brooch with bow expanding into wings, first century A.D.; a small penannular brooch with ribbed ring, block terminals, and ribbed head to the pin ('Welsh' type), and a number of beads probably of the Roman iron age.⁴²

III. THE COINS

BY I. H. STEWART AND J. D. A. THOMPSON

Scottish coin-hoards buried in the fifteenth century are of sufficient rarity to command attention regardless of their precise contents. On examination it very quickly became clear that this find of over a hundred coins was of the utmost importance as a hoard in every sense. It has already been the subject of a paper to the British Numismatic Society which will be published in full in the Society's Journal. In view of its specialist nature, it has not been thought appropriate to include a detailed list of the coins here, but the more general aspects of the hoard are discussed in full.

CONTENTS OF THE HOARD

Except for two very old English silver pieces, all the coins are Scottish, ten being of the James III groat series, one a black farthing, and the remainder billon placks and pennies of James II, III and IV, from 1451 to 1492.

The following is a summary of reigns and types represented, classified according to I. H. Stewart, *The Scottish Coinage*:

ENGLISH (2)

Edward III, London half groat, 1351-60 coinage	1
Henry IV, London groat, light coinage after 1412	1

SCOTTISH (110), all of the Edinburgh mint except one penny of Perth.

Silver

James III, S group II, groats (PL. XXV, 3)	6
„ half groats (PL. XXV, 4-5)	3
group VIa, groat (PL. XXIV, B)	1

⁴¹ This was an ancient tradition; see *Oxoniensia*, XXI (1956), 35-42.

⁴² For these objects of Roman age, see *Ulster J. Archaeol.*, XXIII (1960), forthcoming. and *Proc. Soc. Antiq. Scot.*, LXVI (1932), 375-6.

<i>Billon</i>				
James III, first issue placks (PL. XXV, 6)	..	..	..	2
James II, pennies, second coinage (after 1451):				
First issue (new type) (PL. XXV, 1)	..	..	..	1
Second issue, Edinburgh	..	..	..	7
" " Perth (PL. XXV, 2)	..	..	..	1
James III Pennies:				
S. Class A (including one with reverse of James II (PL. XXV, 7))	..			9
S. Class B (PL. XXV, 8)	..	..	..	1
S. Class C (PL. XXV, 9-10)	..	..	..	45
S. Class D	..	..	..	4
James IV, first issue, pennies:				
S. Class I (PL. XXV, 11)	..	..	..	13
S. Class II (including one with obverse of Class I)	..	..	..	14
Forgeries ?	..	..	..	2
<i>Copper</i>				
James III, black farthing, first issue	..	..	..	1
			Total	112

THE CONTEXT OF CONTEMPORARY HOARDS AND CURRENCY

The discovery of this hoard gives an opportunity for an assessment of collective hoard evidence for the state of coinage and currency in fifteenth-century Scotland.

Thompson's *Inventary of British Coin Hoards, A.D. 600-1500* shows that only a few hoards buried in Scotland in the fifteenth century have been unearthed; those that have been are widely different in composition, but general tendencies can be established, which are followed, more or less, from hoard to hoard. The enormous preponderance of English money in Scotland, outnumbering Scots coin by more than 20:1 in the reign of Edward I, had been reduced by the fifteenth century, but English coin was struck at a better standard and was constantly acceptable. In gold, however, the international currency of trade, the Scots showed a definite preference for their own native issues: at Wick in 1881⁴³ a gold hoard (with, also, two Scots groats) contained 6 continental écus, 8 English nobles and 16 Scottish crowns and demies. New Cumnock, 1882,⁴⁴ contained 138 English to 4 Scottish silver coins, but all the gold (41 coins) was Scottish. The same tendency is noticeable in the huge Perth hoard of 1920,⁴⁵ in which all the 18 gold coins were Scottish except for one Burgundian half-noble.

