

## A traveller's end? – an associated group of Early Historic artefacts from Carronbridge, Dumfries & Galloway

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### ABSTRACT

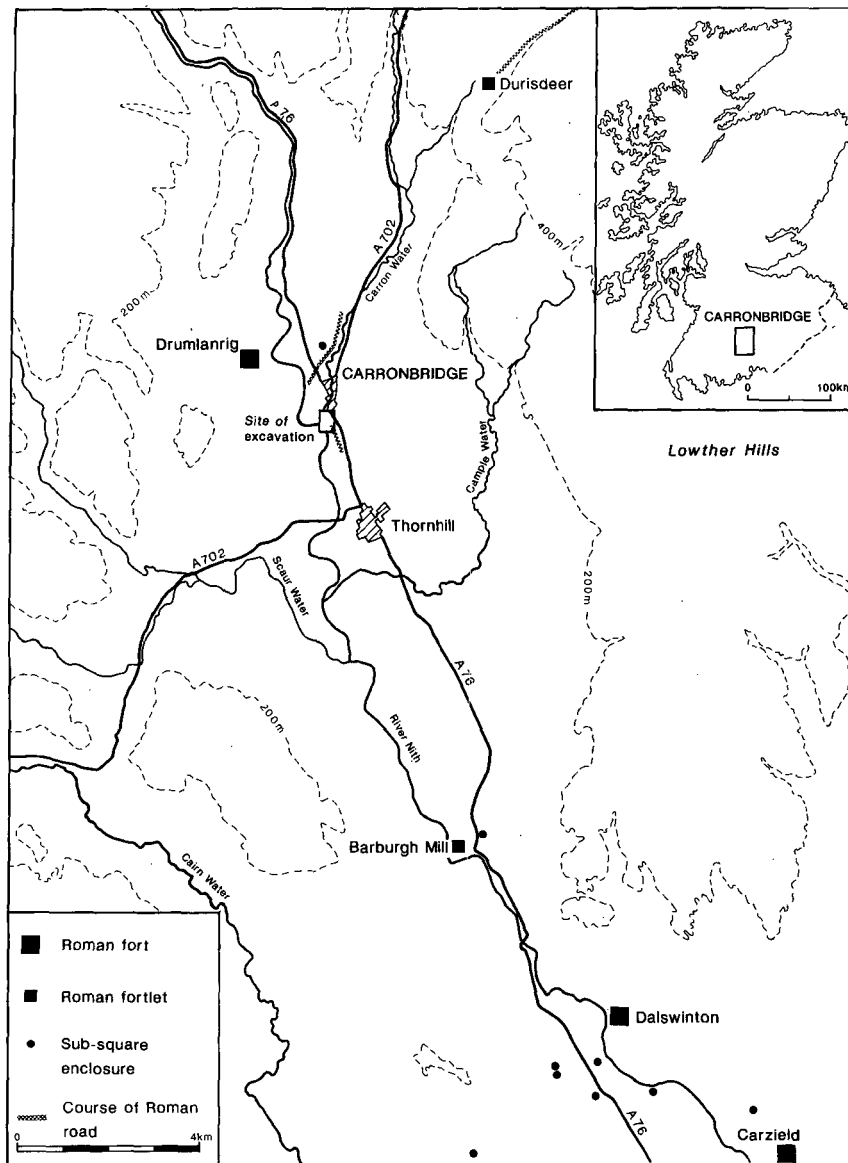
*During the preliminary stages of excavations at Carronbridge (Johnston 1994), in an area of ploughsoil immediately overlying an Iron Age penannular enclosure, an unexpected discovery was made – fragments of a penannular brooch and of a large iron object, later recognized as part of a sword blade. During subsequent laboratory examinations, part of a small sickle blade was recognized and reconstructed from among the corroded iron fragments recovered with the sword. Evidence gained from detailed examinations of the decayed organic deposits adhering to each of the objects, as well as the fact that they were found so close together, suggests that they are an associated group. A date of deposition in the ninth or 10th centuries AD is here proposed for the group. It is argued that the discovery of this assemblage of artefacts is entirely coincidental to the existence of the Roman and Iron Age site at the same location. The project was entirely funded by Historic Scotland.*

### CONTEXT OF DISCOVERY

Fragments of a penannular brooch and two iron objects – a fragmentary sword blade and part of a small sickle – were recovered from ploughsoil which immediately overlay an Iron Age penannular enclosure at Carronbridge (NGR NX 869977) (Building 6 within Enclosure A: Johnston 1994, 239–55, illus 1–4) (illus 1), excavated in 1989–90. The finds were made within the area encompassed by the enclosure (illus 2) but were interpreted by the excavator as later depositions. Subsequent radiocarbon dating suggested that Building 6 and its penannular enclosure can be dated with reasonable confidence to the first to second century AD (Johnston 1994, 250), significantly earlier than the likely date of the brooch (below). The main brooch fragments were discovered some 2 m away from the sword fragments. A brooch terminal, discovered only 150 mm from the sword, was subsequently found to join perfectly to the main brooch. The sickle fragments were not recognized on site, but it may be safely assumed that they came from the same unstratified context as the sword fragments.

