Excavations at Culross Palace and the Bessie Bar Hall

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Introduction
Location and physiography
Culross Palace (NS 985 859) and the Bessie Bar Hall lie towards the west end of the town of Culross, about 10km (6 miles) south-east of Alloa and a similar distance west of Dunfermline in Fife. They stand on a narrow band of level ground close to the north shore of the Firth of Forth. When the palace buildings were occupied this stretch of land would have been narrower but the adjacent harbour has been filled in since that time and the palace now lies even further from the water’s edge. Immediately behind the palace there is a terraced garden on the steep slope that climbs towards the upper parts of the town. During clearance work in 1975 remnants of walling were uncovered at the base of the slope, suggesting that there had been more terraces than are visible now (HS 1975). Buildings also extend along Sandhaven, a road which hugs the old shoreline and which apparently was subject to regular flooding during the 18th century and probably at other times as well (OSA, 145).

The bedrock of the area comprises Upper Limestone Coal Measures below Carboniferous sandstone of the Millstone Grit Series (Cameron and Stephenson 1985, fig 1), which has provided the principal building material for Culross, including its palace. These rocks are overlain by fluvioglacial clays above which are various beach deposits, including sand, sea coal and marine shells.

Historical summary
The ‘palace’ was initially a small hall-house built in 1597 (or earlier) by George Bruce, an industrialist and merchant of great enterprise. Nine years before, Culross had been elevated from a burgh of barony into a royal burgh. In 1604 Bruce was knighted and subsequently designed ‘of Carnock’ after acquiring the nearby estate of that name (Paul 1906, 484; RMS, VI, 458). Seven years later the palace was enlarged and its resultant layout is more or less what survives today. Bruce was instrumental in the development and expansion of coal mining in the area, having been let mineral rights by William Colville, then Commendator of the Cistercian Abbey of Culross, in 1575. He was also involved with salt-panning, which could be fuelled by poor-quality coal (dress), usually regarded as waste. Evidently, there were 44 salt pans during Bruce’s time, producing 90 tons of salt per week (Cochrane 1793, 15). By 1663 there were at least 50 pans in Culross (OSA, 144). The two related industries were a common feature on both shores of the Forth from the Middle Ages until the 19th century: George Bruce is thought to have been the first to develop them on any significant scale. Bruce was also involved in trade, both local and international. He exported coal and salt, particularly to the Low Countries and Scandinavia, importing manufactured goods by return.

Bruce died in 1625 and was succeeded by his son, also George. Some time after that the palace passed into the hands of the earl of Elgin and Aylesbury from whom Alexander Bruce bought it back in 1665. He was retoured heir male of Edward, Earl of Kincardine (the builder of Culross Abbey House and the brother of George Bruce) in 1683; but became blind and infirm and so offered to resign his honours into the king’s hands in favour of his eldest sister, Mary (Gen Ret 1683). The resignation was never received and therefore had no effect.

Debts and litigation resulted in the sale of the estate of Carnock which was purchased by Colonel John Erskine in 1704 (SRO B12/2/1, 275). He died in 1752, leaving the palace (wherein his widow still lived) to his son, also John (SRO B12/2/3, 34).

Only three years later the property was sold to Robert Halkeston, a goldsmith in Culross, from whom it passed eventually to Captain James Kerr of East Grange and thence to a Mr Luke who was...
Illus 1. Location of Culross Palace and the Bessie Bar Hall.
still in possession in 1885 (Beveridge 1885, 302). By this time, the palace had long since ceased to be a property of standing, its west range being used as a lumber store in the mid-19th century (Jervise 1859, 339).

To the west of the palace, and separated from it by a narrow yard, stands the Bessie Bar Hall. This building is named after a maltstress who reputedly used it as a malt house in the late 16th and early 17th centuries. In 1590 the Town Council discussed Bessie’s property and the price of her malt (Cunningham 1910, 64). A stone in its south gable is marked with the date 1776; but whether this was when the hall was rebuilt or altered or if it refers to a change of ownership is not clear. The ground floor of the building comprises a large room with doors at both ends of its east wall and one leading into a smaller chamber at its north end. This chamber can be entered from the yard through a doorway in its east wall. A stone forestair against the south gable of the building leads to the first floor, above which is another storey in the roof space.

The palace was purchased in 1932 by the National Trust of Scotland (NTS) which also owns
the Bessie Bar Hall as well as several other properties in the town. Shortly after, the palace was taken into state care but reverted to the NTS in 1991.

The palace buildings (illus 2)

Several accounts of the architectural history and layout of the palace have already been written: for example, RCAHMS (1933, 78–80); MacGibbon and Ross (1887, 432–5); and Gifford (1988, 154–7).

Notwithstanding, to familiarise the reader with the monument and to place the results of the excavation in context, a summary of these accounts is included here to highlight the more important aspects of its layout.

The palace comprises two separate complexes of buildings on the west and north sides of a courtyard now enclosed on its other two sides by screen walls. The oldest element is the central block of the west range. This was a rather simple building, measuring 12.3m east / west by 5.3m wide, which contained a kitchen and another apartment, probably a store; its upper floor was divided into a hall and private chamber. Its second floor, which is probably an addition, comprised an attic with three dormer windows; on the central dormer are the initials GB and the date 1597, presumably the building’s date of construction or perhaps more likely – when it was heightened.

About the same time, a two-storey, L-plan block was added to the south (Gifford 1988, 154), the two buildings separated by a small courtyard. Shortly after, a two-storey extension containing a bakehouse and a new kitchen was added to the north side of the original building. The completed west range measures approximately 33m north / south and up to 14m east / west.

One doorway opens onto the street at the south end of the building; another leads from the bakehouse into what is now an inner courtyard to the north. There are two stairs leading to the upper floors: a forestair between the east jamb of the south extension (the door into the first storey is now blocked) and a turnpike close to the new kitchen. The forestair is thought to have led to a loggia on what is now an open landing, the stair being within what was once the small inner courtyard, probably defined on its east by a wall running between the ends of the two eastward projections of the west range (pers comm, R Fawcett).

On the first floor in the main block was a long gallery, which was divided in the early 18th century. Other apartments at this level include a strong room, which is accessed only from a private chamber over the original kitchen. There are further private rooms over the secondary kitchen and on the second floor, one of which has an elaborately painted ceiling divided into sixteen panels.

A three-storeyed north range, measuring 12m east / west by 7m wide and completely separate from the earlier buildings, was added in 1611, the date inscribed on one of the dormers on its upper floor. Another bears the initials ‘SGB’, representing Sir George Bruce. Completely separate from the west range, the north range was not equipped with domestic offices and therefore must have been served from the earlier building. At courtyard level are two chambers, which at least latterly were used as stables or byres. These two rooms are separated by a straight stair leading to two living rooms at first floor level and the terraced garden to the rear of the building. A newel stair gives access from the westmost of these chambers to bedrooms on the uppermost floor. All of the rooms at first- and second-floor levels are wood lined and have painted walls and ceilings.

At some stage – probably well after Bruce’s death in 1625 – a small, one-storey building was added to the east end of the north range. This 5m-long extension contained a ground-floor stable and a hay loft above. It is not clear whether this structure actually belonged to the palace or was outside its limits (see below). All elements of the west and north ranges were built of mortar-bonded, coursed sandstone rubble; the outer faces of these buildings are now masked with harling which was applied in 1722.

In the angle between the north and west ranges is a small, inner, domestic courtyard, which can be accessed from the main courtyard and from the west range. At the north-west corner of the inner courtyard is a well – really a collection tank for water seeping down from the adjacent hill – whose age is uncertain. The kitchen was also supplied with water through an inlet in its west wall, presumably from another well near the Bessie Bar Hall (see below).

The two walls on the east and south sides of the main courtyard present a somewhat misleading impression of the layout of the palace; this arrangement does not appear to have existed during its occupation.

The background to the excavations

In November 1991, prior to excavation, geophysical surveys were undertaken by the British Geological Survey within the courtyard and in the terraced gardens behind the palace. Three techniques were employed: ground probing radar; the measurement of the vertical magnetic gradient (using a gradiometer); and the measurement of ground conductivity, the latter using two separate instruments. The survey results indicated the outlines of several possible features; although only two of these (the edge of a kerbed path and a spread of iron-working debris), both within the south-west corner of the courtyard, were confirmed by excavation.

In autumn 1992 the National Trust for Scotland
commissioned a short season of exploratory excavations within the main and inner courtyards to assess the nature and extent of any features of archaeological interest that may have survived therein. At that time the main courtyard was grassed over traversed by cobbled paths of recent origin; they extended alongside its north and west sides, linking with another which led from the enclosure entrance in its south wall. A section of stone wall, cobbled flooring, part of a kerbed path and the edge of an overflow from the well in the inner courtyard were uncovered in trenches towards the north end of the site. Further south, the depth of overburden prevented anything of interest being exposed at the excavated level; although it did allow an estimate to be made of the amount of spoil that would have to be removed at a later date.