Money held by traders tended to be of gold unless specifically connected with the market end of commerce. Throughout England and Scotland hoards primarily, or only, of gold, must thus have been frequently buried, and the Wick hoard, with only two groats, is an example. The proportion of gold coins to silver at New Cumnock, 41:142, is perhaps the sort of money which might be expected in a merchant's hoard, but such combinations of the two metals are, in practice, only rarely found, even in England. The rule is much more for hoards of gold

⁴³ *Proc. Soc. Antiq. Scot.*, xvi (1882), 465; Thompson, no. 377.

⁴⁴ *Proc. Soc. Antiq. Scot.*, xvi, 491 ff., *Numismatic Chron.* 3, III (1882), 354; Thompson, no. 284.

⁴⁵ *Numismatic Chron.* 5, I (1921), 294 ff.; Thompson, no. 309.

coins exclusively, or of silver with the accidental addition of a few gold coins (e.g. Perth).

Gold was riches, and base metal, or billon, was small change; so the buried savings of the ordinary fifteenth-century Scot were likely to be in silver. Hoards in this metal alone come from Ayr, 1863,⁴⁶ Forgandenny, 1876,⁴⁷ and Aberdeen, 1937.⁴⁸ The ratio of English to Scottish silver coins was: at Ayr, 29:106; at Forgandenny (only 37 coins listed), 21:16; at Aberdeen, 178:5. The last is certainly a distortion, and may represent an English merchant's money; it is interesting to note that a parallel hoard in England (Dover—buried 1296⁴⁹) emphasizes how this sort of distortion could arise in trading centres, by providing a much less probable ratio—a large predominance of Scots coins in England. Perhaps the ratio at Ayr, one English to three Scottish, was somewhere near the average in Scotland: though in towns the English coins would be more and in the country less.

In connexion with silver hoards, it is interesting to consider the status of the billon plack, half silver and half alloy, current at fourpence and based on the continental *plaque*. The Kilkerran hard of 1892⁵⁰ contained 36 English silver coins, 30 Scottish silver coins, and one James III plack—with no other billon. Perth, besides its 18 gold coins, had 257 English silver pieces, 341 Scottish silver and 499 placks and half placks. Billon pennies, much baser than these, appear to have been deliberately excluded from both hoards.

The notable rarities of the later-fifteenth-century Scottish series are the half-groats. Various other expedients sufficed to fill in the gap between the billon penny and the silver groat, which was of variable weight and value—from 1451 to 1484, twelve pence; after 1484, fourteen pence. To some extent the old groats of James I and James II before 1451, struck at sixpence, still circulated, and, although clipping and wear had reduced their weight, the price of silver had risen and probably until near the end of the century the old groats still held their original value of sixpence, conveniently half the denomination of the new groats.

Apart from three earlier coins, the James I–III silver content of the Perth hoard was:

James I and II light (6d) groats	..	..	112
James II and III, 12d groats	..	..	214
James II and III half groats	..	..	12
			338

The proportion of half groats is tiny—but if the earlier coins are looked upon as half groats in the new monetary scheme, the proportion 214:124 is much more natural.

⁴⁶ *Proc. Soc. Antiq. Scot.*, v (1863), 105; *id.* vi (1864), 217; Thompson, no. 20.

⁴⁷ *Numismatic Chron.*, n.s. xvi (1876), 76; Thompson, no. 163.

⁴⁸ *Brit. Numismatic J.* 3, III (1940), 282 ff.; *Proc. Soc. Antiq. Scot.*, LXXIII (1938–9), 51; Thompson, no. 5.

⁴⁹ *Brit. Numismatic J.* 3, VIII (1955–7), 147 ff.

⁵⁰ *Proc. Soc. Antiq. Scot.*, XXVIII (1893–4), 275 ff.; Thompson, no. 208.

The shortage of silver is also reflected in the English content of Scottish hoards. For some reason, earlier rather than contemporary, English coins had vogue in Scotland, and the great rarity of Scottish half groats created a remarkable demand for English half groats, particularly old, clipped Edward III coins. Of the 257 English silver coins from the Perth hoard, buried towards 1500, no less than 83 were half groats of Edward III, all well over a century old. From Kilkerran, a hoard buried about the same time, only 7 out of 36 English coins were of Edward IV or later, whilst 7 were worn half groats of Edward III. Even in the Forgandenny hoard (? buried 1440s), out of 21 English silver coins there were 4 groats and 5 half groats of Edward III, but of the 16 Scots silver coins, not one was of Edward III's contemporary, David II. Of the 138 English silver coins from New Cumnock, 20 were of Edward III, but of the 45 Scots, only 4 were of the fourteenth century, and these all of Robert III.