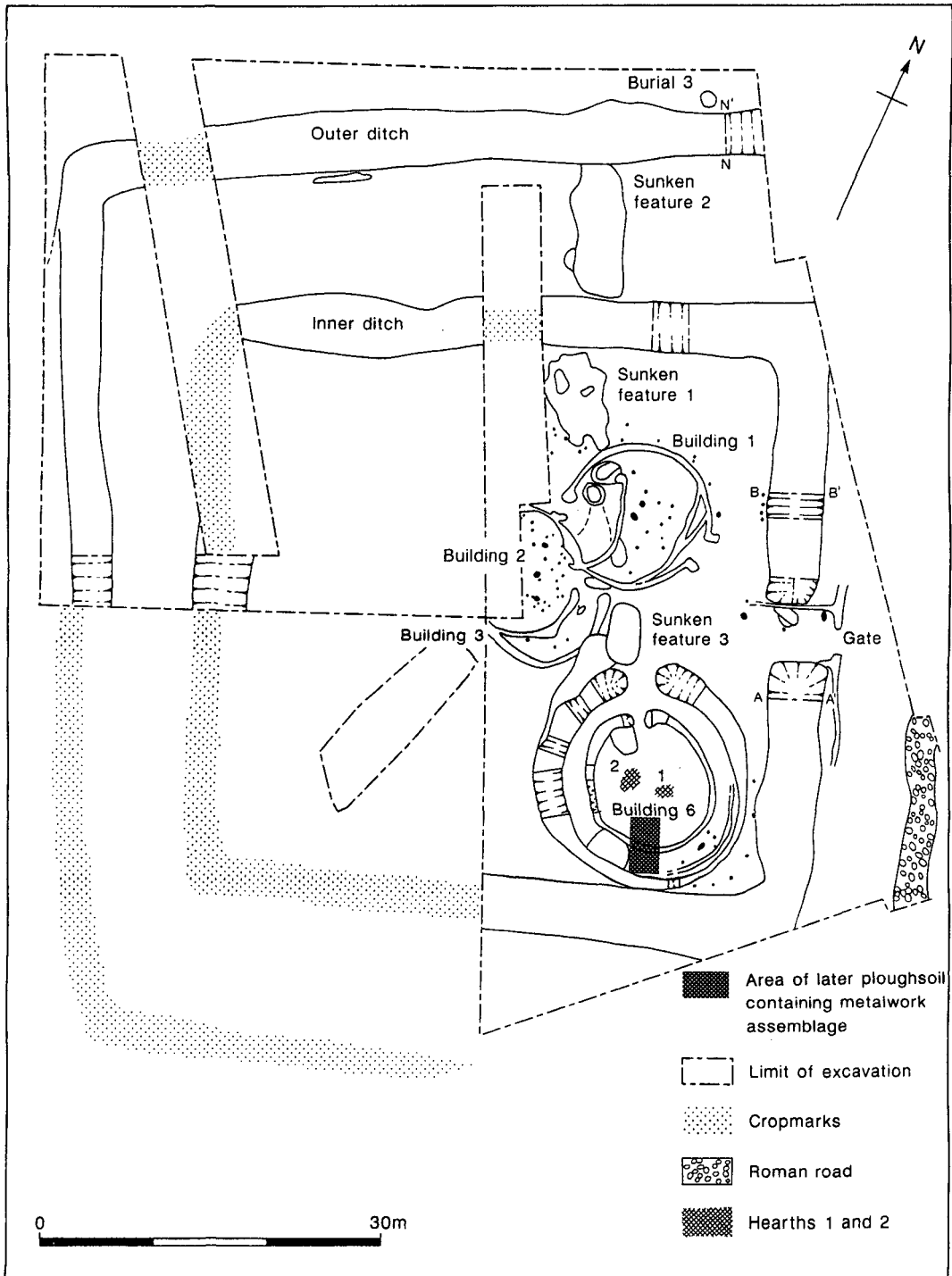
Both the brooch and the sword appeared to have fractured *in situ* – little or no lateral disturbance was observed. With the exception of the displaced terminal, the juxtaposition of all of

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ILLUS 1 Location of Carronbridge (after Johnston 1994. Based upon the Ordnance Survey map © Crown Copyright)

the brooch and sword fragments in the ground accurately reflected their relative positions after reconstruction. The nature of the fractures (including those of the sickle fragments) is consistent with that which might be expected by the objects being crushed from above – compression fractures. The damage is likely to have been caused in the relatively recent past by the weight of modern farm machinery, or perhaps even during clearance of the site by machine prior to excavation in 1989.



ILLUS 2 Excavations at Carronbridge: the find circumstances of the brooch and sword blade (after Johnston 1994)

## CATALOGUE

1 *Silver gilt penannular brooch with expanded rounded terminals* (illus 3). Found in eight joining pieces – three hoop fragments and five pin fragments. Following reconstruction, the form of the brooch was intact and complete. The brooch originally had three studs, probably of glass, which were set in bezels placed within each of the three decorative fields: one in the centre of the curve-ended cartouche at the top of the hoop, and one in each of the circular fields of the terminals (illus 4). These fields each contain interlace ornament. None of the bezels contains any trace of the material they once held but small ledges, at a depth of about 2 mm within the bezels on each of the terminals, may represent mounts for the missing studs. The front faces of the terminals, parts of the reverse of the brooch and, to a lesser extent, the pin shank, were covered with fibres (illus 5).

Insular Celtic, late eighth to early ninth century AD

Hoop diameter 58 mm; pin length (reconstructed) 111 mm; HS laboratory no. 891422.

2 *Wrought-iron two-edged sword blade fragment with remnant scabbard* (illus 6). Found in eight joining fragments. The blade, which is slightly bent at the mid-point along its length, is probably fullered (a manufacturing technique to reduce the weight but maintain the strength of a sword blade; a broad central channel on both sides of a blade running from the hilt towards, but stopping short of, the point). It tapers to a blunt point at one end and is broken obliquely at the other end (towards the shoulder or upper end of the blade), at which point it has a roughly lentoid cross-section. No evidence of the tang survives and all remains of the hilt assembly (guard, hand grip and pommel) have been lost. The blade surfaces are covered extensively with heavily mineralized organic remains.

Probable Anglo-Saxon or Viking date

Overall length (as reconstructed) 740 mm; maximum width: 57 mm; maximum thickness: 10 mm; HS laboratory no. 891661.

3 *Wrought-iron sickle blade fragment* (illus 7). Found in three conjoining pieces. The tip and upper section of the blade survives; the lower section, tang and handle being lost. A backed, curved blade of roughly triangular cross-section, covered extensively with heavily mineralized organic remains.