During the autumn of 1993 the interior of the Bessie Bar Hall was excavated prior to the conversion of its ground floor into a restaurant and an associated kitchen. Other than within a few small trial trenches, excavation did not extend below those deposits (approximately 0.3m deep) which were threatened by the redevelopment of the building. Thereafter, the area between the hall and the west range of the palace was investigated before new service trenches for the restaurant were installed. The depth of excavation within this area varied considerably: in places only recent deposits were removed; elsewhere, particularly where new drains were to be inserted, trenching was comparatively deep.

In April 1994 a trench was opened against the outside face of the wing at the south end of the west range in advance of the re-harling of the building. The results of this and the 1992 exploratory excavations have been incorporated into those retrieved from the main investigation undertaken later that year. Almost the whole of the courtyard area was excavated in September and October 1994. Unfortunately, it was not possible to remove a small flowering cherry tree from the east end of the site during those two months. The tree was felled some time after the main season of excavation and, as a consequence, the investigation was not completed until February 1995. All of the excavations were carried out by Scotia Archaeology Limited.

The principal aims of these excavations were:
to establish whether the areas now occupied by Culross Palace and the Bessie Bar Hall had been occupied prior to the construction of the extant buildings;
- to interpret how the palace courtyard had been utilised between 1597 and the present day; and
- to identify any structures or features that could be consolidated or restored so as to enhance visitors’ appreciation of the palace.

In addition, small-scale investigations were undertaken within the green at the west end of Culross to trace the suspected course of a sea-wall thought to be shown on the 1st edition Ordnance Survey map of 1856. This was done at the behest of Fife Enterprise.

Excavation within the main courtyard of the palace

The courtyard measures approximately 23m north / south by 17m wide at its north end, narrowing to 15m at its southern limit because the east boundary wall is dog-legged. It was evident before the start of the excavation that this wall might contain elements of earlier structures. Apart from the cobbled paths, the green swathe of turf that covered most of the courtyard was relieved only by the flowering cherry tree located near the east wall. This tree was planted in the 1950s, soon after several other trees (mostly elms) had been felled (pers comm, J Robertson).

The excavation results have been divided into four periods. As is true of most sites that were occupied for some time, these divisions are somewhat artificial; they mostly reflect changes in the layout and uses of what may have been comparatively minor structures and features outside the main palace buildings. Indeed, some of those structures may well have been beyond the limits of the palace precinct. The periods of occupation and their most important structures and features are:

Period 1 the construction of the principal buildings of the palace and a range of buildings along the east side of the courtyard (late 16th / 17th century);
Period 2 the partial abandonment of the east range and the construction of at least two phases of metalled path leading to the west and north ranges of the palace (18th century);
Period 3 the construction of a small building at the north end of the former east range and the widening of the Period 2 path (19th century);
Period 4 the final use of the palace, mainly for animal accommodation, and the establishment of a garden in the south-east corner of the courtyard (late 19th / early 20th century).

Period 1 (late 16th / 17th century) (Illus 4-7)

It could not be established with certainty that the buildings along the east side of the courtyard were the work of George Bruce, although they are believed to date from a relatively early phase of the palace and hence are included in Period 1. Indeed, one of them may have been built before some of the extant elements of the palace (see below). This structure certainly pre-dated at least one other element of the east range but, because absolute dates could not be applied to any part, all are included in Period 1. There was little evidence of activity within the confines of the courtyard before building began along its east side; at first, its surface would have borne little resemblance to that expected of a courtyard.

Prior to the construction of the east range, much of the courtyard area was undulating ground, the topography probably reflecting natural processes rather than human activities. This was most noticeable in the south-east and north-east corners of the site where there were depressions, up to 0.5m deep, in the ground surface which had been levelled, often with rubble, at various stages of the courtyard’s development. The western half of the site was much more even at the start of Period 1 and had required little infilling. Nowhere was there any trace of buried turf or topsoil. It can be assumed that either the courtyard had been stripped of such materials prior to building or the beach deposits in this area (mostly gritty sand stained black by sea coal) had not been overlain by topsoil, perhaps because of regular inundations by the sea. Flooding was a very real problem along the Sandhaven in the late 18th century (see above; OS5A, 145) and it must be wondered what measures would have been taken to protect the palace some two centuries earlier.

The east range. Although its ground plan was not evident prior to excavation, some elements of the east range were incorporated into structures that still stand at the end of the 20th century. This is particularly evident at the south end of the east boundary wall; although mostly a 19th-century structure, it incorporates part of the east wall of Structure 1 – a Period 1 building.

The east range extended from the line of the extant south wall of the precinct for at least 19m northwards; from that point all trace of it seemed to have been removed. However, the foundations of the east wall of the range (or at least a wall against which that range was built) appeared to extend as far as – and perhaps beyond – the eastern annexe of the north range of the palace. Unfortunately, it was not possible to examine the
Illus 4. The palace courtyard: Period 1 features.

relationship between that wall and the annexe without damaging the fabric of the palace. If the east range had extended this far, its internal measurements would have been at least 23m north/south by 4.4m wide within walls 0.6-0.8m thick. Three distinct elements could be identified, Structures 1, 2 and 3, although they were not all contemporary. Whilst it was not possible to
determine all the chronological relationships between these buildings, it is thought that Structure 2 was created by filling in the space between Structures 1 and 3 at the extremities of the range.

Structures 1 and 2 were of approximately equal size, measuring 6.5-6.8m north/south; the northern limit of Structure 3 could not be defined. The dividing walls and most of the length of the west wall of the range survived mainly as robber trenches; the foundations of the east wall of the range, apart from its southern section which stood to a considerable height, lay buried beneath the extant boundary wall, which dates to the 19th century.

Structure 1 was originally a free-standing building, being incorporated into a new east range when Structure 2 was built against its north gable. Its east wall survived to a maximum height of about 2.0m and was built of mortar-bonded, random sandstone rubble, sometimes squared and occasionally brought to level beds. By contrast, its south wall, also built of mortar-bonded, sandstone rubble, was almost totally demolished, standing to a maximum height of only 0.6m. Its north and west walls were robbed out apart from a few remnants of their base courses which survived at the corners of the building. Some of these remaining wall fragments were removed during consolidation work in 1997, revealing iron-working debris, clearly deposited before Structure 1 was built and before the hearth was installed in Structure 2 (see below).
Illus 6. Elevation of the inside face of the east precinct wall, showing remnants of Structure 1 at its south end and, further north, the blocked doorways into the later Structures 4 and 5.

There had been doors in both the east and west walls; whether they were contemporary is not known. The doorway in the east wall was at its extreme north end and splayed from 0.86m on the outside of the building to 1.05m on its interior where it stood to a height of 1.7m above floor level. Its jambs were of ashlar but neither threshold nor lintel remained, both perhaps having been removed when the doorway was blocked, probably in Period 2. In the same wall were two windows of unequal size. The southernmost window was about 0.5m square, widening to 0.75m on the inside of the building, with jambs, sill and lintel of unremarkable quality. Further north was a larger opening, surrounded by stonework of superior workmanship; it measured 0.92m high and 0.67m wide, splaying to 0.95m on the inside face of the wall.

The interior of this building was floored with rounded beach pebbles, the gaps between them tightly packed with smaller stones. Towards the east side of the room was a shallow, open drain which ran from the south wall for a distance of 5.6m before stopping abruptly. Beyond that point, along a 1m-wide band across the north of the room, the floor was of a somewhat inferior quality. The significance of this is not apparent although it may have been associated with a change of function. Whatever the reason, it was difficult to determine how the drain would have worked. There was no discernible change in level along its length and the location of its outflow is not known. It did not appear to have flowed beneath any of the walls of the building and it can only be surmised that a sump at the north end of the room had been destroyed when that part of the floor was relaid.

There was a slight, but noticeable, downward slope towards this drain from both sides of the building, suggesting that there had been a regular need to discharge fluids. A possible explanation for this is that Structure 1 was used to house animals at some stage; although both the presence of two windows in its east wall and the narrowness of the nearby door suggest otherwise. In addition, there was no indication that the room had been divided into stalls as in many byres or stables, albeit mainly post-improvement ones.

Little evidence remained of the doorway in the west wall, apart from its threshold of crude sandstone flags and a small, rectangular check cut into two of them, perhaps to accommodate the central post for a two-leaved door or to take a substantial bolt. Curiously, this check was some 0.5m behind the inside face of the wall but there was no indication as to where the door jambs had been. Running north-westwards from this doorway was a path, about 2m wide and comprising unworked, mainly sandstone flags. Because of the lack of time, only a short length of this path was uncovered and its destination remains unknown. However, it was evidently a Period 1 feature: it had been laid at the bottom of a natural hollow; it had obvious associations with Structure 1; and it appeared to pre-date paths dating from Period 2 (see below).

The east and west walls of Structure 2 abutted those of Structures 1 and 3 although all its walls had been demolished to foundation level and, in places, completely robbed out. There was no trace of any formal floor surface within Structure 2, only a layer of gritty, sandy soil (probably beach deposits) stained almost black by coal. Towards the south-west corner of the room was a large, sub-circular pit, measuring 1.8m across and 0.4m deep, whose age and function are unknown.

