6 Specialist Contributions

6.1 Soils *by John S Duncan*

6.1.1 Burnt mound site

In general, the majority of the layers investigated from the burnt mound site show evidence of a relatively low-energy system, where fine-grained material is deposited by the action of very slow-moving or stagnant water. The main exception to this is layer 10A/11A (context 101), which is very poorly sorted and of mixed particle size in addition to containing abundant inclusions of burnt stone and charcoal. This layer is best interpreted as a dump of 'burnt mound' material.

6.1.2 Timber site

Most samples indicated a very low energy environment, with waterlogging almost entirely due to limited fluctuations in groundwater/overbank flooding rather than episodes of flash flooding.

A clay layer that sealed, and was covered by, peat deposits indicated erosion further up the valley, with the mineral layer deposited at the site. The small grain size was strongly indicative of low-energy deposition where there was also standing water. During an erosion event, material is disturbed and transported; in general, the energy in such a system will reduce with increasing distance from the erosion site, and the smaller the particles, the further they are carried. In this case, the layer covered a large area, which implies over bank flooding, or that standing water covered this area, as it would be sensible to conclude that this event was limited by natural topography rather than human activities. The ultimate origin of this layer may have been human deforestation further up the valley. Another source of this mineral material could relate to increases in arable cultivation. This increase would lead to increased hill wash erosion and position downstream (French 2003, 111). Subsequent low-energy freshwater flooding over a large area would lead to the deposition of silts and clays. Similar results have been observed elsewhere (French et al 1992; French 1998). It is likely that, following this phase of deposition, events stabilized and the influx of mineral material decreased, allowing the peat to form again, indicating that the area continued to be wet.

6.2 Botanical evidence *by Jennifer Miller & Susan Ramsay*

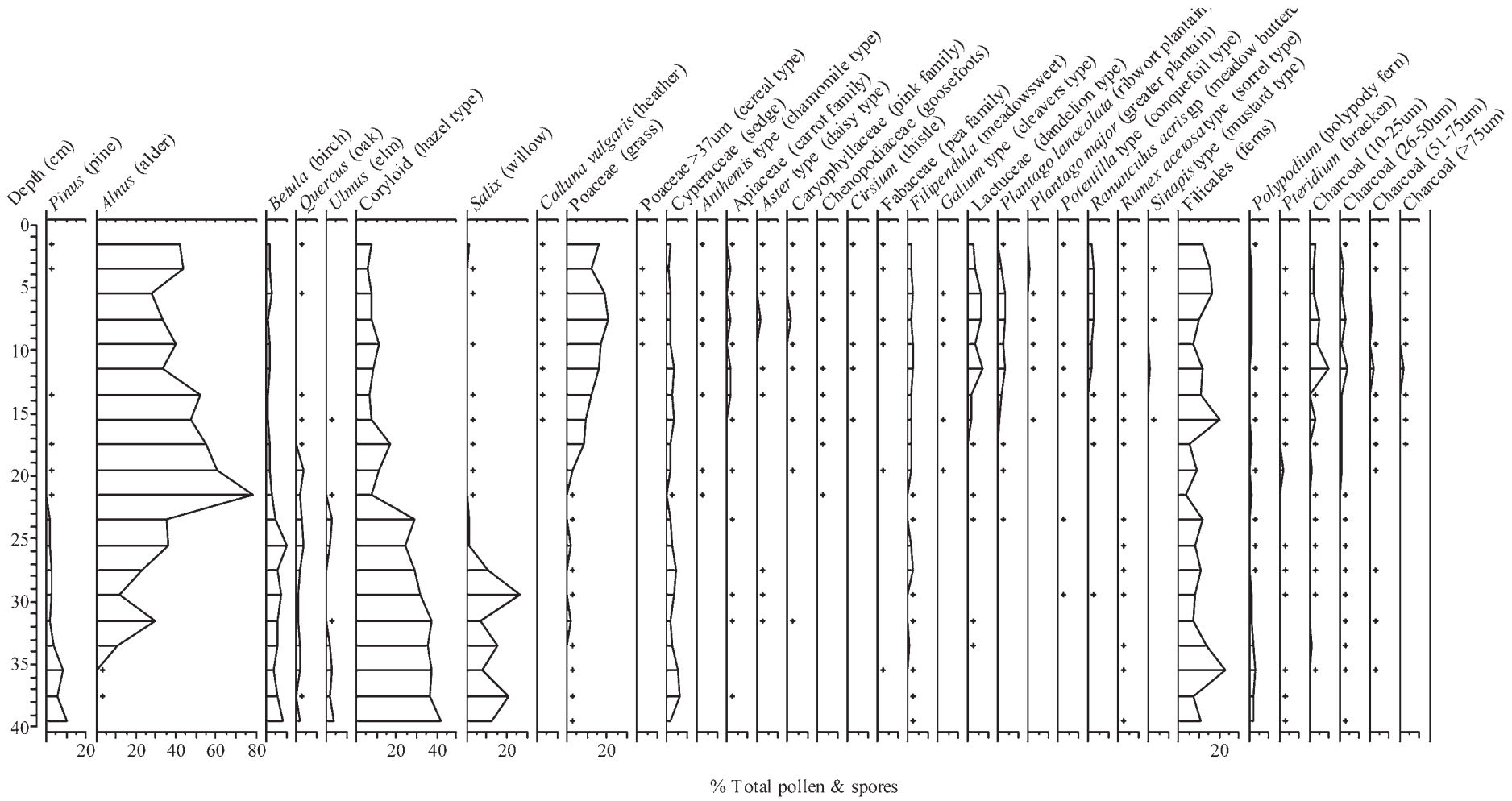
6.2.1 Phase 1: Vegetation history at the time of peat accumulation and the formation of overlying alluvial deposits