Probable Anglo-Saxon or Viking date

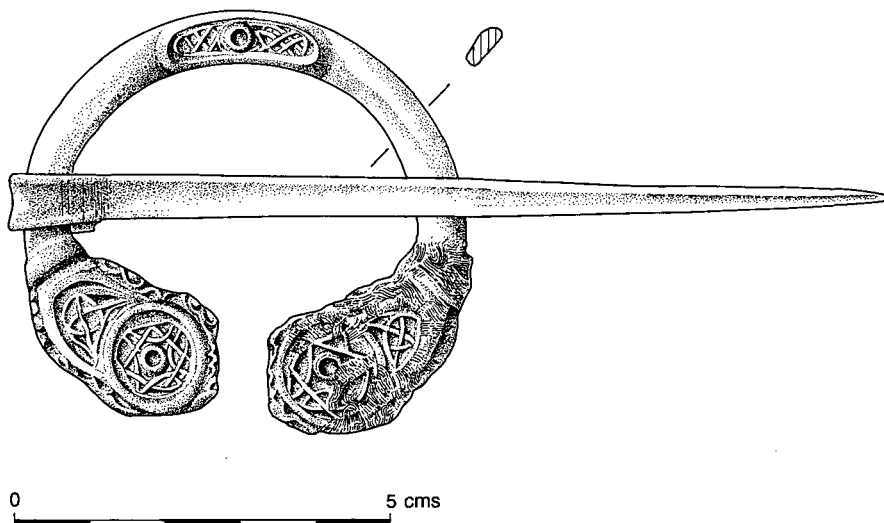
Overall length (as reconstructed) 120 mm; maximum width: 20 mm (approx); HS laboratory no. 891661.

## EXAMINATION AND DESCRIPTION

## THE BROOCH (ILLUS 3)

When discovered, the brooch was in eight pieces. Two hoop fragments and five pin fragments were found together; one of the hoop terminals was found adjacent to the sword fragments. Some of the surfaces of the fragments were obscured by textile fibres (Gabra-Sanders below; illus 5), and all the fragments were obscured by grey/green corrosion products. An examination of the latter, during initial investigative cleaning, suggested that the composition of the brooch was base silver, containing relatively high amounts of copper and tin. Subsequent qualitative X-ray fluorescence (XRF) analyses confirmed these observations, the brooch and pin having similar compositions of relatively impure silver (a copper-rich silver alloy with tin, lead, gold, iron and traces of antimony present). Areas of the brooch fragments were found to be gilded and traces of mercury in these areas strongly suggest that a mercury amalgam, or 'fire gilding' technique (Dodwell 1961, 89–90), had been used in the application of the gilding to the brooch. When reassembled, the brooch was complete and in good condition.

The brooch originally had three studs probably of polished glass, amber or stone, which were set in bezels placed within the three main decorative areas: one in the centre of the curve-ended

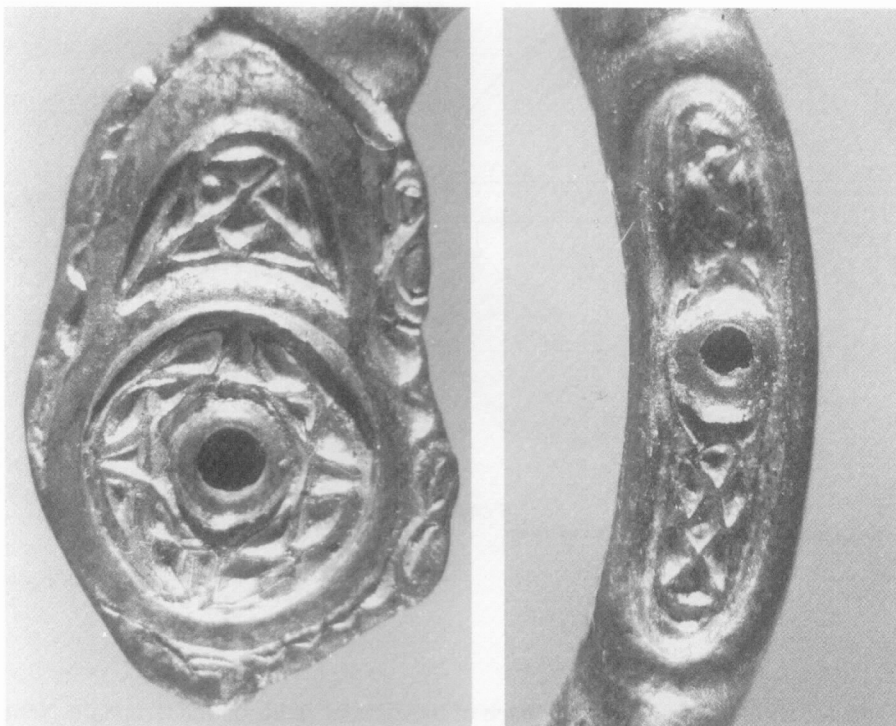


ILLUS 3 The brooch

cartouche at the top of the hoop, and one in each of the circular fields on the terminals. None of the bezels contains any trace of the material they once held but small ledges, at a depth of about 2 mm within the bezels on each of the terminals, may represent mounts for the missing studs.

The ornament of each terminal is dominated by a pronounced circular field with the vacant bezel at its centre, which is adjoined by an equally pronounced, horseshoe-shaped cusp. Both of these fields contain recessed panels of gilded, band interlace, which is irregular and fairly crudely executed. The ornament on the right terminal remains obscured by partly mineralized fibres but it can be seen that the interlace patterns on the two terminals, although similar knotworks, are not identical. An oblique interlace pattern occurs within the curve-ended cartouche at the top of the hoop but, again, the patterns on either side of the central bezel are not symmetrical. The technique used to form the interlaced lines is based on chip-carving but the gilding which survives along the sides of the raised lines demonstrates that some lines were intended to pass beneath others, a feature of interlace rather than chip-carving. Gilding along the top of the interlaced lines survives only as traces, presumably lost through abrasive wear from surface polishing. Further gilding was applied over the plain necks of the terminals and on their flat, expanded borders which are engraved with a series of small, spiral and semicircular ornaments. The terminal edges appear to have been shallow-lobed but some truncation has occurred on their ends and in places along their inner edges, producing an irregular shape. Raised, plain silver collars separate the terminals from the hoop of the brooch. The hoop is plano-convex in section and thickens slightly to accommodate the cartouche at its top.