The role of the Scottish half groat, that was virtually non-existent, was thus largely assumed by half groats of Edward III and the old sixpenny groats of James I and II. About 1470, however, two deliberate measures seem to have been aimed at the shortage of small silver. One was the issue of an alloyed groat—the thistlehead and mullet type (group II) of James III's series; this was originally valued at sevenpence, but reduced to sixpence in 1473, and appears to have been struck until nearly 1484, alongside the regular issue of silver groats. In order to avoid confusion, the alloyed groat had a distinctive type, a three-quarter-face portrait, as opposed to the conventional facing bust on the fine silver groats.

The other measure was the institution of a new denomination, the plack of fourpence, and its half. There were certainly two main issues, one about 1470-5, the other about 1482; like the alloyed groats they may have been in more or less continuous issue between 1470 and 1484. Again like the alloyed groats, they are of distinctive type, and the correspondence between many features of the designs of the placks and alloyed groats is notable.

Naturally hoards of billon coins are rare, since it was easier to keep or hide a dozen groats than a hundred billon pennies; and it has been noted that if billon is present at all with silver, it is usually in the form of placks. Later, of course, when silver coinage had almost completely ceased after 1500, even billon was sought after and buried—cf. the hoards from Creggan, Argyllshire⁵¹ and Ballig-morrie, Ayrshire.⁵² But in the fifteenth century men put aside silver for saving, and everyday small transactions were made in billon. Today, but for the Perth hoard, placks and half-placks of James III would be of the highest rarity; even so, half-placks are very rarely on the market. Billon pennies before the second issue of James IV are quite uncommon: the high proportion of new varieties produced by Glenluce demonstrates this. The billon coinage, the mainstay of Scottish currency at the end of the middle ages, is much scarcer than the silver coins of the time, although the original proportion in circulation in, say, 1475, must have been in favour of billon by ten to one. This can be proved by the number of dies known: those listed for the silver groat coinage of James III, c. 1467-84, by Burns as

⁵¹ *Numismatic Chron.*, n.s. xvi (1876), 78.

⁵² *Numismatic Chron.* ⁶, xv (1955), 245 ff.

long ago as 1887⁵³ may have contained two-thirds of all the original dies of the coinage, for new hoards rarely produce an unrecorded variety of these coins. But the large number of similar dies used for the billon pennies can be seen from the class C pieces found at Glenluce, where die identities are almost impossible to find, but coins very similar are numerous.

Contemporary records show that there was a considerable amount of copper money in circulation in Scotland; some of it was certainly foreign, but more was Scottish, including an official coinage for James III in the shape of 'black' farthings of very small size. These are extremely rare today, though there were certainly two issues within ten years after 1466. Examples of these coins have only been found in one place besides Glenluce—Crossraguel Abbey, Ayrshire, 1919, where they occurred with other Scottish pieces in copper and brass, some of them probably coined by Bishop Kennedy at St. Andrews and some as yet unattributed.⁵⁴

The 'black' farthings and other copper issues represent a serious attempt to provide very small change, which had no parallel in England, where lack of small silver in the early years of the century had led to the illegal use of billon Scottish pennies (worth only a halfpenny in 1402), base Venetian *soldini* ('galley-half-pennies') and even lead tokens.⁵⁵

The distribution of fifteenth-century hoards is curious: the majority come from the south and west of the country, from Wigtownshire to Argyll, exceptions being from Perth and from Wick in the north. This distribution may only reflect the chances of discovery, and it does not appear to have any obvious historical significance. James III's reign ended in his death at the battle of Sauchiburn (1488) as a result of his son, James IV's, successful rebellion, but by the time that the Glenluce-Perth group of finds was being deposited (1495-1500), James IV was secure on his throne and remained so until he also met his death in battle, at Flodden in 1513.