Radiocarbon dating has shown that the date of peat inception is prior to 6000 cal BC. During the early post-glacial period, the area was a wet, marshy environment, with woodland initially dominated by willow and haze, with some pine. By around 5500 cal BC, alder had become established in the area, and subsequently flourished (Illus 12). Alder outcompeted and eventually displaced willow as the dominant tree, providing an abundant resource for the local prehistoric population.

Oak and elm required drier conditions and never formed a significant component of the wet, valley floor woodland. By contrast, oak and hazel were the dominant charcoal types from the nearby Mesolithic site of Littlehill Bridge (MacGregor & Donnelly 2001). However, that site has a different topography and underlying geology, with slightly higher, well-drained soils able to support the mixed oak woodland characteristic of lowland Scotland.

The first evidence for human impact on the valley woodland occurred as short duration episodes around 4500 cal BC and 2250 cal BC. More substantial, sustained clearance began around 600 cal BC, with increased counts of agricultural indicators. This cleared landscape was maintained to the top of the sequence, although agricultural indicators were never high, as the wet valley floor would not sustain arable, or even pastoral, agriculture. The drier valley sides were probably used for cereal cultivation and grazing from the Neolithic onwards, with a significant expansion in the Iron Age. The agricultural signal coincides with steadily increasing counts of microscopic charcoal, especially the smallest size fraction often associated with particles from domestic fires.

The first substantive evidence of agriculture coincided with the end of peat formation and the deposition of grey clay, suggesting this might represent hillwash from destabilized soils caused by woodland clearance. Analysis of waterlogged deposits showed local wetland taxa mixed with others favouring drier habitats, in a sandy matrix, suggesting some hillwash has occurred.



Illus 12 Botanical analysis: pollen diagram monolith 030

6.2.2 *Phase 2: The formation of the burnt mound deposits*

Alder was the most abundant charcoal from the burnt mounds overall, with other types only present in trace amounts in some cases. The pollen evidence indicated that alder dominated the local woodland during the Bronze Age. Consequently, utilization of local resources is implied. A few burnt mounds had a more mixed charcoal assemblage, and radiocarbon dating has shown that these mounds are earlier than those dominated by alder charcoal. This suggests that the mounds were formed over an extended period of time, using whatever wood types were abundant in the local environment at the time.