The hoop and terminals of the brooch were cast in silver as a single casting. Numerous fine scratches, which run parallel to the edges of the brooch, result probably from intentional polishing during either production finishing or, more probably, use. Accidental abrasion would be more likely to cut across the metal surface at an angle. On the left terminal, a tiny dent filled with gold indicates that some damage had occurred prior to gilding, probably (but not necessarily) on the cast, rather than on the original master of the brooch. Tool-marks are clearly visible in many of the

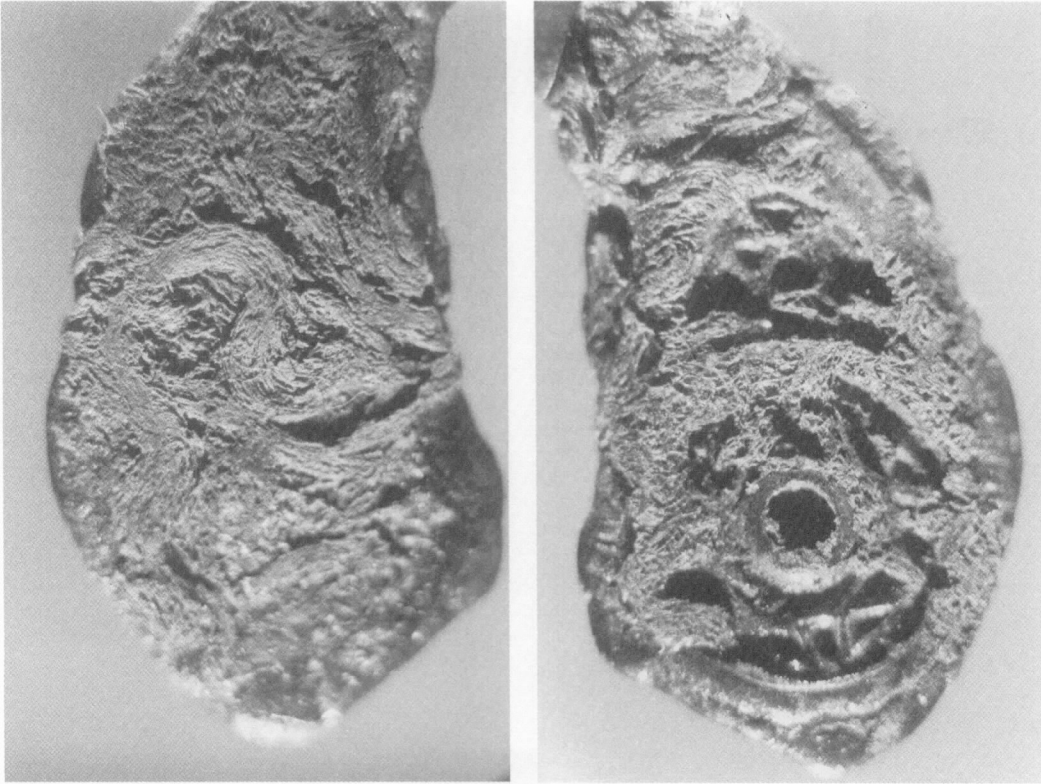


ILLUS 4 Details of the brooch ornament

hollows of the decorated areas. These may have resulted from marks on the master but it is more likely that they were caused by burnishing the surface after gilding. A caveat here is that, had the master been of wax, such smoothing marks might have been made in the hollows in any case.

The surface of the brooch is in good condition and must have had a high polish when in use, enhanced through frequent handling and contact with clothing. A clear dendritic structure to the metal is visible on the hoop, across the collars and on the backs of the terminals, confirming that the brooch was cast in one piece rather than the terminals being cast separately from the hoop and applied. The presence of such metallurgical structures indicate that, during the casting process, the molten metal was allowed to cool slowly in the mould and that the subsequent cast, during finishing, was not subjected to high temperatures or reworking. The eroded edges of the terminals have an irregular and truncated appearance. In all probability, those areas extending outwards from the casted design are overflows from the casting which, rather than being completely removed in the finishing of the brooch, were trimmed and decorated to enhance (and perhaps personalize) the appearance of the brooch.

The pin was made from a silver rod or bar, heated, hammered and annealed repeatedly until fully formed. It is tapering and lozenge-shaped in section. Towards its tip there is a central groove with a roll of metal on either side, the result of hammering along the sides of the pin to form it into a point. The tip itself has split vertically, probably as a result of stress corrosion between the two folds of metal. The shank of the pin broadens towards the loop and has been hammered and flattened. It loops around the hoop and moves freely. The pin is undecorated.

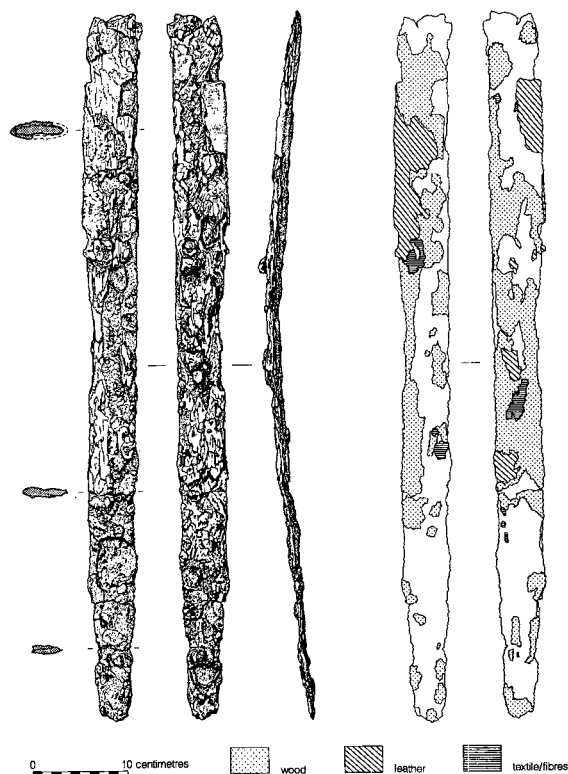


ILLUS 5 Textile remains on the front and rear of brooch terminal

Where the metal is not obscured by corrosion products, the pin can be seen to have a highly polished surface, similar to that on the hoop of the brooch. However, unlike the hoop, there are no indications of dendritic structure on the surface metal; instead, this appears to have a crystalline metallographic structure which indicates that the pin was extensively cold worked (by repeated hammering and annealing) to form its final shape, although its initial shape may have been formed by casting. The appearance of the pin also differs from that of the hoop in that, despite its highly polished surface, there are numerous, pustule-like outbreaks of copper corrosion. This probably reflects a slight difference in the composition of the metals of the pin and the hoop, with the pin having a higher copper content, perhaps to impart additional strength since it would have been subject to higher stress when in use than the hoop.