Against the south wall of the room was a sandstone hearth – the only one to be identified within the east range. It measured about 0.5m square but had been severely eroded by usage, heat and decay so that its centre was distinctly concave and was only 20mm thick. The effects of heat extended well north of the hearth and to a considerable depth beneath it, suggesting that the fire had been at floor level rather than contained within a basket. A deposit of ash and a spread of iron-working debris nearby are thought to be associated with iron working, probably the manufacture of girdles (see below).

The overall plan and dimensions of Structure 3, the northernmost chamber within the east range, remain uncertain because no trace of its north wall was found. Even the robber trench for the west wall was barely evident although its line seemed to be a continuation of that of the rest of the range. Its east wall, albeit demolished to ground level at this point, continued as far as the north-east corner of
The remainder of the courtyard area. Much of the south side of the courtyard was not available for investigation because later features, particularly Period 2 paths (see below), were retained for display. Nevertheless, in Period 1 there did not appear to have been any buildings within the courtyard other than those already described; not even a boundary wall on its south side. The only surviving traces of activity, other than those associated with the east range, consisted of a drain against the west range (see below) and a few crude stone flags and extensive deposits of iron-working debris, up to 0.14m deep, re-used as a hard-wearing surface. Spreads of ashy waste both below and above the flags and iron waste were probably used to level parts of the courtyard at various times. Unfortunately, no artefacts were retrieved from these materials. However, because the flags and most of the iron debris lay directly on undisturbed beach deposits and were overlain by two paths that were associated with the palace, they are thought to have been laid down in Period 1.

Running alongside the east face of the west range was a drain built of and capped with sandstone slabs, up to 0.9m across. It arose roughly level with the ground-floor window in the chamber to the immediate north of the original kitchen and was traced southwards for a length of 8.5m. Over this distance there was a drop of some 0.75m. The drain, which was probably associated with the kitchen in the west range, certainly continued beyond that point, perhaps issuing into the Forth estuary, which would have been a lot nearer the palace in the 17th century than it is now. On the (albeit slight) evidence of some disturbance to its north, the drain may have been extended northwards at some stage, perhaps to connect with the well in the inner courtyard.

Period 2 (18th century) (Illus 8)

There are grounds for treating Period 2 as more than one phase of development but further divisions would be based only on localised, sometimes small, changes often difficult to equate with those discovered elsewhere within the courtyard. The most obvious Period 2 modification was the installation of a rather impressive path leading from the south side of the courtyard to the west and north ranges. However, this path overlay an earlier, much less imposing one which, because it post-dated the crude Period 1 surface of flags and iron waste, has also been ascribed to Period 2.

It is virtually impossible to link activities within the east range with the laying of the two stone paths; the residual nature of many of the deposits rendered the artefactual evidence unreliable. The paths are thought to date from the 18th century, as perhaps does the one-storey building added to the
east end of the north range. Although the evidence is not unequivocal, it seems likely that this annexe was built only after Structure 3 had been demolished; unless the two buildings were connected by a door. The issue is clouded somewhat by the harling now covering the standing buildings, photographs of the palace before it was harled proving anything but conclusive.
The east range. It is not known whether the east range continued unaltered into and through Period 2. Parts of the range may have fallen into disrepair during the 18th century or even before that, when the Bruce family had possession of the palace. However, such buildings were probably not totally abandoned, perhaps continuing as animal accommodation or as stores. Certainly, the wall dividing Structures 2 and 3 was still standing in Period 2 and at least part of the floor of the latter remained intact well after this time.

The paths within the courtyard. At some stage the Period 1 surface of flags and iron waste was replaced by a layer of small rubble (F1048), at least in the western part of the courtyard. It was not possible to provide a firm date for this event although, on the evidence of artefacts recovered from deposits below the later surface, this may have been in the first half of the 18th century when Colonel John Erskine owned the palace. Although rather crude in appearance, the rubble was well compacted and bedded into stiff clay and would have formed a reasonably durable surface. This material was exposed over an area measuring about 10m north / south by 5.6m wide on the west side of the site. Its northern edge, 8m from the north range, formed a fairly straight line; perhaps marking its original limit although this line may have been fortuitous. This metalling may also have extended eastwards beyond its surviving width: indeed, its description as a path might be a misleading one.

The somewhat rough metalling of F1048 was overlain by an altogether more sophisticated path that led from what is now the south side of the courtyard to the west and north ranges of the palace. Gardening and other late activities had destroyed large sections of this path although enough had survived to allow most of its original extent to be defined. It ran in a straight line through the courtyard towards the doorway that leads to the stair in the north range, curving round to meet the forestair against the west range from where it splayed northwards. As the path approached the north range, it narrowed to 2.6m; at the junction of its three arms it was very much wider. The alignment of the kerbs was such that, if there had been a south wall to the courtyard in Period 2, the entrance through it would have been some 1m west of the present opening. However, no evidence of such a wall was uncovered and it is likely that the path continued southwards towards the Sandhaven.

Before the path was laid, the ground on the south side of the courtyard (uneven since the palace was built) was levelled with heavy rubble. The surface of the path itself was quite level and comprised hard-packed, angular rubble in a matrix of mortar and gravel, edged with kerbs of one, or occasionally two, courses of sandstone blocks with straight edges and flat tops. On top of the rubble core there were occasional small patches of mortar which may once have extended over the whole of the path's surface although it is difficult to imagine how such a material could have endured the heavy wear caused by pedestrians and perhaps horse-drawn traffic, let alone the Scottish climate. There was no trace, however, of any other type of material that might have sealed the path and it can probably be assumed that its mortar surface would have needed constant repair.

The path had been truncated some distance short of the north range and it is not clear whether it had ever extended as far as that building. About midway between the north range and the truncated end of the path and in line with its east kerb was a single sandstone block (F1152) with a small hole cut into its upper face. Presumably this was to accommodate a sliding bolt for a gate or door although the significance of such a barrier at this point is not clear.

The north side of the courtyard. Along the front of the north range were a few patches of crude flagstones, perhaps contemporary with the Period 2 kerbed path. Of the numerous other features uncovered in that area, and which were probably associated with the use of the ground floor of the north range, most date from the 19th century (Period 3); only a few are thought to be earlier than that. Indeed, the ground surface in the north-east corner of the site appeared to remain uneven throughout Period 2. Against the face of the north range were the remnants of a box drain which ran eastwards to a soakaway near the east wall of the precinct.

Period 3 (19th century) (Illus 9)

It can probably be assumed that the palace was in a state of disrepair during much of the 19th century and it would not be surprising if many of its rooms were uninhabitable. However, the ground-floor chambers of the north range and its extension could have continued in use as animal accommodation, a view supported by the evidence of excavation. The north-east corner of the courtyard was levelled and the kerbed path was widened at its north end, probably in association with continuing or renewed activity in the north range.

The east side of the courtyard. By Period 3 the buildings on the east side of the site ceased to exist as a continuous range. Most of the east wall of the east range had been demolished to foundation level, perhaps because it was unsafe. The exception was the outer wall of Structure 1, which survived to the level of the tops of its doorway and windows.
Illus 9. The palace courtyard: Period 3 features.

These openings were blocked with sandstone rubble and the wall heightened by approximately 1m and incorporated into a new boundary which extended as far as the east wall of the north range annexe. For some reason, the wall's alignment differed slightly from that of its predecessor in that it had a slight dog-leg towards its north end. Thereafter a new building (Structure 4) was erected over
the ruins of Structure 3, its south and west walls sitting on the earlier cobbled floor.

The walls of Structure 4, which were only 0.45m wide, were demolished almost to ground level. Its north and south walls appeared to abut the secondary east precinct wall although its north wall clearly overlay the foundations of the primary east wall. There were doorways in its east and south walls, the former, which still survived in 1939 (Illus 13), giving access from outside the courtyard. Internally, this building measured approximately 4m square. Its floor comprised most of the surviving cobbles from Period 1 Structure 3, together with some crude sandstone flags at the north end of the room and the levelled remains of the earlier east wall.

There were no indications as to the function of Structure 4 other than a stone-built drain which led from its south-west corner, suggesting it housed animals or was used as a domestic office although there was no trace of a fireplace within it. The drain ran some 6.5m to the south-west into a sump, 1.1m deep, which appeared to be a later feature.

**The north side of the courtyard.** During the later years of occupation of the palace, there was considerable activity in this area, much of it probably associated with the use of the ground-floor rooms of the north range and its extension as byres and / or stables. As in Period 2, the walkway along the front of the north range continued to be upgraded and repaired, evidence of which survived as fragments of paving and kerbing.

Running below the doorway into the north-range extension was a V-shaped, open drain (F1027). It had been repaired rather crudely and there was no trace of it within the annexe, whose floor of crude flags and large cobbles is probably of quite recent origin. The drain was filled in when the north end of the Period 2 path was widened on its east side, its outer face defined by a substantial kerb which fanned out to meet the north-west corner of Structure 4. This kerb was built of one or two courses of yellowish sandstone blocks which, despite being well eroded and varying in size, presented a very neat outer face. The space between the primary and secondary kerbs was infilled with mortared rubble. At some stage, and for some unknown reason, the central part of the new kerb was heightened and built on a slightly different alignment by the addition of a few angular boulders.