Much of the charcoal from the mound in Area A was indeterminate, unlike that from Area B mounds. This suggests the wood used in Area A was either wet, or was subjected to repeated burning or exceptionally high temperatures. Repeated burnings seem most likely as no furnaces were found, and indeterminate charcoal would have recurred if burning wet wood were normal practice. Several carbonized cereal grains (six-row barley) recorded from the Area A mound deposits were probably incorporated accidentally from other, possibly unrelated activities.

The charcoal assemblage from the burnt mound site at nearby Gallow Hill (Donnelly & MacGregor 2006) was noticeably different from Grant's. The abundance of birch and scarcity of alder charcoal at Gallow Hill implies this local woodland was better drained than that present around Grant's. This further suggests that the mounds were utilized by small, local communities rather than as a focus for regional activity.

6.2.3 *Phase 3: Medieval activity*

Post-hole fills from the medieval moated enclosure yielded abundant carbonized cereal grains and the remains of oak posts burnt in situ, suggesting that this group of features represents an oak-built grain store or barn destroyed by fire. Hazel charcoal was also frequently recorded, perhaps from internal wattle screens or structural walls. Radiocarbon dating of cereal grains from several contexts dates the use of this structure to within the range of 1240–1400 AD.

Oats were abundant on this site, which concurs with the heightened importance of this cereal during the medieval period. However, six-row barley also constituted a significant component of the grain assemblage, together with abundant arable weed seeds, suggesting the storage of locally grown, partially processed crops. The almost total absence of chaff from this site, but abundance of small weed seeds, indicates that these crops have only undergone partial processing. This is indicative of a locally grown crop rather than a traded commodity, the latter being well cleaned to maximize commercial value.

The weed seeds were characteristic of spring-sown crops (Greig 1988), but samples primarily comprising oats or barley had different weed floras, implying separate crops rather than maslin cultivation (Van der Veen 1995). Fat hen was more common in barley-rich contexts and corn marigold more prolific in oat-rich samples. Although barley and oats can grow in poorer, wetter soils (Hinton 1991), the weeds are those that prefer fertile, nitrogen-rich arable land (Williams 1963; Howarth & Williams 1972), with corn marigold favouring light, sandy soils. This implies that the valley floor was not used for arable cultivation, with oats and barley crops probably grown in separate areas on the better-drained slopes of the valley.