#### THE SWORD (ILLUS 6)

[Throughout this report, the authors have followed the well-established convention of referring to the 'upper' and 'lower' sections of a sword. These terms are used with reference to the sword to mean, from a notional mid-point, the section of the blade tapering to the point ('lower') and the section of the blade widening towards the tang and hilt assembly ('upper').]



ILLUS 6 The sword blade

Initial examination, conducted shortly after excavation, confirmed the corroded objects to be conjoining fragments of an iron sword blade. The iron was in poor condition with large corrosion blisters distorting the original form of the blade.

The sword is represented only by the lower portion of the blade; there is no evidence of a hilt, guard, quillons or pommel. The broad upper portion of the blade appears to have 'snapped' off – but whether this occurred while the sword was in use or not must remain a matter of conjecture. There is no evidence to suggest that the hilt portion of the sword might have decayed differentially from the blade and might, therefore, have been 'lost' in this way. It is possible that the missing parts of the sword had been present on site in the surface ploughsoil but were not observed during the removal of the latter by machine. The exposed cross-section of the lower blade, when compared with the other fractures prior to rejoining, shows a far greater degree of corrosion – from which it is inferred that, at the time of its deposition, the blade at least was likely to have been a complete fragment, which became further fragmented during its time in the ground.

Both faces of the blade were masked by a variety of associated deposits (see illus 6) which had a discernible structure and were readily recognized as being of organic origin (Clydesdale below). Cross-sections of the blade (along the lines of fracture at the base of the blade) showed an elongated 'figure of eight' pattern consistent with the blade being double-sided. There were no visible signs of fullering on the blade surfaces but subsequent analysis by X-radiography strongly



suggests that the blade was in fact fullered (see Dating Evidence below). The X-radiographs showed no evidence of any pattern-welding or piling in the fabrication of the blade. However, in the area of the upper blade, immediately above the upper fracture point, a decorative double-spiral pattern, probably a maker's mark (illus 8), could be discerned in the X-ray. The mark appeared to have been truncated by the fracturing at the base of the upper blade.

#### THE SICKLE (ILLUS 7)

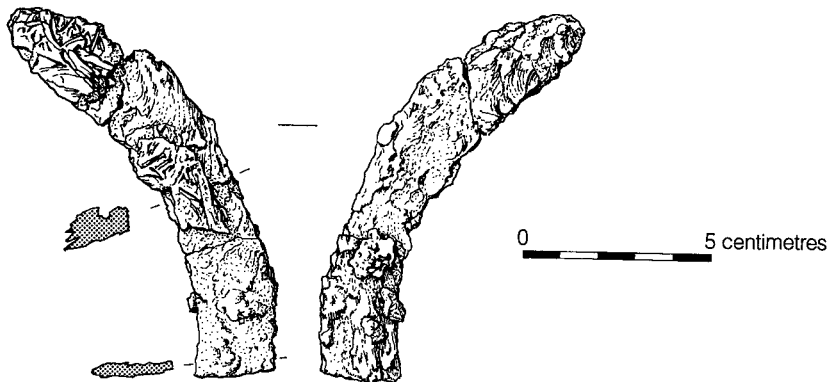
During a routine X-radiographic survey (by Amanda Clydesdale) of the smaller pieces of ironwork (which at that time were believed to be fragments detached from the main sword blade), the unexpected presence of a third artefact was revealed. Three, small, highly corroded fragments of iron were found to conjoin. They formed an elongated, curved object with a roughly triangular cross-section, which tapered to a blunt point. The inner edge had the appearance of a sharpened cutting edge; while the outer edge had a broader back consistent with being the outer side of a single-edged blade. The object was identified as the tip and lower portion of a small sickle. The upper portion of the blade and the tang were not recovered among the remaining iron fragments. Further examination showed that both surfaces of the sickle blade were extensively covered with pseudomorphs of various organic remains, which appeared to wrap over the back of the blade. A detailed examination by light and scanning electron microscopy (SEM) was conducted of these remains (Clydesdale, below).

#### ASSOCIATED ORGANIC REMAINS

##### *The fibres associated with the brooch (illus 5)*

##### Thea Gabra-Sanders

Fibre bundles, in various stages of degradation but up to 18 mm thick, occurred on the front faces of the brooch terminals, on the reverse of the brooch and, to a lesser extent, on the pin shank. They were mostly cemented to the object by copper carbonates. It was decided to conserve the fibres



ILLUS 7 The sickle

covering the right-hand terminal *in situ*; the other fibres were removed mostly during conservation of the brooch. Fibres on the reverse of the brooch were pressed together in a mass. As found, the fibre bundles were coiled and wound in a random manner and showed no trace of a weave.

A mass of fibres from the back of the brooch was cleaned ultrasonically. Microscopic examination revealed a scale pattern characteristic of wool. The wool was light brown in colour and there was no evidence of dye. As no other textile remains were recovered, it is not possible to determine whether this fibre mass had come away from the neckpiece of a fleece cloak or other garment, although this would seem the most likely source. Another possibility would be that the brooch had been wrapped in wool for safekeeping.

### *The organic remains associated with the sword and sickle (illus 6)*

Amanda Clydesdale

The iron of both the sword and sickle fragments was totally mineralized and there were numerous pseudomorphs of organic material preserved in the corrosion layers. The surfaces of the sword blade were covered extensively with mineralized wood (illus 6), red-brown in colour, which was overlain by patches of a spongy yellow-brown layer of decayed leather. Textile remains were found in small areas. These deposits were interpreted as the remnants of a scabbard, constructed from two wooden laths secured together and covered with a leather or hide sheath. The textile may have been part of a decorative banding around the scabbard, or it may have been a fragment of clothing adhering to the scabbard surface. It seems more likely, however, that these remains represent the remnants of a winding cloth originally wrapped around the scabbard laths, securing them together. The fact that the sword blade was contained in a scabbard when it was deposited suggests that the sword was complete when lost, despite the lack of any surviving trace of the tang and hilt assembly.