The main points of interest in the Glenluce find can now be summarized. Individual elements of the hoard are particularly interesting in connexion with the remarks already put forward about the state of currency at the time. The wide range of billon pennies gives an idea that this coinage was much more extensive than is suggested by the scarcity of surviving specimens. The one black farthing is in very bad condition, chipped and worn, but its very survival (perhaps thirty years) is significant; the implication is that black farthings were in considerably longer and more general circulation than their great rarity today would suggest. No doubt they were more often lost than buried, like English silver farthings of the fifteenth century, being unsuitable material for hoarding.

Of the silver, the two English coins are, as might be expected, very old: an Edward III half groat, a century older than the earliest Scottish coin, and a Henry IV groat forty years old. The half groat at 18½ grains and the groat at 39 grains, have been clipped down to correspond with the weights of the Scottish

⁵³ Edward Burns, *The Coinage of Scotland* (1887), II, 115 ff.

⁵⁴ *Proc. Soc. Antiq. Scot.* 5, VI (1920), 20 ff.; *id.*, LXXXIV (1952), 109 ff.; I. H. Stewart, *The Scottish Coinage* (1955), ch. vii, pp. 51 ff.

⁵⁵ R. Ruding, *Annals of the Coinage of Great Britain*, etc. (3 ed., 1840), I, 250.

coins of the time. The Scottish groats are much newer and, notably, are all of James III's three-quarter-face types (S. group II, alloyed issue of 1470; VI, 'heavy' fourteen-penny groats after 1484). This is in complete contrast to the Perth find, which contained *no* three-quarter-face groats; since they are the commonest type of James III's groats known today, doubt is cast upon the numismatic value of the Perth find which has hitherto been accepted as an accurate cross-section of late-fifteenth-century Scottish currency.

The latest coins in the hoard are billon pennies of James IV's first issue: equal numbers of classes I and II of this issue argue for a date of burial about 1492 or a little later. Class II cannot be dated earlier than 1492, and the bad condition of some pennies (due to wear as well as to poor striking) suggests that an allowance of five years' circulation might be made to *circa* 1495. The large proportion of pennies, with a few groats and placks, suggests a normal parcel of ready cash, and its location, as found, suggests hasty burial by the site of an old destroyed building. It is not a hoard in the sense of money set aside for saving. Rather it is of a kind which is naturally very rare, the sort of group which would only be buried in emergency, and of which, apparently, no other examples have survived of this period.

The Glenluce hoard contains the following important and unrecorded coins:

- a. Four new varieties of James III groats, group II.
- b. New variety of James III half-groat, group II.
- c. Two new varieties of James III placks, one of which may be substantially later than the bulk of first-issue placks.
- d. James II penny, obverse from a die of the first issue of the second coinage, reverse with a crown in one quarter, and three pellets in the others—a completely new type for any Scottish coin.
- e. James II, second coinage, second-issue penny with annulets between the pellets on the reverse.
- f. Mule penny, obverse James III Class A, reverse James II second coinage, second issue.
- g. James III, Class A penny, with saltires by bust.
- h. Three James III, Class C pennies, with crown of three fleurs only.
- i. Two pennies, perhaps attributable to the group V groat issue.
- j. Two James III, Class D pennies, an extremely rare type.
- k. Two James IV, first-issue pennies, Class I, with annulets between the pellets in two quarters of the reverse.
- l. Pennies of both Class I and Class II of James IV's first issue, with an extra point between the pellets on the reverse.
- m. Mule penny, James IV first issue, obverse Class I, reverse Class II.

In addition, by its contents, the hoard proves that the two portrait-type groats of James III (groups II and VI), were struck before the date of deposit, *c.* 1495, and so could not have been, as has been until recently supposed, in the one case the first coinage of James V, and in the other a later coinage of James IV.

Finally, individual coins throw light on two other disputed points, suggesting:

i. That the second coinage of James II continued under James III until replaced in about 1467.

ii. That Class I and Class II of James IV's first-issue pence are consecutive, and therefore that James IV's type-2 groats are correctly attributed.