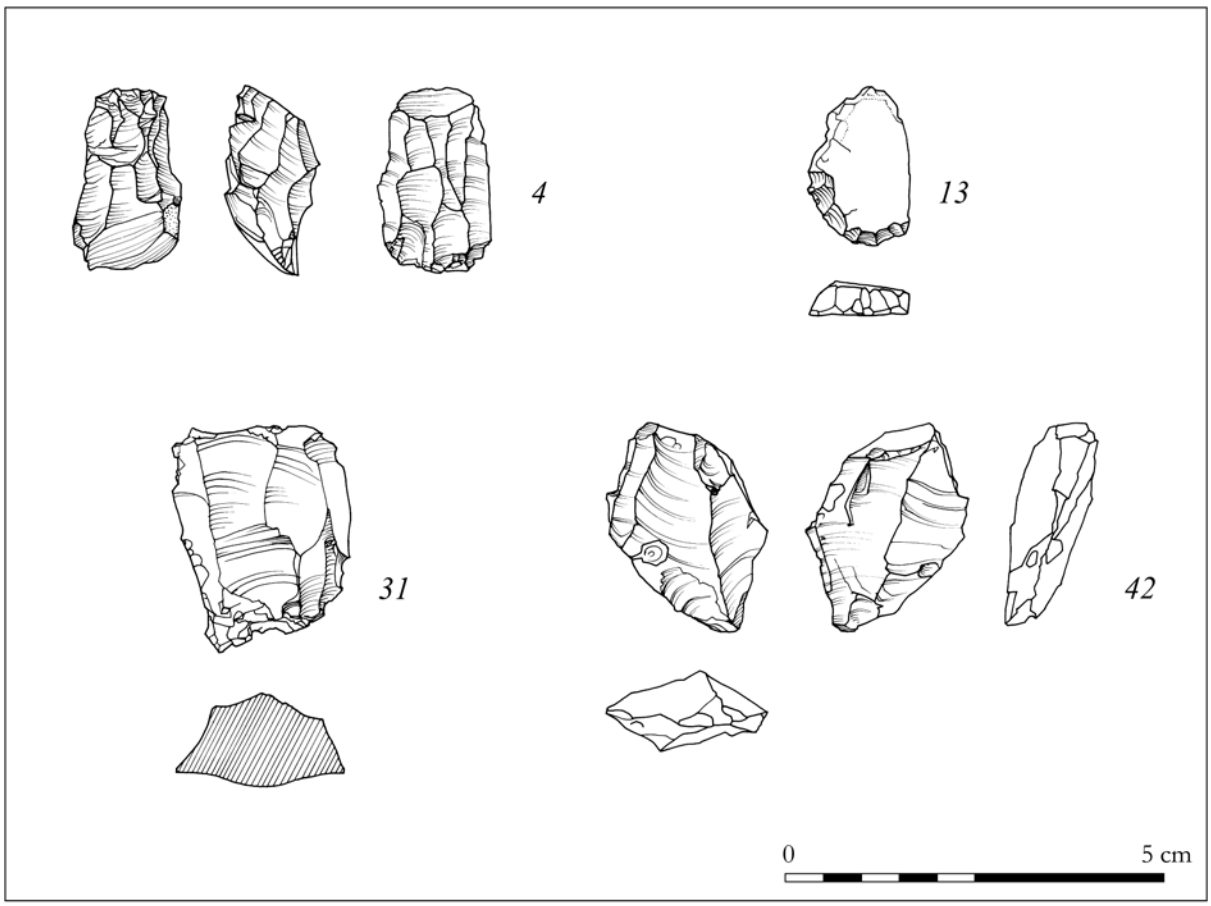
One context (Post-hole F005) was dominated by wheat (bread wheat, emmer and possible spelt), yet contained very few weed seeds. The weed seeds present were those of similar size to the cereal grains, indicating a finely cleaned crop. The apparent scarcity of wheat on the site implies that context 005 represents a higher status, more valuable crop. In Scotland, wheat cultivation is more problematic than either barley or oats, and hence was a more valuable commodity throughout history (Miller et al 1998; Dickson & Dickson 2000). This cleaned wheat crop would have had a higher value than a partially processed one, and suggests an expensive commodity, unlikely to have been lost through carelessness.

Although there are few archaeobotanical studies from rural medieval sites in Scotland, investigations of the urban sites of Elgin, Perth and Aberdeen (Fraser 1981) recorded the presence of barley, wheat, rye and especially oats. However, these assemblages are from waterlogged cesspits, not grain storage areas, and so are not directly comparable with Grant's, although the similarities are clear. Analysis of the drains at Paisley Abbey showed these same cereals to have been present in the medieval monastic diet, and records indicate the monks also collected grain as rents from the surrounding settlements (Dickson & Dickson 2000). The large quantity of grain, especially the wheat, stored at Girvan suggests a similar wealthy monastic or manorial tithe system may have operated there.

The abundance of oak charcoal in these medieval contexts is in stark contrast to the prehistoric samples examined. The pollen profile shows oak to have been a rarity in the area throughout prehistory, and it would have been even scarcer by the medieval period. This suggests that timber for the medieval oak-built structure was imported from elsewhere, further indicating a high status structure, given the extensive cost of timber importation.

6.3 **Animal bone** *by Catherine Smith*

The animal bone recovered from the moated enclosure ditch and its fills was poorly preserved, consisting of fragmented animal teeth and small bone fragments, most of which were burnt or calcined. The sandy clay



Illus 13 Lithics analysis: lithics 4, 13, 31, 42

was assumed to have been acidic in nature, hence the poor preservation of bone.

The only species identified at the site was cattle, represented by tooth fragments. The teeth were molars that had disintegrated into their component parts, and came from adult animals. Long bone fragments, described in the catalogue as large ungulate, were probably also from cattle. Two conjoining long bone fragments came from the upper ditch fill (small finds no 009 and n/a).