The 2m-wide strip adjacent to the north range was floored with sandstone flags and cobbles which merged with the new part of the path. This metalling had been repaired on numerous occasions, probably because of subsidence and the disturbance caused by livestock moving in and out of their nearby quarters.

Period 4 (late 19th / early 20th century) (Illus 10–15)

Whilst there was no tangible dividing line between Periods 3 and 4, the over-riding impression is that the later usage of the courtyard and its buildings was associated almost entirely with animal husbandry (and perhaps related industrial activities) rather than with the human occupation of the palace. As in other periods, not all of the structures and features listed here were contemporary with one another, the evolution of the palace being a continual process. It is not known when the present south boundary wall of the palace precinct was built although it was certainly after Structure 1 was demolished. Photographs show that originally it was somewhat higher than it is now and that it was probably lowered some time during the late 19th or early 20th century.

**The overflow from the well.** Running diagonally across the courtyard from below the entrance to the inner court was a deep, linear cut, 7.4m long, which opened into a circular pit measuring 2.2m in diameter. The channel was 0.8m wide and deepened from 1.07m at its north end to 1.35m where it met the even deeper (1.75m) pit. Both features had disturbed earlier deposits and features: the pit cut through the Period 2 kerbed path (a probable indication that the path and, by analogy, the residential accommodation within the palace were de-funct); as well as the subsoil and, in places, even the bedrock.

The channel may have taken the overflow from the well in the inner courtyard (possibly replacing the Period 1 drain against the west range) and perhaps rainwater from the roof of the north end of the west range (see below). At the base of the channel was a single line of thin, narrow terracotta tiles, whose precise function remains unclear although they might have formed the base of a tiled drain. At the bottom of the pit was 0.2m of grey, stone-free clay containing unworked timbers and a small number of artefacts dating from the 18th and 19th centuries. The pit was probably not a soakaway; it was a mere 0.4m deeper than the channel and the clay at its base would have hindered rather than assisted drainage. What is more likely is that the clay sealed the base of what was probably a water container supplying some of the courtyard buildings such as the byres and / or stables in the north range. The pit was perfectly circular in plan and appeared to have had vertical sides although erosion towards its base had resulted in a bell-shaped profile. Its straightness suggests that the pit had been lined, probably with timber.

This putative water tank may not have been in use for long, photographic evidence indicating that it was filled in before the end of the 19th century.
Within its infill of rubble and loam were artefacts dating from the late 19th century as well as substantial amounts of probable late 17th-century bottle glass, perhaps resulting from the clearance of an early wine cellar.

The east side of the courtyard. Although the east range had long ceased to exist as such, its boundaries continued to be respected during the construction of new buildings. The last building to be erected in that area was a rather flimsy structure (Structure 5) which survived into the present century. Its outline is depicted in a drawing by Hardie, dated to 1904 (Illus 11), who describes it as a shed. According to that drawing, it measured approximately 5.4m east / west by 3.7m wide and its walls appeared to be rather insubstantial. Photographs of broadly similar dates show the west end of this building, which was of timber with a pantile roof. According to Hardie’s plan, there was no east wall to this building, probably indicating that it had a wide door rather than being permanently open to the elements. Unfortunately, there are no known photographs of the east end of the ‘shed’ although a 1939 photograph shows its wide doorway having been recently infilled (Illus 13).

Structure 5 had been built over the demolished Structure 2, its floor of sandstone flags and cobbles set into mortar. Some of the flags were very substantial, up to 0.5m across and 0.4m thick. The floor was further raised on at least one occasion with more flagstones; latterly crude concrete, up to 0.2m thick, was laid over them.

Illus 12 shows a fence of timber planking running from the north-west corner of Structure 5 to the junction of the original north range and its eastern extension. This seems to indicate that in Period 4 the ‘courtyard’ of the palace extended only as far as the line of the west wall of the former east range; at least along its north half. It also demonstrates that the north-range annexe was accessed only from outwith the courtyard. Photographic evidence suggests that Structure 4 had been demolished some time before the end of the 19th century. Furthermore, Hardie did not include the outline of that building in his plan of 1904 although he did depict its east doorway. By this time the northeast corner of the site was probably a small yard associated with the north-range annexe.

Early-20th-century photographs show several trees within the courtyard area as well as a hedge running east / west across it. Some of these trees are marked on Hardie’s drawing; and the locations of a few of them were identified during the excava-
tion. Other garden features, of probable late-19th-century date, were uncovered in the south-east part of the courtyard. During Period 4 the ground level within this area was more than 0.5m above the floor of the Period 1 Structure 1.

The most conspicuous garden feature was a truncated gravel path (Illus 14) whose course had been rectangular with rounded corners. It enclosed an area measuring approximately 6.4m north/south by 2.2m wide and infilled with an almost stone-free, humic garden loam. Between the south end of this path and the entrance through the south precinct wall were a few small patches of cobbles, probably the remnants of the metalled surface, visible in an early-20th-century photograph, which had extended into the courtyard from the street beyond.

The north end of the courtyard. Repairs continued to be made to the paved area immediately outside the north range, using poor quality materials including mudstone and reused roofing slates. Just east of the doorway into the central chamber of the north range was a circular pit, within which were the part-decayed remains of an iron-banded, wooden barrel measuring 0.5m in diameter and 0.7m deep. A lead pipe ran from a drain in the floor of the adjacent chamber, through the wall of the building, into the barrel. Presumably, the barrel would have collected urine from that chamber (a byre according to Hardie's plan), perhaps to be used as a mordant when dyeing textiles.

Contemporary photographs show posts for clothes lines at several points within the yard. If the two lines of five small, circular features on the east and west sides of the area shown in Hardie's plan are representative of these posts, then it would seem that the palace courtyard was used as a drying green at the turn of the century.

Excavation within the inner courtyard of the palace

In 1992 two small trenches were opened within the
Illus 12. Early 20th-century photograph showing a view from the south of the west gable of the Period 4 building, Structure 5. A crude planked fence runs from it to the north range annexe. (Crown Copyright RCAHMS).

Illus 13. View from the south of the north-east corner of the courtyard in 1939, showing the east doorway of Structure 4 and the recently-blocked doorway of Structure 5. Note the size of the door into the north range annexe compared to its present arrangement (Illus 5). (Crown Copyright RCAHMS).

Illus 14. The Period 4 garden path in the south-west corner of the courtyard, viewed from the north.

Illus 15. The Period 4 barrel sunk into the ground outside the byre in the north range. Note the pipe leading into the barrel from within the building.
inner courtyard to determine the nature of its surface below the gravel that then covered it. Although a few flagstones were visible adjacent to the doorway into the west range, these are thought to be of recent origin. To the immediate north of those flags were a few crude flags, set into a loamy deposit containing iron slag, coal and slipware pottery of probable 18th-century date; further east was a rough surface of flags and cobbles. Unfortunately, there was insufficient time to investigate this area further and the matter remains unresolved.

In 1997 a narrow drainage trench was dug across this yard to take rainwater from the roof of the bakehouse at the north end of the west range. The trench ran northwards for 4m from the west range before curving eastwards towards the door linking the two courtyards. Part of its route coincided with that of the Period 4 channel that extended into the circular pit within the main courtyard. Elsewhere, the trench cut through recently deposited rubble and soils as well as the modern flags outside the bakehouse door. Undisturbed beach deposits lay only 0.2–0.3m below the modern ground surface with nothing of archaeological interest between the two.

Excavations within the Bessie Bar Hall (Illus 16–18)

At ground-floor level this building comprises a large chamber measuring 17.3m north/south by 5.0m wide and, to its north, a smaller chamber which widens from 4.5m to 5.0m over its north/south length of 4.0m. There are doorways at both ends of the east wall of the main chamber and one in its north wall leading into the smaller room. The latter chamber can also be accessed from the yard (between the hall and the palace) through a door in its east wall. All of these doorways are approximately 1.0m wide. In the south-east corner of the main chamber is a small recess which extends into the base of the forestair set against the south gable of the building.

This building was not the first to stand on this spot although neither the date nor the full extent of the earlier structure could be determined. The evidence of it consisted of a robber trench, 1.0m wide and infilled with pale grey, sandstone rubble and mortar, which extended across the width of the Bessie Bar Hall, 6m from its south end; it returned northwards below and parallel with the west wall of the hall where it could be traced for a distance of 4m. No evidence of its floor was uncovered within the excavated area and no trace of the structure was identified during investigations to the east of the Bessie Bar Hall. Consequently, its overall ground plan remains unknown. Furthermore, because the fill of the robber trench was not removed, artefactual evidence could not be used to help determine its date of construction or its demise.

Rubble, clay and ash had been laid directly over beach deposits of shells and black silts to level the ground, particularly towards the south end of the building where it was lowest. It was not possible to tell whether this was carried out prior to the construction of the early building or if it was associated with the extant Bessie Bar Hall.