APPENDIX I

THE BRONZE SPUR AND DECORATED ROWEL FROM GENOCH DUNES⁵⁶

(p. 271, FIG. 96, nos. 6-7)

By W. A. Seaby

Director, Museum and Art Gallery, Belfast

The *spur* (L. $4\frac{1}{2}$ in.; W. $3\frac{3}{8}$ in.) is of bronze, cast. The arms of the heel-band form an arched bow in plan and curve gracefully downwards in profile; they end in large double-ring terminals⁵⁷ notched where they join the arms. The shank is fairly steeply-angled downwards and holds the remains of what must have been a fairly large (*c.* $1\frac{3}{8}$ in. diam.) five-pointed iron rowel. The heel-band is widest at the back of the heel and is of elliptical section, the shank of circular section being attached as usual to the lower part of the band.

The features outlined here show the spur to belong to a fairly large group of spurs, well known in Ireland and to a lesser extent in Scotland and England, mostly of bronze and varying greatly in style and details of decoration. This group may be dated, provisionally, from the latter half of the sixteenth century extending until probably the end of the seventeenth century. They range from a slightly downward sloping shank to a very acutely angled shank which was certainly popular during the reign of Charles I, as many contemporary portraits show.⁵⁸ The swan-neck form and large rowel, from which the present example would seem to be derived, is likely to have been in existence before the end of Elizabeth's reign and was certainly in use well into Stuart times.

While the English forms which have survived are principally of iron, and often strongly chased or elaborately decorated with inlaid silver or gold in Italianate or German renaissance style, those forms found in the Gaelic regions are of bronze with softer contours, the decoration, where present, being in the casting or in the subsequent punching and engraving. This is seen particularly well in the large (*c.* $2\frac{5}{16}$ in. diam.) six-point bronze *rowel*, each spike filed to a faceted section, the surface ornamented with minute round punch-marks and the whole gilded.

It is difficult to give exact parallels either to the spur or the ornamented rowel but the following, at least, are probably contemporary:

- (a) bronze spur with rather elaborate double-ring terminals, somewhat similar bow, no shank, but a rowel of eight long narrow points found with it. From Sketrick Island, Strangford Lough. Belfast Mus. 1910.649.
- (b), (c), (d) three swan-necked iron spurs (the last of which came from Ballon Hill, Co. Carlow) which have similar terminals and somewhat similar shanks. Judging, however, by the five-point ornamented rowels on two and the large elaborate buckle on one of them, these spurs would appear to belong well on in Stuart times. All are in the National Museum, Dublin. WK.87; 1882:158; 1928:458. Others very like them, dated by Miss Blanche Byrne (in 1956) to the latter part

⁵⁶ This discussion is based on a study of the drawing only.

⁵⁷ *London Museum, Medieval Catalogue*, type F, p. 105 f. fig. 28.

⁵⁸ See portraits of Charles I by Van Dyck about 1630-5 and James, Duke of Hamilton by D. Mytens, 1629 (Edinburgh).

of the seventeenth century, are to be found in the Guildhall and the Victoria & Albert museums.

Other examples might be cited, but no really close analogy which can be dated with accuracy has been traced. Suffice to add that three spurs of cast bronze in somewhat broken condition, with mouldings or engraved decoration on the bows (two with plain double-ring terminals and one with elaborate quadruple-ring terminals), were found in a 'kitchen midden' in the sandhills between Loughros More Bay and Sheskinmore Lough, near Kiltorris, Co. Donegal, on 7 July, 1958, by Mr. T. B. Graham of Bangor, who has them in his possession. They have been fully noted, drawn and photographed in colour by myself. While difficult to date, I place them provisionally in the late sixteenth century, but I am prepared to accept a very much later date. They were wedged together and, all being broken, they are likely to have been part of a bronze-founder's hoard, or perhaps that of a pin maker of the seventeenth or eighteenth century.