6.3.1 Discussion

As the animal remains were so poorly preserved, it is not surprising that only one species was identified. Cattle bones, being larger and more robust than those of sheep and pigs, tend to survive in a more recognizable condition under adverse burial conditions. It is unlikely, however, that sheep and pigs would have been absent from the site, both being well established in the medieval economy.

6.4 Chipped stone *by Eland Stuart*

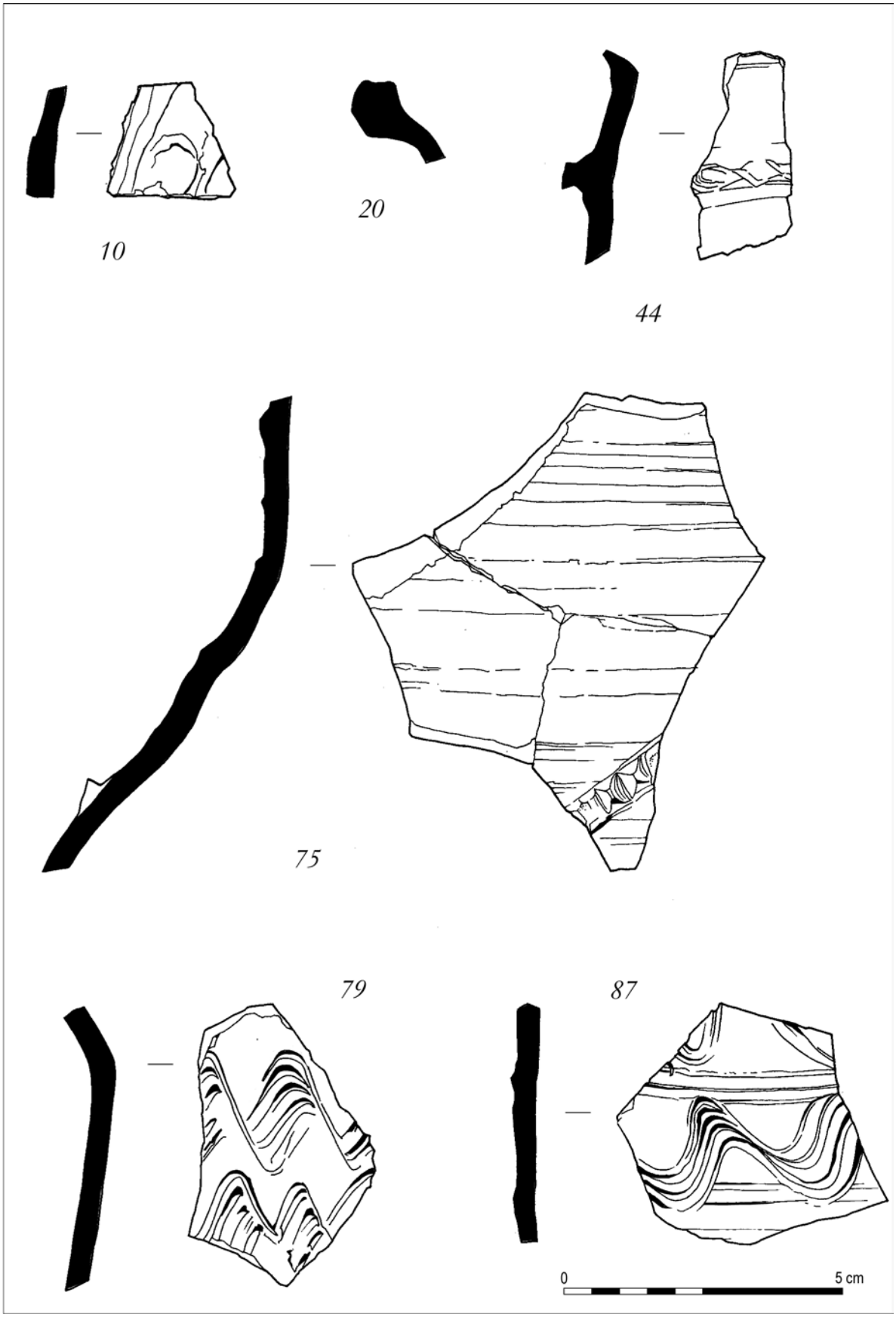
The assemblage consisted of 35 pieces, deriving from all three Areas A, B and C. The assemblage was in good condition and most pieces were fresh, although breakage was common. It appeared that the lithics in Areas A and B had been more disturbed than those from Area C. There were 30 flints, four agates and one well-rolled chert chip, probably natural. Only two pieces had definitely been modified, an end scraper from Area A (Cat no 13) and an indeterminate piece (Cat no 28) from Area C.