One side of the sickle blade had a fairly consistent layer of uniform, round-sectioned fibres overlying the original metal surface; on one of the three fragments, a small area of well-preserved, highly detailed leather was visible, partly obscured by an overlying layer of more fibres. Scanning electron microscopy (SEM) of both the fibres and the leather was undertaken. The preservation of the leather surface was so good that stumps of hairs could be seen projecting from the surface and it was easy to see that the grain side (with some hairs intact) had faced outwards. The nature of the corrosion products resulted in extremely detailed casts and pseudomorphs of the fibres. Clear scale patterns were visible from which the fibres were identified as sheep wool (Wildman 1954, 63, 73–81). The leather was overlain by a layer of glassy corrosion products which had casts and pseudomorphs of fibres preserved in it – probably the remains of the fibres which were originally embedded in the leather. In short, this material was interpreted with reasonable confidence as the remains of a sheepskin fleece.

This layer of fleece passed over the back of the blade and covered part of the other side, where it was partly overlain by a thick layer of powdery orange corrosion which appeared to contain the remains of bird feathers. The significance or purpose of these feathers, or even whether they were deliberate or accidental inclusions, is unknown; they did not appear to have been lying in any particular direction. However, the fleece seemed in general to have lain parallel to the long axis of the blade, except for a swirl of fibres on one side, close to the join between two of the three fragments. Textile remains were also visible in the section where the corrosion layer containing the feather casts had broken off, close to the sharpened edge of the blade. The textile fibres, probably of wool, were single ply, Z-spun with a thread count of approximately 9 threads per cm.

## THE DATING EVIDENCE

Only the brooch has survived completely enough to allow detailed consideration of its likely date of manufacture and deposition. The dating of the sword and sickle fragments is largely dependent on their association with the brooch.

### THE BROOCH

The Carronbridge penannular brooch falls clearly into a series identified as 'Pictish' by Stevenson (1959, 256), followed by Wilson (1973, 81–105) and others, and best exemplified by the 12 brooches in the St Ninian's Isle hoard, Shetland. Today, there is an increasing trend to abandon such ethnic labels in favour of less subjective terminology and, here, the term 'Insular Celtic' is preferred (see Discussion below). This brooch series is notable for its homogeneity which might suggest that brooches of this type were manufactured over a relatively short time-span. They are commonly considered to be eighth-century products; however, most recently, Ó Floinn (1989, 90), following Wilson (1973, 101) and others, has suggested an approximate time-span of about the mid-eighth to early ninth century.

The brooch is similar in concept and design to several finer examples of the type although the expanded rounded (and irregular) shape of its terminals is unusual. These may have been slightly mis-cast and then trimmed, but the original intention was probably that the terminals should have very shallow-lobed edges. The outer edges of the circular terminals of a much finer brooch from near Clunie Castle, Dunkeld, Perthshire (Youngs 1989, no 109), are also slightly truncated. This would have been the part of the mould furthest from the influx of molten metal and any insufficiency of metal, or a failure to allow the metal to set in a precisely horizontal position, might account for this casting deficiency. The Clunie Castle brooch terminals have a chased border of s-scrolls which recalls the engraved spirals and semicircles on the terminal edges of the Carronbridge brooch, although these latter are markedly inferior in execution.

Lobed or trefoil terminal shapes were especially favoured in the so-called 'Pictish' brooch series. The Carronbridge terminals may have been influenced by asymmetrically lobed terminal shapes such as those on one of the brooches from the Rogart hoard, Sutherland (Youngs 1989, no 112). This same Rogart brooch has slightly raised, plain cross-bars where the terminals meet the hoop, which is the only parallel for the distinctive, raised silver collars between terminals and hoop on the Carronbridge brooch.

The emphatic, circular and cusped decorative panels on the Carronbridge terminals are predominant in the design. These recall the rounded terminals of several other brooches, amongst the finest of which are those from Aldclune, Perthshire (Stevenson 1985; Youngs 1989, no 108), and Ervey, County Meath, Ireland (Youngs 1989, no 86). This latter brooch is considered by Wilson to have been of Irish manufacture but 'produced under very strong Scottish influence' (1973, 84, fn 1), a view followed by Ó Floinn (1989, 102). Both the Aldclune and Ervey brooches are considered to be ninth-century products; Stevenson suggests that the Aldclune brooch was made in the early ninth century (Stevenson 1985, 236). Typologically, the gradual simplification of terminal shapes culminating in the disc-only terminals, the eradication of hoop ornament with the exception of the elongated cartouche opposite the terminals, and the progressive emphasis on the cusps at the junction of hoop and terminals, all indicate a date towards the end of the series for the Aldclune and Ervey brooches, and perhaps for the less fine Carronbridge brooch too. Some corroboration of this typology is provided by a typologically late brooch from the Croy hoard, Invernesshire (Wilson 1973, pl. xxxviii), which was found in association with a mid-ninth-century Anglo-Saxon coin.

Several factors suggest that, typologically, the Carronbridge brooch may be a little earlier than the Aldclune brooch: the interlace on the Carronbridge brooch is of the usual oblique lines (unlike the more geometric ornament in the recessed decorative panels of the Aldclune, Ervey and Croy brooches); the remains of lobed terminal edges may indicate only 'embryonic' rounded terminals; and the relatively small size of the now absent studs correlates closely with those on the St Ninian's Isle brooches. A late eighth- to early ninth-century date of manufacture is possible, although the potential fallibility of typological dating has been well rehearsed and needs no repetition here.

The pin on the brooch is not of the usual type with engraved, lentoid head; instead, it is rather crude and undecorated. There is, therefore, a strong possibility that this pin replaced the original brooch pin, a point returned to in the discussion below. If the pin is later than the brooch, then it follows that the brooch may have been lost some time later than its typological dating would suggest. A ninth-century, or even 10th-century date of deposition at Carronbridge is not impossible.

#### THE SWORD AND SICKLE

The attribution of a date to the Carronbridge sword and sickle fragments is fraught with difficulties. Much of the published work on swords has concentrated on the morphology of complete blades (with tangs), the design and ornament of the hilt assembly (the guard, hand grip and pommel) and the typological study of these elements, all of which are absent from the Carronbridge find. Detailed statistical work has been done on the dimensions of sword blades of various types and periods, eg Brown 1982 (Bronze Age swords); Manning 1985, 148–52 (Roman and Roman Iron Age swords). Considerable attention has focused on art historical analysis of the decorative features of the hilt assembly, particularly those of Dark Age date (eg Youngs 1989). Wilson referred to the difficulties of dating sword fragments based solely on their morphology – a comment made at a time when such analyses were 'the only dating criterion available' (1965, 52). With pleasing honesty, he admitted to the necessity 'to fly a kite' when faced with limited options (1965, 44), as is the case here with the Carronbridge sword (and sickle) fragments.