The main chamber

Following the construction of its rubble walls, further levelling materials were spread over the interior of the building before a floor was laid above them. The lowest levels of make-up within the main chamber of the hall contained pottery from the late 18th century (and none of later date), perhaps confirming the date of the building's construction. The floor appears to have been repaired and even relaid on a number of occasions, this sequence probably extending into the 20th century. There was no trace of a stone or timber floor within the Bessie Bar Hall, the only materials used being compacted earth, ash and clay upon which were spreads of white plaster and mortar, presumably associated with repairs to the fabric of the building and the plastering and lime washing of its walls. The uppermost floor surface comprised 0.10–0.15m of very compact, pink, ashy material. It could not be dated because no artefacts were retrieved from it.
A stone-lined box drain ran through the south doorway of the building, 0.4m below threshold level. Only a small section of this drain was uncovered during excavations within the yard outside the hall and it was not clear with which phase of Bessie Bar’s it was associated, although it clearly pre-dated most, if not all, of the features exposed within the yard (see below).

The south-east corner of the building had been severely disturbed in recent times, making it difficult to relate the excavated features in this area (or those within the adjacent walls) to the deposits in the main part of the chamber. Those features comprised two low masonry plinths, each 0.9m wide, which ran from the recess in the south wall, and a robber trench at their north ends, just inside the south door of the building. The plinths were separated by a gap of 2.5m, its south end paved with large sandstone flags which extended into the recess. The recess comprised an arched alcove, 3.4m wide, built partially of brick. It may have been a fireplace heating a malting floor above but whose chimney had been blocked to accommodate the extant forestair against the south gable of the building. If so, the stair – and, by analogy, the doorway into the upper level – were secondary features. Alternatively (or perhaps latterly), there may have been a trap-door at the top of the stair to facilitate the easy transference of goods between the two levels of the building. Indeed, one of the large flags at the top of the stair is of different stone from the rest, suggesting it may have replaced an earlier (wooden) hatch.

In the east wall of the forestair, at ground level, is a small opening, 0.24m wide and 0.32m high, with sandstone jambs, lintel and sill. There are shallow checks on both jambs, perhaps to accommodate a shutter or door which appears to have been hinged on its left side. Now blocked on its exterior with concrete and not visible inside the building, it probably once opened into the recess in the south-east corner of the Bessie Bar Hall although its role is not understood.

The north chamber
The south-east corner of this room was floored with bricks of recent origin, bedded in sand; elsewhere the floor surface was of compacted rubble, balae and gravel. This overlay a deposit of sand and gravel, perhaps a floor of some antiquity. However, the excavation was halted at a depth of 0.3m and what may have been early levels were not investigated.

Excavation in the yard outside the Bessie Bar Hall (Illus 17, 19)
This irregularly shaped yard was defined on its north by the retaining wall against the steep bank at the rear of the palace and on its south by the road. It measured approximately 22m north/south, widening from 4.8m at its south end to 7.2m against the retaining wall. Through a doorway at the west end of that wall is a flight of steps that leads to the garden at the rear of the palace; further right in the wall is a smaller doorway behind which is the so-called Bessie Bar Well, reputedly dug in 1598 to provide water for the burgh (Cunningham 1910, 64). This well, like the one in the inner courtyard of the palace, is really a collection point for water draining off the slope behind and measures 1.45m in diameter and 1.83m deep. Its capacity is estimated as approximately 2,725
litres (600 gallons) and its fill rate, during the dry period of the excavation, 2.27-4.45 litres (0.5-1.0 gallon) per minute.

It was difficult to relate either the functions or the phasing of the features exposed in the yard to those within the Bessie Bar Hall and those unearthed during the excavation of the palace courtyard. Furthermore, it was not possible to carry out a full investigation of this area; only to excavate to a depth that would allow the installation of services to the new restaurant in the Bessie Bar Hall and the resurfacing of the yard.

Most of the excavated features and deposits were associated either with the cobbled and flagged surfaces that had covered the yard, probably for the past two centuries, or with various drainage systems removing waste water from the west range of the palace and the overflow from the Bessie Bar Well.

The earliest levels

The earliest of the features uncovered within the yard was the stone-lined box drain of unknown date that ran below the south doorway of the Bessie Bar Hall (see above). Of more interest was a stone-lined tank set into the ground in the north-west corner of the yard. It was 0.3m deep and measured 3.05m long (north / south) although its full width was not uncovered. The floor of this tank comprised sandstone flags and its edges were of tightly jointed ashlars, sealed with pink-brown clay, substantial quantities of which remained against its south and west sides. There were two circular holes in the floor of the tank: one in the north-west corner, 0.15m in diameter and only 20mm deep; and another midway along its length, which measured 0.5m in diameter and 0.2m deep. Around the latter was a rectangular rebate, perhaps for a grating. The width and original height of the tank remain unknown, as does its function. The two circular holes in its floor may have been silt traps, perhaps indicating that this was a water container; although a pervading odour of phenolic compounds within that part of the site suggests it was associated with the production of coal tar (see below).

The cobbled yard

Prior to excavation, most of the yard was covered with a compact layer of whin dust and gravel with a few patches of rubble up to 0.25m deep and firm and level enough to form a durable surface. The exception was the north-west corner of the yard, where tightly jointed sandstone flags and a small area of cobbles, all of recent origin, were set against the wall of the Bessie Bar Hall.

Several drains had been cut through the surface of the yard or had been installed before the rubble was deposited, causing considerable damage to a cobbled surface that lay below. It is not known whether those cobbles had once covered the whole yard because, as well as the area disrupted by drains, the north-east corner and the west side of the yard were practically bereft of them. It was not even clear if the surviving cobbles were all contemporary. There were certainly variations within their arrangement although these may simply be the result of repairs rather than separate phases of construction.

The main surviving cobbled areas were located towards the south-east corner of the yard and along a strip down its centre, the latter forming a shallow channel (P911) whose edges were raised somewhat above the rest of the cobbles. Within this channel was a narrow cast-iron pipe linking a stand pipe set adjacent to the well at the north end of the yard to another which evidently had stood further south, near to the road, (pers comm, J Robertson). It is not clear when this well ceased to be used although, despite local protestation, the water from it was declared unfit to drink in the 1880s (Cunningham 1910, 64). The culvert had been replaced by an overflow system, comprising a ceramic pipe set into a 0.6m-wide and 0.6m-deep trench (P904) which ran southwards from a drain trap about 2m from the retaining wall at the back of the yard. An open drain (P914), also contemporary with the cobbled surface, ran from the south-west corner of the kitchen in the west range of the palace, presumably removing waste water from within it. This drain had also been replaced by a ceramic pipe which connected with the one removing the well's overflow.

On the evidence of pottery retrieved from deposits below the cobbles and contemporary drains, these features were not installed before the 19th century; the flags in the north-west corner of the yard are thought to be more recent than that. Although it was not possible to excavate below the
cobbles other than in drain trenches, there was no evidence of any other such surface pre-dating them.

**Excavation on the old shoreline**

The first-edition OS map shows that the shore of the Forth estuary was about 50m from Culross Palace in 1856. Further east, the water lapped against the southern edges of properties, bounded by a continuous masonry wall which still stands today. That wall seems to have continued westwards beyond the limits of those properties in the mid-19th century. Since then, a further 50m of ground has been reclaimed from the water, much of it grassed over; although there is also a railway line on its seaward side.

Two slit trenches, about 12m apart, were opened due south of the palace, across the line of the putative sea wall, in an attempt to verify its position and determine its nature. Although the wall itself was not uncovered, below topsoil there was a distinct difference between the deposits within the north and south halves of each trench. To the north was a humic loam, similar to topsoil; whilst to the south were interleaving deposits of shaly coal and ash, presumably some of the materials used to reclaim what was formerly the beach.
The finds

The small finds

Julie Franklin

All of the objects are primarily of copper alloy. Only one object (no 1) was recovered from an early level; and it happens to be the most interesting of the group. It is of definite 17th-century date and provides a small insight into the relations of the palace with the monarchy during a rather turbulent century.

1. Heraldic disc. Large disc of dense copper alloy, its front surface is decorated, probably by etching, with a coat of arms. There are traces of inlaid blue and white enamel and also of gilding. The back is completely plain with no signs of rivets, rivet holes, brooch mechanisms or any signs of how this disc was displayed. The backing may have been made as a separate piece, perhaps in a different material, and has been lost. It may have been a brooch or possibly a decorative mount for a box, bowl or similar small object. Although corroded, it is still possible to make out the coat of arms. The shield is divided into quarters; the second quarter has a lion rampant, the third depicts what could be a harp. The first and fourth quarters are themselves identically quartered; the first and fourth of these with three fleur-de-lis, the second and third with three horizontal figures, probably lions passant. Above the shield, which is supported by a lion and unicorn, is a crown. The surviving patches of blue form the background base colour and is also visible on the shield behind the harp and the fleur-de-lis. At the base of the crown is the single, surviving patch of white. The gilding forms the lines of the crown and also survives on the fourth quarter of the shield where it traces its outline and also colours the fleur-de-lis and the three lions. This matches the royal coat of arms used by the Stuarts after the Union of the Crowns in 1603 through to the abdication of James VII in 1688 (Woodcock and Robinson 1988, pl 35).