6.4.1 Discussion (Illus 13)

Most of the flakes were small and broken, and the lack of formal tools and the small size of the assemblage made dating the material difficult. Blades were not significant, which argues against the idea that the material is Mesolithic, yet at least two of the cores (Cat nos 4, 20, 32 and 42) were well-worked platform cores that easily could be Mesolithic (Cat nos 4 and 20), while a third burnt bipolar core is not (Cat no 42). At the same time, the abundance of flakes might suggest a later date: Neolithic or Bronze Age. Indeed, one piece (a thick flake from a formal platform core) appeared typically Neolithic (Cat no 31). However, as the material came from across the entire valley, it would be a mistake to try to view this as a coherent assemblage. This is a small piecemeal set of material where the pieces

Table 1 Catalogue of lithics referred to in text

ID	Location	Material	Colour	Red seq.	Blank	Sub-blank	Broken	L	W	T	Bulb type	Scar	Edge Damage	Modified
4	Area C	Flint	Dark grey	Tertiary	Core	Platform	n	20	14	11		N	N	N
13	Area A	Flint	grey-White/red	Primary	Flake	Regular	y	20	15	5		N	Y	Y
20	Area C	Agate	Pink/white	Tertiary	Core	Platform	n	22	14	11		N	N	N
28	Area C	Flint	Pink/grey	Tertiary	Flake	Irregular	y	11	12	4		Y	N	Y
31	Area C	Flint	Grey	Tertiary	Flake	Regular	n	27	22	10		Y	Y	N
32	Area C	Flint	Pale grey	Secondary	Core	Platform	n	15	31	23		N	Y	N
42	Area C	Flint	White/grey	Tertiary	Core	Bipolar	n	30	18	9	n	N	N	N



Illus 14 Medieval pottery analysis: sherds 10, 20, 44, 75, 79, 87

are not related to one another; this is supported by the colours of the lithics, where no two pieces came from the same parent rock. Some might be Mesolithic, others Neolithic. Small pebbles were used, and when of good quality, they were worked right to the limit. The best description of assemblage is the result of the expedient manufacture and use of tools. The small size of the assemblage and overall lack of small debitage, particularly from the samples, suggests that the sites were not knapping sites.

6.5 Glass bead *by Ewan Campbell*

A single glass bead was recovered from Area C in the top of the intrusive silt layer (3002) during the initial archaeological evaluation. The form of this bead is not distinctive, being found in both prehistoric and later beads, but the colour is unusual in that it incorporates a trail of opaque white glass in otherwise colourless material. It looks as if the bead has been fairly crudely made from melting down sherds of a glass vessel decorated with opaque white trails. While there can be no certainty about the origin of this material, such vessels were characteristic of the early medieval period in western Britain, when they were imported from France in the sixth and seventh centuries AD. The major collection in Scotland was found at Whithorn, where glassworking took place on site (Campbell 1997). The bead could therefore date to this period, though the possibility remains that it could be prehistoric. However, there are no obvious parallels from prehistoric contexts.