APPENDIX II

POLLEN-ANALYSIS AND ECOLOGY OF THE SITE

By G. W. Dimbleby

University Demonstrator, Department of Forestry, Oxford University

Soil Samples. Pollen analyses were carried out on samples of sandy soil-material collected from each of the dark humic layers by Mr. E. M. Jope. Both proved to be rich in pollen, the upper one the more so. The pollen in the lower layer was poorly preserved, suggesting that this material had been more biologically active. It would obviously be unwarrantable to attempt any estimate of the comparative duration of these surfaces from the relative abundance of pollen.

The ecological picture presented by these two analyses (given in full in the Table) is broadly similar, yet there are significant differences. Both indicate a treeless landscape, possibly with occasional clumps of hazel, more especially at the earlier stages. The vegetation at both periods was grass-heath, but whereas at the earlier stage the grasses preponderated over the heather, in the later surface the proportions were reversed.

In both there are traces of weeds of cultivation, and in the lower material a cereal grain was recorded. It is considered, however, that being in such small quantities, with the possible exception of the Liguliflorae (dandelion group), these are likely to have blown in from neighbouring cultivated land.

The overall picture is of a treeless wild terrain, probably swept regularly by fire. The heath species were increasing their hold at the expense of the grasses and the continued degradation of the soil would result in increasing acidity and poverty of the top layers as the plant nutrients became leached out. The iron removed by this process had already formed a cemented accumulation-layer.

Hearth Material. Charred remains of organic material from the hearth were examined; some were obviously charcoal and these proved to be hazel. Others were amorphous. The latter were subjected to pollen-analysis and were found to contain a little pollen and abundant remains of charred angiospermous vegetable matter. Pollen is very susceptible to destruction by heat, so large quantities are not to be expected. For this reason no detailed estimate was attempted, but the following figures give a rough idea of the relative proportions of the various types recognized:

Corylus	1	Gramineae ..	10
Quercus	1	Liguliflorae ..	4
Calluna	8	Rumex	1
		Cruciferae ..	1

It seems most likely that this material was locally-cut turf, used as a fuel, but it is possible, on these data, that it was dung being used for the same purpose.

TABLE

	UPPER SAMPLE			LOWER SAMPLE		
	Count	%	APF*	Count	%	APF*
Alnus	3	1.0	7,000	8	2.4	4,900
Betula	1	0.3	2,300	3	0.9	1,900
Juglans	1	0.3	2,300	—	—	—
Quercus	2	0.7	4,700	5	1.5	3,100
Ulmus	+	+	+	—	—	—
Corylus	14	4.6	32,800	26	7.6	16,200
Salix	1	0.3	2,300	—	—	—
Calluna	137	44.6	320,600	110	32.4	68,600
Other Ericaceae	15	4.9	35,100	4	1.2	2,500
Gramineae	86	28.0	201,200	145	42.7	90,500
Cerealia	—	—	—	1	0.3	600
Tubuliflorae	2	0.7	4,700	1	0.3	600
Liguliflorae	10	3.3	23,400	13	3.8	8,100
Plantago lanceolata	8	2.6	18,700	2	0.6	1,200
P. Major	8	2.6	18,700	2	0.6	1,200
Ranunculaceae	+	+	+	+	+	+
Cyperaceae	+	+	+	—	—	—
Umbelliferae	1	0.3	2,300	—	—	—
Rubiaceae	3	1.0	7,000	4	1.2	2,500
Potentilla type	6	2.0	14,000	2	0.6	1,200
Leguminosae	1	0.3	2,300	1	0.3	600
Succisa	1	0.3	2,300	1	0.3	600
Onagraceae	—	—	—	1	0.3	600
Caryophyllaceae	—	—	—	2	0.6	1,200
Varia	5	1.6	11,700	2	0.6	1,200
Dryopteris	+	+	+	2	0.6	1,200
Polypodium	1	0.3	2,300	+	+	+
Pteridium	1	0.3	2,300	5	1.5	3,100
TOTAL	307		718,400	340		212,200

(Very corroded).

* APF = Absolute pollen frequency, in number of grains per gram of air-dried soil.