Interestingly, this is the English version of the arms, the Scottish form having the lion rampant first (pers comm, D Caldwell).

Diameter 48mm, thickness 2mm.
Period 1; floor surface of Structure 2.

2. Watch case. Circular object of thin sheet metal with edges curved over to form the lip of a lid. Surface covered with intricate machine-engraved decoration in a stylised shield shape, surrounded by floral and curvilinear motifs over a dotted background. 18th or 19th century.

Diameter 41mm, height 4mm.
Topsoil in palace courtyard.

3. Thimble. Small thimble with upper half covered in close, evenly placed peck marks; probably machine-made in the 18th century or later.

Height 19mm, approximate diameter at base 14mm.
Topsoil in palace courtyard.

4. Ring. Small, plain ring, round in section and probably cast in one piece. Too small for a finger ring.

Diameter 13mm, thickness 1mm.
Topsoil in palace courtyard.

5. Pin. Large pin with a large, stamped, coiled wire head.

Length 50mm, width of head 3mm.
Topsoil in palace courtyard.

6. Pin. Pin with a stamped, spherical, coiled wire head.

Length 26mm, width of head 1.5mm.
Topsoil in palace courtyard.

7. Pin. Small pin with a solid conical head, cast as one piece.

Length 22mm, width of head 1.5mm.
Topsoil in palace courtyard.

8. Pin. Pin with a large, corroded head, probably a soldered, coiled wire head. There are still traces of gilding on the shaft.

Length 37mm, width of head 3mm.
Topsoil in yard between Bessie Bar Hall and palace.


Length 32mm, width of head 2mm.
Topsoil in yard between Bessie Bar Hall and palace.

10. Pin. Pin with a soldered, coiled wire head; gilding remaining on point and top of shaft.

Length 32mm, width of head 2mm.
Topsoil in yard between Bessie Bar Hall and palace.

11. Pin. Pin with a soldered, coiled wire head.

Length 33mm, width of head 2mm.
Topsoil in yard between Bessie Bar Hall and palace.

12. Pin. Pin with a soldered, coiled wire head; remains of gilding on lower part of shaft.

Length 28mm, width of head 1.5mm.
Topsoil in yard between Bessie Bar Hall and palace.

13. Pin. Pin with a stamped, spherical, coiled wire head.

Length 30mm, width of head 1.5mm.
Topsoil in yard between Bessie Bar Hall and palace.

14. Pin. Pin, complete but with a head that has slipped slightly down the shaft. The head is of the loosely coiled, soldered type. Few patches of gilding
remain.
Length 25mm, width of head 2mm.
Topsoil in yard between Bessie Bar Hall and palace.
15. Pin shaft. Pointed shaft of a pin.
Length 32mm.
Topsoil in yard between Bessie Bar Hall and palace.
Length 31mm.
Topsoil in yard between Bessie Bar Hall and palace.
17. Pin shaft. Short length of thin wire, probably from a pin shaft.
Length 14mm.
Topsoil in yard between Bessie Bar Hall and palace.

All but three of the pins are from the yard between Bessie Bar Hall and the palace; all are from topsoil. The majority have heads made from coiled wire, stuck or soldered into place. This type of pin is found from the mid-13th century to at least the 17th century (Caple 1983, 274). Generally, by the 16th and 17th centuries pins with spherical heads, still made of coiled wire but stamped into shape, had become more common; although this is not the case with this small sample of pins.

The pottery
Naomi Crowley

A total of 2,585 sherds of pottery was retained from the excavations, the majority of which dates to the 19th and 20th centuries. Pottery earlier in date, ranging from late 15th to 18th century, occurred residually in many contexts but exclusively only in 34 of them.

Green-glazed reduced ware and red oxidised ware. The earliest pottery from the site occurs in these two fabrics which dominate most Scottish assemblages from the late 15th to the 18th century.

The reduced ware jugs are similar to those from Throsk, near Stirling, and have identical wavy combing on the shoulders. Production at Throsk is thought to have been under way by the 16th century and well established during the 17th century (Caldwell and Dean 1992). Red oxidised wares, particularly bowls, small jugs and chamber-pots in a similar fabric to that uncovered at Culross, were also being made at Throsk during this period. These wares were also being manufactured at Stenhouse, near Falkirk, by the 15th century; and there were probably other, as yet undiscovered, production sites.

Because of the lengthy production period of these types of pottery and the consistency of forms over a long period, neither the reduced nor the oxidised wares can be closely dated. Evidence from Throsk and Stenhouse and from excavation sites throughout Scotland suggest a date range from the 15th to the 18th century.

Culross is hard, smooth and reduced or partly reduced, varying in colour from dark grey to orange-red within individual sherds. It contains flecks of mica, a fine scattering of small quartz inclusions and red iron oxide. Most sherds are covered with a dark-green glaze although sometimes this tends towards a slightly yellowish green. The most common form is a large jug with a rilled-neck, knife-trimmed base and strap handle, often with wavy combing on the shoulder. Less common is a form with an everted rim and diameters of 180-200mm which are always glazed on the inside and sometimes on the outside too. These are probably chamber-pots or storage jars but, as no complete profiles or adjoining handles were retrieved, this could not be confirmed. There is also one example of a handled bowl.

The red oxidised ware has a smooth red fabric distinguished by its lack of inclusions, except for mica. The sherds are covered with a clear glaze, sometimes slightly yellow or green, the majority of which are from bowls or dishes, often with only the interior surface glazed. There are also examples from a skillet, a jug, a small drinking jug and possibly a chamber-pot.

Other wares. The excavation yielded three small body sherds of white salt-glazed stoneware, probably dating to the 18th century, and 14 sherds of brown salt-glazed stoneware, probably dating to the 17th or 18th century, many of them from residual contexts.

Ten fragments of tin-glazed earthenware are from dishes with blue decoration and were probably made in the 18th century. They are abraded and most occur residually in later contexts. There was a variety of sherds from white-slipped, red earthenware dishes and bowls dating from the 17th and 18th centuries, as well as a fragment from a possible 16th-century Dutch dish.

The majority of the pottery comprises 19th- and 20th-century refined white and red earthenwares in a variety of forms and decorations. Also present in lesser quantities are fragments of creamware, Jackfield (Shropshire) ware, stoneware black-leaded bottles and fragments of flower pots.

Glass
Robin Murdoch

The glass assemblage is typical of that retrieved from post-medieval sites of some status and, not unusually, is dominated by fragments of wine bottles.

Vessel glass. Glass wine bottles first appeared around 1630 and, whilst none of the examples from Culross dates from that period, it should be noted that initially these were produced in small numbers. By the middle of the 18th century,
however, such vessels were extremely common.

Wine bottle glass was not of high quality and was usually fluxed with potash, which causes the glass to degrade in damp conditions. Most of the Culross material is in better condition than might be expected because the site was relatively free draining. The late-17th- / early-18th-century sherds recovered from the bottom of the Period 4 pit in the north-west of the courtyard are very well preserved. This glass was obviously redeposited, having probably lain in a relatively dry environment until the late 19th century. Early wine cellars had earth or sand floors and the bottle fragments in the pit may well have been cleared from such a cellar, perhaps the room in the north-east corner of the west range described as a wine cellar by MacGibbon and Ross (1887, 432).

Two identical wine bottle seals (one shown in Illus 21, 1), both recovered from residual contexts, are indicative of a person of some status. Personalised seals date from the mid-17th century when wine bottles were scarce and expensive items. Although such seals continued in use well into the 19th century, they appeared on only a small percentage of bottles by then. Both seals from Culross seem to be from the same die and obviously refer to one of the earls of Dundonald, perhaps the 8th earl who inherited an estate in Culross from his brother, William, in 1758. The style of these seals certainly suggests an 18th-century date. Two other wine bottle fragments are worthy of comment: a base with a very conical kick, possibly Dutch; and a neck, almost certainly French (Illus 21, 2), both recovered from deposits of uncertain dates near the east range.

Fine wares were poorly represented in this collection. Only three sherds from drinking vessels were recovered, all within recent deposits. A wheel-engraved mushroom stopper from a decanter (Illus 21, 4) and fragments of three medicine phials were also recovered from modern levels.

One of the vessel rim fragments (Illus 21, 3) is perhaps the most unusual sherd in the assemblage. If the vessel had been circular, its diameter would have been approximately 600mm, which is massive. Alternatively, the vessel could have been oval in shape. It appears to have been made of mid-green bottle glass, suggesting that the vessel was utilitarian rather than fine ware. The very heavy patina on its surface suggests that it was made before the end of the 17th century, a date also indicated by its folded rim, a common manufacturing technique between the 14th and 17th centuries. Excavations within the terraced gardens of Aberdour Castle yielded large numbers of glass fragments, including sherds similar to this example from Culross. Many of these were reassembled into vessels interpreted as plant propagators or cloches for which an early-18th-century date was suggested (Hynd and Ewart 1983, 104).
Window glass. Several of the sherds of window glass, particularly those retrieved from Periods 1 and 2 levels in the courtyard, were probably associated with the initial glazing of the palace windows in the late 16th/early 17th century. A few examples of similar date were also recovered from within the Bessie Bar Hall. Very similar material has been found within roughly contemporary levels at Dairsie and Carrick Castles (Murdoch, forthcoming a and b). It is worth noting that the output of the glassworks at Wemyss, 45km east of Culross and founded in 1611, included broad window glass (Chambers 1859, 428).