6.6 Medieval pottery *by Bob Will*

The excavations at Girvan uncovered a small but important assemblage of medieval pottery. In total, 107 sherds (448.3g) were recovered from the excavations at Girvan. All the sherds date to the medieval period and consist of the two main medieval pottery fabric types found in Scotland, Scottish White Gritty ware and Scottish Medieval Redware. Many of the sherds are well made, with thin walls and pronounced rilling marks on the inside; these features would suggest a date from the late 12th or early 13th century. Many of the White Gritty sherds demonstrate a strong Yorkshire influence in terms of the vessel form and decoration (eg Illus 14, SF nos 10, 20, 44, 75, 79 & 87). Most of the sherds were recovered from the moated enclosure. The Scottish White Gritty ware formed the largest group of sherds, which generally dates from the late 12th century through to the mid 15th century; the sherds from Girvan probably date to the 13th century or early 14th century. Most of the sherds appear to be from jugs, but several sherds may be from cooking pots or storage jars. Many of the sherds show a Yorkshire influence and may in fact be from one of the several Yorkshire potteries that were in production in the 13th and 14th centuries. Twelve Scottish Medieval Redware sherds were recovered from the excavations. These Redwares tend to date from the 13th century through until the 15th century.

6.6.1 Discussion

The Girvan material is an important assemblage as very little is known about the pottery from this area and the local pottery industry in the south-west of Scotland in general. Although a number of excavations have been carried out across the region, most of these are presently unpublished (Ayr, Dreghorn, Dundonald). What information is available shows that White Gritty sherds are present in reasonable numbers, suggesting that a number of kilns could be operating in the area (the small published assemblage from Dundrennan Abbey contained 41 sherds of White Gritty Ware). The Girvan material also shows a high level of skill and craftsmanship, not previously recognized from the larger unpublished assemblages. It may be that Girvan pottery is a bit earlier in date and could mark the beginning of pottery production in the area. The sherds display a combination of traits, vessel form, glaze and decoration that would suggest a Yorkshire influence or possibly origin, but whether that reflects trade or the settlement of Yorkshire potters in the area is impossible to determine at the moment. A note of caution should be made as this is a very small assemblage and may only represent a small number of vessels.

6.7 Radiocarbon dates *by Paul Duffy*

Sixteen single-entity dates were submitted to Scottish Universities Environmental Research Centre for dating. Fifteen dates were obtained, with one sample failing to produce a date.

Table 2 Radiocarbon dates

Lab code	Sample ref	Material	δ13C	Age BP	Cal BC 2 sigma
SUERC-2906	Area A C130 S003	*Alnus*	–27.8‰	3290 ± 35	1690–1460 BC
SUERC-2907	Area A2 C101 S001	*Alnus*	–27.5‰	3230 ± 40	1610–1410 BC
SUERC-2908	Area B Sample A #30 37–39cm	Monocotyledonous fragments	–28.9‰	7020 ± 35	5990–5800 BC
GU-11881	Area B Sample A #30 33–35cm	Nutshell fragments from peat	Failed	Failed	Failed
SUERC-2909	Area B Sample A #30 19–21cm	Bark from peat (prob *Alnus*)	–28.8‰	2495 ± 35	790–410 BC
SUERC-2910	Area B CB006 Sample H#20	*Alnus*	–31.8‰	2235 ± 35	390–200 BC
SUERC-2914	Area B CB006 Sample B#12	*Alnus*	–28.9‰	2285 ± 35	410–200 BC
SUERC-2915	Area B C008 S003	*Alnus*	–27.9‰	3580 ± 35	2040–1770 BC
SUERC-2917	Area B2 C 001 S030	*Corylus*	26.6‰	3800 ± 35	2400–2130 BC
SUERC-2918	Area B2 C007 S005	*Corylus*	–27.8‰	3790 ± 35	2305–2050 BC
SUERC-2919	Area B2 C012 S008	*Alnus*	–27.3‰	3540 ± 35	1960–1740 BC
SUERC-2920	Area B2 C026 S015	*Alnus*	–26.1‰	3650 ± 35	2140–1910 BC
SUERC-2924	Area B2 S014	*Alnus*	–28.8‰	6415 ± 35	5480–5310 BC
SUERC-2925	Area C2 C022 S005	*Avena* sp	–25.1‰	645 ± 35	AD 1280–1400
SUERC-2926	Area C2 C005 S006	*Triticum aestivum ss*	–22.5‰	705 ± 35	AD 1240–1400
SUERC-2927	Area C2 C037 S011	*Avena* sp	–25.6‰	675 ± 35	AD 1270–1400