The surviving length of the Carronbridge sword blade measures approximately 740 mm. The probable maker's mark truncated by the fracture of the lower end of the blade suggests that the majority of the blade length has survived. Such marks typically appear on the area of the blade immediately above the cross-guard. A reasonable estimate of the original tip-to-shoulder length of the blade (ie without tang) would be approximately 800 mm, with a width at the shoulder of approximately 60 mm; this would indicate a possible overall length for the original sword of approximately 900–950 mm.

Swords of these general proportions may be very broadly attributed to the Dark Age period. Evidence (Davidson 1962, 38) drawn from earlier studies of Merovingian (Salin 1943) and Carolingian (Gessler 1908) sword groups suggested an average tip-to-shoulder length in the order of 850 mm, with a typical width of 55 mm at the shoulder. From the Anglo-Saxon period, the Fiskerton sword (Wilson 1965, 33–5; Webster & Backhouse 1991, 276, no 250), dated to the second half of the ninth century, has an overall length of 902 mm; while the Gilling West sword (Watkin 1986, 93–9; Webster & Backhouse 1991, 277, no 251), though also of late ninth-century date, is somewhat shorter in overall length (838 mm). A sword in the collections of the Tullie House Museum, Carlisle (Wilson 1965, 45), is of similar date and was found in closer proximity geographically to the Carronbridge sword, but is unfortunately both unprovenanced and incomplete.



ILLUS 8 X-radiograph showing double-spiral maker's mark at truncated upper end of the sword blade

The two cutting edges of the Carronbridge sword are not parallel, but taper gradually towards the tip, a characteristic associated with a transition in sword design (and warfare practice) during the ninth and 10th centuries from broad parallel-sided blades, effective in cutting and slashing, to blades with more tapered points, which retained the earlier actions but enabled more effective stabbing and thrusting. Concomitant with this transition was the increasing appearance of fullered blades, a development in design intended to give the sword improved balance in the hand (by reducing the overall weight rather than length of the blade) without any reduction in its strength and performance. Although the surfaces of the Carronbridge sword blade remain largely obscured by the remnants of the scabbard, X-radiographs (illus 8) show two marked parallel lines of greater density, or ridges, running the length of the centre of the blade and splaying out towards the cutting edges at the truncated upper end of the blade, where the double-spiral maker's mark is positioned. The position of these lines, which stop short of the missing cross-guard, is consistent with a thickening of the blade to form a backing for the outer cutting edges, while the thinner area between these lines formed a shallow groove. This evidence suggests that, in all probability, the Carronbridge blade was fullered.

The X-radiographs demonstrate that the iron is severely corroded; little elemental iron remains and much detail has either been lost or is obscured by the scabbard remains (left *in situ* during conservation). However, it is improbable that the blade was pattern-welded (a complex smithing technique first recognized and described by Maryon (1947, 73–6)).

In summary, the available evidence suggests that a date sometime in the ninth or 10th century AD could be sustained as a working hypothesis for the Carronbridge sword fragment. By direct association, the sword scabbard remains and probably the sickle fragment are of the same approximate date. To test this dating hypothesis, small samples of the degraded organic remains of the scabbard were removed and subjected to a standard loss-on-ignition test to determine the proportion of surviving organic material. This was found to be in the order of 20% of the original sample weight, sufficient in theory for an attempt at dating by the radiocarbon accelerator technique. Unfortunately, in this case, the sample still proved too small for a date to be obtained (G Cook, pers comm).

## DISCUSSION

### THE BROOCH

The growing assemblage of so-called ‘Pictish’ brooches is dominated by those from Scottish hoards (Wilson 1973, 89–90; Graham-Campbell 1985, 255, Table 1). Wilson’s map of their distribution (1973, fig 14) shows a marked north and east Scottish concentration which is accentuated by the fact that all the above hoards were found in these same areas. However, the scatter of such brooches from west Scotland and Ireland is now augmented by this example from south-west Scotland and it seems increasingly likely that the distribution map may be ‘skewed’, first by the presence of the hoards, which are a distinct cultural phenomenon and, second, by the inevitably random nature of the survival and recovery of portable metalwork. Lane’s amended distribution map (1984, 54–5, fig 3.3 and fn ii), by excluding finds recovered from Viking contexts, adding new finds and correcting the findspots of others on the basis of new evidence, amply demonstrates the potential fallibility of distribution maps of portable material. It reveals a much more even spread of findspots from the Pictish kingdom, through Dalriada and into Ireland, and echoes the north and east distribution of Pictish symbol stones far less emphatically than the previous version.

The relationship of findspots of metalwork to proven production centres is also revealing since, in contrast to finished and highly portable objects, mould fragments would usually have been discarded at workshop sites. As Close-Brooks (1986, 146) noted, clay moulds for metalworking are often found on Dark Age sites, often without extensive excavation, which suggests that they may be a relatively common feature of the cultural assemblages. Of nine sites where Dark Age metalworking has been attested thus far, four have produced fragments of clay moulds for penannular brooches: Brough of Birsay, Orkney (Curle 1974); Clatchard Craig, Fife (Close-Brooks 1986); Dunadd, Argyll (Craw 1930; Lane 1984); and Mote of Mark, Kirkcudbrightshire (Curle, A O 1914; Laing 1975; Graham-Campbell *et al* 1976; Longley 1982).

Thus, brooch manufacture appears to have taken place in northern and southern Pictland, but also in western Scotland. The moulds are notable for the greater variety of brooch size and type than is represented among the finds of brooches themselves. No close parallel for the Carronbridge brooch exists among the clay moulds recovered so far, nor for surprisingly few of the other penannular brooches. As Curle (1974, 95) concludes from the Birsay assemblage, the moulds seem to have been for ‘the production of a cheap form of jewellery’ and she suggests that many from

Birsay are in effect a simplified form of the brooches of the St Ninian's Isle hoard. The Birsay and Clatchard Craig moulds indicate that penannular brooches were in relatively common use. In general, only some of the more expensive brooches seem to have survived, perhaps as family heirlooms or because they were a form of transferable wealth. Although the Carronbridge brooch is less fine than many other extant examples of the type, it is made of silver; the Birsay moulds were for simpler, bronze brooches (Curle 1974, 95).