The nature of the degradation of these sherds suggests that they are of potash glass, which was generally replaced by soda glass during the late 17th century. Several late-17th- and 18th-century sherds of soda glass were also present; some of them bore scribe marks from on-site glazing.

   Topsoil.
2. Pale green bottle neck with very dark brown, blotchy patina; gently curving neck with round section string ring 9–12mm below a slightly flared lip of 17mm aperture. Probably French; first half of 18th century. Period 2 or 3 in east range.
3. Folded rim from very large diameter bowl or possibly a cloche. Pale green bottle glass with heavy brown patina; 2.7mm thick. Not later than the late 17th century. Period 2 or later in east range.
4. Mushroom decanter stopper in clear glass with patchy white patina. Upper surface ground with radial grooves; stopper ground to fit to neck of vessel. Probably 18th century.
   Topsoil.

Clay tobacco pipes
Dennis Gallagher

A total of 46 clay pipe fragments (4 bowl and 42 stem fragments) was examined. Most were from residual contexts and none is illustrated.

On the evidence of stem bore diameter, about half of the assemblage is of 17th-century date. However, the lack of bowls and marked stem fragments from this period makes it impossible to refine this dating. One stem fragment (no 1), of probable 17th-century date, has had its broken ends rounded for reuse; perhaps as a hair curler although it is far shorter than most purpose-made curlers (Le Cheminant 1982, 348).

The 19th-century material indicates a predominance of local makers, there being marked stems by William Richmond (nos 5 and 6) and James Williamson (no 7), both of Dunfermline. Richmond was active as a pipe maker from 1852, his business remaining in his family until about 1940 (Horgate 1980, 3). Local directories record Williamson as a manufacturer of pipes during the period 1866–98 (Horgate 1980, 7). There is a noticeable absence of pipes from the main centres of production, Glasgow and Edinburgh.

1. Stem fragment, ends rounded for possible reuse as a hair curler; 7/64.
2. Front of tall, thin-walled bowl; no measurable stem bore; wire-cut rim; 19th century.
3. Plain, upright bowl, 4/64; post-1850.
4. Fragment of the rear of a bowl, marked W within an incuse frame; part of a Thomas Williamson pipe; post-1850.
5. Stem fragment, 4/64; marked W, RICHMONOND / DUNFERRMLINE; post-1852.
6. Stem fragment, 4/64; marked [RICH]MOND / DUNFERRMLINE; polished; post-1852.
7. Stem fragment, 4/64; marked J WILLIAMSON / DUNFERRMLINE; 1866–98.
8. Stem fragment with running leaf decoration in relief along base; post-1850.

Building materials
Naomi Crowley

The site yielded a small quantity of ceramic building material, mainly fragments of pantile in a red, sandy fabric, some with black glaze on their surface. Pantiles, not common in Britain until the 18th century, continued in use into the 20th century. There were also several fragments of brick in a red, sandy fabric with sanded edges and soft arises, indicating that they were hand-made. Two small fragments of glazed floor tile may date from the 16th century; after this date plain tiles became more popular.

Iron-working debris
Irene Cullen

As well as being a centre of coal production and salt-panning, Culross was also renowned for the manufacture of iron girdles for baking oatcakes. In the mid-16th century, when there were 16 master smiths in Culross, pacts were formed to ensure that their livelihoods were protected (Cunningham 1910, 64). In 1599 James VI re-established the town’s monopoly to produce girdles. The ready availability of coal would have been beneficial for smithing and for the manufacture of domestic iron products before coke-fired blast furnaces produced plentiful supplies of cheap cast iron in the second half of the 18th century.

Iron-working residues were recovered from the east range and from the west and south sides of the palace courtyard where they had formed hardwearing surfaces during Period 1.

All the debris examined was associated with the later stages of iron manufacture: the hammering and annealing of blooms into usable iron and
the production of wrought iron objects. None of the slags was the result of ore smelting. Most of the material retrieved from the courtyard was very fragmentary and appears to have been crushed prior to its secondary deposition. One sample was in a less fragmentary condition; it contained no slags and consisted of only vitreous cinder and coal. Other deposits comprised mainly smitty floor concretions of bloom-working debris with occasional hammerscale.

Debris from Structure 1 contained large lumps of smitty floor material, up to 75 mm thick and comprising mainly banded deposits of coal dust and hammerscale but also including prill (small globules of slag struck out after the later stages of bloom working), coal fragments and some small stones. The very high proportion of hammerscale in this deposit, together with the lack of any heavy bloom-working fayalite (iron silicate) slags, suggests that the deposit was derived almost exclusively from the final phase of production of iron objects. A nearby pit contained a deposit of lightweight cinder and coal. Two deposits associated with the Structure 2 hearth were typical of waste from a general purpose smitty and contained bloom-working debris, smitty floor concretions and hammerscale. One sample had a greater proportion of hammerscale whilst the other contained a higher percentage of bloom-working debris. The latter was the heavier and more robust of the two deposits and was more typical of the waste produced in the early stages of the process when the iron bloom still contained a sizable quantity of slag.

Coal fragments, coal dust or cinder were present in all of the samples with no other fuels represented. This suggested that only smithyng was taking place within the courtyard because the high sulphur content of coal made it unsuitable for use in smelting at that time.

The majority of the smithing debris uncovered at Culross Palace had been laid down to form a metalled surface. Some of it may have been produced within Structure 2 in the east range; however, there was evidence that similar materials had been deposited there before any part of the east range was built.

**General discussion**

It has been stated already that the somewhat convenient division of the excavation results into four neatly defined periods profits a less than accurate picture of the development of the palace and its immediate environs. As with any site occupied for a long period, many of the changes to its layout would have arisen because of the decay of its buildings and the changing needs of those who lived and worked in them rather than from events of historical significance. The evidence of many of these changes, including those carried out on the fabric of buildings, might not have survived into modern times. Nevertheless, the four periods defined above are believed to best represent the results gleaned from the excavations within the palace grounds.

It should also be noted that the perception of the excavation area as a courtyard and even of the buildings to its north and west as those of a palace is somewhat misleading. The word 'palace' may date from the time when James VI visited Culross in 1617 and resided in what was simply the home (albeit quite a grand one) of local industrialist George Bruce (MacGibbon and Ross 1887, 432). Alternatively, this term could have derived from 'palatium' which was used by early writers to describe a hall, whether it was a separate building or simply a large room within one (Mackenzie 1972, 149). It also appears that what is generally assumed to have been a courtyard was not enclosed until well into the 19th century; although there may have been a small, inner court around the forestair outside the west wing (see above).

The early years of the palace

It could be a mistake to assume that the earliest part of the palace was built in 1597, the date inscribed on one of the pedimented dormers at third-floor level in the central block of the west range. This building is thought to have comprised only two storeys originally (RCAHMS 1933, 78; Gifford 1988, 154), and that it was heightened and extended at a later date, probably 1597. Whether it belonged to Bruce before then or if he acquired the building about that time and enlarged it soon after is not known.

RCAHMS (1933, 78) suggests that the earliest phase of the palace ‘... lay fronting a small courtyard on the south, which had a smaller building, perhaps a lodge or a stable at the south-east corner.’ If there had been such a courtyard, it is far from clear which building the authors had in mind: the south-east projection of the west range; a timber structure to its immediate east; or even Structure 1. The timber building is shown on the first edition OS map of 1856 and on Hardie’s plan of c 1904 (Illus 11) although no trace of it was found during the excavation. It would not be difficult to accept that Structure 1, which was free-standing at first, was contemporaneous with the earliest phase of the palace, although the two buildings may not have belonged to the same owner.

There were few pointers as to how the ground floor chamber of Structure 1 (assuming there had been more than one storey functioning). On the evidence of the drain set into its cobbled floor, it could be interpreted as a stable or byre. However, there was no discernible gradient within the drain and no obvious point of discharge from it, as might
be expected for animal accommodation. The presence of two windows in the only wall that survived to any height (the east wall) is a strong indication that the ground floor of this building was residential or a workshop. The lack of evidence for a hearth or for any domestic or industrial process might argue otherwise, although such evidence may have been swept away when the northern part of the floor was relaid.