The moulds from Mote of Mark and Dunadd are mostly for Type G brooches (Fowler 1960; Dickinson 1982), a type which has an exclusively west coast distribution in Scotland. However, recent excavations at Dunadd (Lane forthcoming) have produced some brooch moulds with 'Pictish' features and some which combine 'Pictish' and 'Irish' features (Wilson 1973, 83–8; Lane 1984, 52). Lane (1984, 49–56) tentatively suggests an early ninth-century date for these Dunadd moulds and explores the possibilities of a Pictish/Dalriadic cultural exchange. The dating of the Mote of Mark and its cultural assemblage is controversial and the site is inadequately published. However, the reconstruction drawing of a penannular brooch from a Mote of Mark mould (Laing 1975, fig 3e) is reminiscent of the early ninth-century Aldclune brooch. The addition of Mote of Mark and Carronbridge (which are only about 45 km apart) to Lane's distribution map of 'Pictish' brooches (1984, fig 3.3), gives a south-west Scottish dimension to it for the first time.

Thus, whilst there is no reason to doubt the identification of a distinctive penannular brooch series common to Scotland, it is almost certainly misleading to regard it as wholly Pictish. The hybrid examples of the type, Lane's amended distribution map and the evidence of the clay moulds are all indicative of a degree of cross-fertilization of stylistic influences between Ireland and Scotland, between Dalriada and Pictland, and probably from elsewhere. The findplace of the Carronbridge brooch, precisely between Ireland and that part of west Scotland traditionally defined as Dalriada, combined with its superficial similarities to both Irish and Scottish examples, serves to highlight the point. Clearly, as Alcock (1984, 27) has suggested, the attribution of certain classes of metalwork to particular named peoples must be treated with caution. For these reasons, it is proposed that the term 'Insular Celtic' might henceforth be a more appropriate term for this brooch series than 'Pictish'.

It is worth recalling here the probability that the Carronbridge brooch had a replacement pin and, therefore, may already have been of some antiquity when it was lost or buried at Carronbridge. Given that it was probably also a relatively valuable item, and that brooches of silver seem to have survived more often than those of bronze, perhaps as family heirlooms or as a form of readily transferable wealth, it seems highly likely that the brooch was deposited in the ground somewhat later than its typological dating might suggest. On these grounds, a likely date of deposition in the ninth or even 10th century is suggested.

#### THE SWORD AND SICKLE

The sword and, even more so, the sickle are too incomplete to allow convincing parallels to be drawn, or to place them firmly into any typological or chronological sequence. It must be admitted that the dating evidence for both pieces is very limited and relies heavily on inference in that both objects were found in direct association with each other and, almost certainly, with the (somewhat) better dated brooch.

However, it seems most probable, on the basis of the estimated original length of the sword and the fact that it appears to have had a fullered blade, that the sword is Dark Age in date, possibly Anglo-Saxon or Viking. Some corroboration may be found by process of elimination, in that Pictish swords as depicted on Class II stones certainly appear to be relatively short; and that,

since known Irish swords of the period are regularly shorter than the estimated length of the Carronbridge blade, the same might be expected to be true of those of the Scotti (L Alcock, pers comm). Unfortunately, despite the existence of several typological studies of Viking Age swords (eg Petersen 1919; Maure 1976), too little evidence survives to allow consideration of whether the sword is likely on typological grounds to have been Viking rather than Anglo-Saxon, or vice versa.

The reconstructed length of the sickle (c 120 mm) is rather smaller than the sickles which have been recovered fairly routinely from Viking graves in Scotland. These normally range from 190 mm to 220 mm across the bow, although that from the Viking boat burial at Scar, Sanday, Orkney (Dalland & Owen forthcoming) is only 130 mm across the chord. It is notable that sickles are frequently (although not exclusively) a female artefact in Viking graves in Scotland and western Norway (Petersen 1951, 515–16; Dommasnes 1982, 76–7), but the presence of the sword at Carronbridge strongly suggests that this is a male assemblage of artefacts. A discussion of the use of sickles for cereal harvesting in a 19th-century agricultural manual (Stephens 1850, 330–1) makes it clear that size is not important; what matters is that the sickle is kept sharp, that the curvature is right, and that the size and weight of the sickle is matched to the size and weight of the person using it. At harvest time, everyone would be expected to help, from the smallest children to the male and female elders of the household. This was probably true throughout much of Scotland's rural history.

## INTERPRETATION AND CONCLUSIONS

The brooch was probably manufactured in the late eighth to early ninth century by analogy with other similar Insular Celtic brooches. However, it is probable that its deposition in the ground occurred somewhat later than this – perhaps in the ninth or even 10th century AD. Its find location in south-west Scotland is unusual and, whilst entering a caveat about the fallibility of distribution maps of portable metalwork, it highlights the growing impression that this type of brooch may, in fact, result from a cultural exchange involving Irish, Dalriadic and Pictish stylistic influences.

The Carronbridge brooch may have been attached to the neckpiece of a fleece cloak when it was deposited in the ground. The fact that the sword blade had been in a scabbard when it was lost suggests that the sword too may have been 'worn' by its bearer. No evidence survives of the method of transport of the sickle but its recovery among iron fragments found with the sword blade suggests that it too had been carried or 'worn' to its final resting spot by the bearer of the sword. It is highly likely that these three objects are directly associated with each other and were deposited at Carronbridge simultaneously. The discovery of this group of Dark Age artefacts during removal of ploughsoil preceding excavations of a Roman and native Iron Age site is almost certainly entirely coincidental to the presence of the excavated site. There is no evidence whatsoever for any activity at this location later than the Iron Age (Johnston 1994). Although all three objects are effectively unstratified, nor were any features located in the immediate vicinity which could be interpreted as the truncated remains of a grave pit. Perhaps the most likely explanation is a strange coincidence: that a lone traveller – wearing a brooch and carrying a sword and a sickle – died unexpectedly at Carronbridge in the ninth or 10th century AD.

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