There was certainly evidence of industrial activity within the neighbouring apartment, Structure 2. On the evidence of the metal-working debris recovered from around its hearth, it was probably one of the production centres for the wrought iron girdles for which Culross was renowned from the 16th to the 18th century. Unfortunately, the hearth itself was truncated to below floor level and no other information was forthcoming from it. Similar debris was observed below the north wall of Structure 1, implying that this process was under way before Structure 2 was built. The circumstances under which this material was retrieved (during masonry consolidation) were far from perfect and it would be unwise to make too much of such slender evidence. At least some of the waste from iron working in Culross was put to good use, providing a durable, level surface in front of the two main palace buildings. The excavation uncovered no trace of any formal surface pre-dating the deposition of this debris and it is unlikely that there had ever been one. Furthermore, there seems to have been no effort to level the eastern part of the site during the early years of the palace, perhaps because that area was outwith Bruce’s ownership.

It was not possible to date the kerbed path that led to the two main buildings of the palace. This is not thought to have been part of Bruce’s scheme and it is tempting to place it in the 17th century when Colonel Erskine may have upgraded his property at the same time as he expanded its limits (see below). Although it was not possible to excavate all of the deposits that lay beneath the path, the artefactual evidence that was retrieved tended to support this dating.

The buildings within the courtyard

The term ‘east range’ may not be the most appropriate one to apply to this series of structures. It implies that there was a definite relationship between it and the main buildings of the palace. It is quite possible, however, that this connection was a secondary one and that originally the limits of the palace extended only as far as the west wall of the range.

As stated above, Structure 1 originally stood alone and may have been built about the same time as the palace. Structure 2 seemed to be the final element of the east range and the heraldic disc recovered from within it suggests a 17th-century date for its occupation.

It was difficult to tell how far the east range had extended northwards at any time. The wall which formed the east side of Structure 3 continued at least as far as the north range extension but the precise relationship between these two buildings could not be established because of the harling that now covers the exterior of the north range. However, at this junction only one to two courses of the east wall of the east range (not the precinct wall that overlies its remnants) still remain while the north range annexe still stands to its full height: an indication that the north end of the east range had probably been demolished before the annexe was built. It appears then that before Structure 2 was built there were two blocks of buildings at the east end of the site: Structure 1, which stood alone; and a longer block of which Structure 3 formed the south end but whose length remains unknown.

The iron goods manufactured in Structure 2 were very likely some of the girdles which were produced in quantity in Culross until the mid-18th century. Unfortunately, there was no artefactual evidence from which to ascribe a more precise date. Furthermore, it would be unwise to assume that the iron debris that covered the western part of the courtyard necessarily originated in Structure 2. It certainly appeared to have been laid down at a relatively early date but at least some of it could have been waste produced on the site before Structure 2 was built or it could have been brought in from elsewhere in the burgh.

Because a substantial part of the east wall of Structure 1 was incorporated into the later (presumably 19th-century) precinct wall, it can probably be assumed that this building still stood after Structures 2 and 3 had been levelled. This may be due to the quality of its construction or because its role continued to be a worthwhile one, unlike Structure 2 which was perhaps redundant after 1760 when the manufacture of much cheaper, cast-iron girdles began at Carron.

Culross burgh sasines dating to the 18th century allude to several buildings near to the palace although their precise locations are not obvious. When Colonel John Erskine acquired the palace in 1704, the estate included ‘... pallace or great lodging lying near the Sand Haven in the lo brugh of Culrose and offare houses therof with the tenement of houses called the Panloft with the great Timberfold at the back of the Same [same] both lying on the south side of the common green ore bowling green ...’ (SRO B12/2/1, 275). The locations of the bowling green, the panloft (possibly a girnel for storing salt) and the timberfold remain unclear. In 1722 Erskine obtained a ‘chaise house, stable and Green Yard’ from Robert Blaw (SRO B12/2/3, 35), the buildings perhaps being the same as those described as a workshop,
working booth and stable inherited by Blaw from his father (also Robert) in 1711 (SRO B12/2/1, 356). These buildings appear to have lain between the palace and, further east, the lands of Lawrence and James Johnston (father and son), both bailies of the burgh (SRO B12/2/3, 34-5; 51). A small building that stands to the rear of the property to the immediate east of the palace is thought to have been the 'chaise house', having been used to house coaches and, within living memory, a hearse (pers comm, J Robertson).

Although there is no proof that any of the buildings referred to in these sasines formed part of the 'east range', the descriptions in the documents suggest that they did. It is possible that Blaw's workshop was in Structure 2, where iron girdles are thought to have been made, and that Structure 1 was the stable, perhaps after its windows and one of its doors had been blocked up. Another candidate for one of the 18th-century stables is the eastern extension of the north range which, according to at least two sources, operated as such until the end of the 19th century (MacGibbon and Ross 1887, 432; Hardie 1904). The layout of the site in the 19th century is difficult to interpret. The arrangement of the structures at the north-east corner of the courtyard as shown in the first-edition OS map of 1856 is very different from that suggested by excavation. There are also discrepancies between the doorways depicted at various points around the palace and in the Bessie Bar Hall on the 1856 map and those in the buildings themselves.

The later history of the 'east range' is essentially one of small, low-status buildings (Structures 4 and 5) erected over the remains of probable 17th-century ones. It is unlikely that these later structures were linked to the palace which appears to have been in a rather dilapidated state by the late 19th century. The two main buildings of the palace may still have been occupied — perhaps as housing for the poor of the burgh — but the elegant days of the 17th and 18th centuries were long gone by then. The ground-floor apartments of the north range (including its annexe) appear to continue as animal accommodation into the 20th century, their occupants perhaps watered from the tank in the north-west corner of the courtyard which, in turn, was fed by the well in the inner yard. One of these apartments is described as a byre, both by MacGibbon and Ross (1887, 432) and Hardie (1904), a description reinforced by the discovery of part of a barrel set into the ground outside its walls. This is thought to have been a collecting tank for urine, used until recently as a mordant for dyeing cloth. An identical arrangement can be seen at the Museum of Country Life at Auchindrain near Inveraray, Argyll. This arrangement, dating from Period 4, may have replaced an earlier (Period 3) one in a similar location, comprising a box drain and an open pit.

The Bessie Bar Hall and yard

There is no obvious connection between the Bessie Bar Hall and the palace, only 5m to its east. On the evidence of the date-stone in its south gable, the hall could have been built as late as 1776, some 165 years after the completion of the two main blocks of the palace; alternatively, this date may simply be an indication of when alterations were carried out to the building. Whenever it was built, the hall's foundations overlay the remains of an earlier structure about which little is known of its ground plan and nothing of its date of construction, although it may not be unreasonable to speculate that this was the malhhouse owned by Bessie Bar in the late 16th century. However, it would be of no surprise to find that several houses and other buildings, some perhaps associated with the salt industry, had stood along that stretch of the Sandhaven before the late 18th century. It is also quite possible that the part-excavated building had been the property of Lawrence or James Johnston, who owned land to the west of the palace in the mid-18th century (SRO B12/2/3, 34).

Very little of what was uncovered during the excavation cast any light on how the extant building had functioned. It is unlikely that its ground floor was anything other than a store. If, as has been assumed, the upper storeys were used as malting floors, it is not clear how they were heated. Malting needs a warm, relatively moist atmosphere to allow barley grains to germinate. To halt that process at the desired stage, the temperature needs to be raised further. The alcove at ground-floor level in the south-east corner of the building certainly bears a superficial resemblance to a fireplace although precisely how heat could have been transferred from there to — and along the length of — the floors above is far from clear.

The surviving arrangement in and adjacent to the alcove suggests that some mechanism for hauling goods to the first storey had been housed there, although such a system must have been a secondary one had there been a fireplace there originally. It is difficult to see the hall as anything other than a store when that putative mechanism was in place; and it must be wondered if that was its function from the start.

For much of the time after the construction of the Bessie Bar Hall, the area between it and the palace seems to have been simply a yard, surfaced with cobbles and a few flags. As might be expected from its location, drains of various ages cut across this yard, taking water from the hill to its north, via the well at the bottom of the slope, and from within the palace. The stone-lined tank in the north-west corner of the yard might also have been a water cistern although the smell of phenol that
pervaded the area suggests otherwise. A clue to the source of this smell – and to the function of the tank – may lie in a late 18th-century reference to ‘... a new and ingenious method of extracting tar from coal ... which was first practised at Culross by the present Earl of Dundonald ...’ (OSA, 142). Little more is known of this enterprise although it may well have been carried out in this yard; and was perhaps represented by a square feature shown at the north end of the yard in the 1856 OS map.

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All site data, including day books, context sheets, photographs and field drawings, together with relevant catalogues and lists and other miscellaneous documents are lodged with the National Monuments Record of Scotland. The finds await disposal.

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RCAHMS 1993 Royal Commission on Ancient Monuments and Constructions of Scotland: Inventory of Monuments and Constructions in the Counties of Fife, Kinross and Clackmannan,
Abstract

Excavations revealed that the courtyard of Culross Palace was not enclosed until the 19th century; although standing buildings on its west and north sides and the remains of others against its east wall date from the late 16th and early 17th centuries. In the 18th century the approach to the palace was paved with a well-constructed, kerbed path. Neither the date of construction nor the function of the nearby Bessie Bar Hall could be confirmed.

Keywords: Culross Palace, courtyard, iron girdles, Bessie Bar Hall