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Bronze Age pastoral practices in the Clyde Valley: excavations at West Acres, Newton Mearns

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ABSTRACT

In November 2002, AOC Archaeology Group carried out the archaeological excavation of a roundhouse and associated palisades prior to a housing development at West Acres, Newton Mearns. The excavation revealed a ring-groove roundhouse, bounded on the south by a curvilinear palisade trench and on the north by another two curvilinear palisade trenches, one that preceded the roundhouse and another that succeeded the roundhouse. It is proposed that these palisades represent evidence of stock management practices. Charcoal recovered from the roundhouse and the palisade features date this settlement to the second millennium BC. *A considerable quantity of pottery sherds was recovered from within the roundhouse and supports a Bronze Age date for the occupation of the site.*

INTRODUCTION

In November 2002, Mactaggart and Mickel Ltd commissioned AOC Archaeology Group to carry out the archaeological excavation of a roundhouse and associated palisade features in advance of residential development at Mallots Rise, West Acres, Newton Mearns. The previously unrecorded roundhouse (NGR: NS 5300 5585; illus 1) had been discovered during an earlier archaeological evaluation and desk-based assessment of the 17ha West Acres development site by AOC Archaeology Group on behalf of Mactaggart and Mickel Ltd (Toolis 2003, 65–6). Several putative prehistoric cairns were initially believed to exist within the proposed development area, but the AOC Archaeology evaluation and previous work by Headland Archaeology Ltd (Conolly 2000, 32) established that all of these remains were entirely natural in origin.

The roundhouse lay at 130m above sea level on the north-west end of a broad spur, at the southern periphery of the lower Clyde Valley, and had a clear outlook to the immediate west and north, through which the Capelrig burn runs, together with a small tributary. The view extended across the lower Clyde Valley and the Campsie Fells to the north. The outlook east and south towards level or gradually rising ground was obscured by a modern housing estate.

THE EXCAVATION

The fieldwork was undertaken in December 2002 and examined a variety of plough truncated features within an area of approximately 1800sq m (illus 2 & 3, Table 1). An area topsoil strip centred upon the roundhouse was carried out during the evaluation phase. The topsoil across the site varied from a minimum

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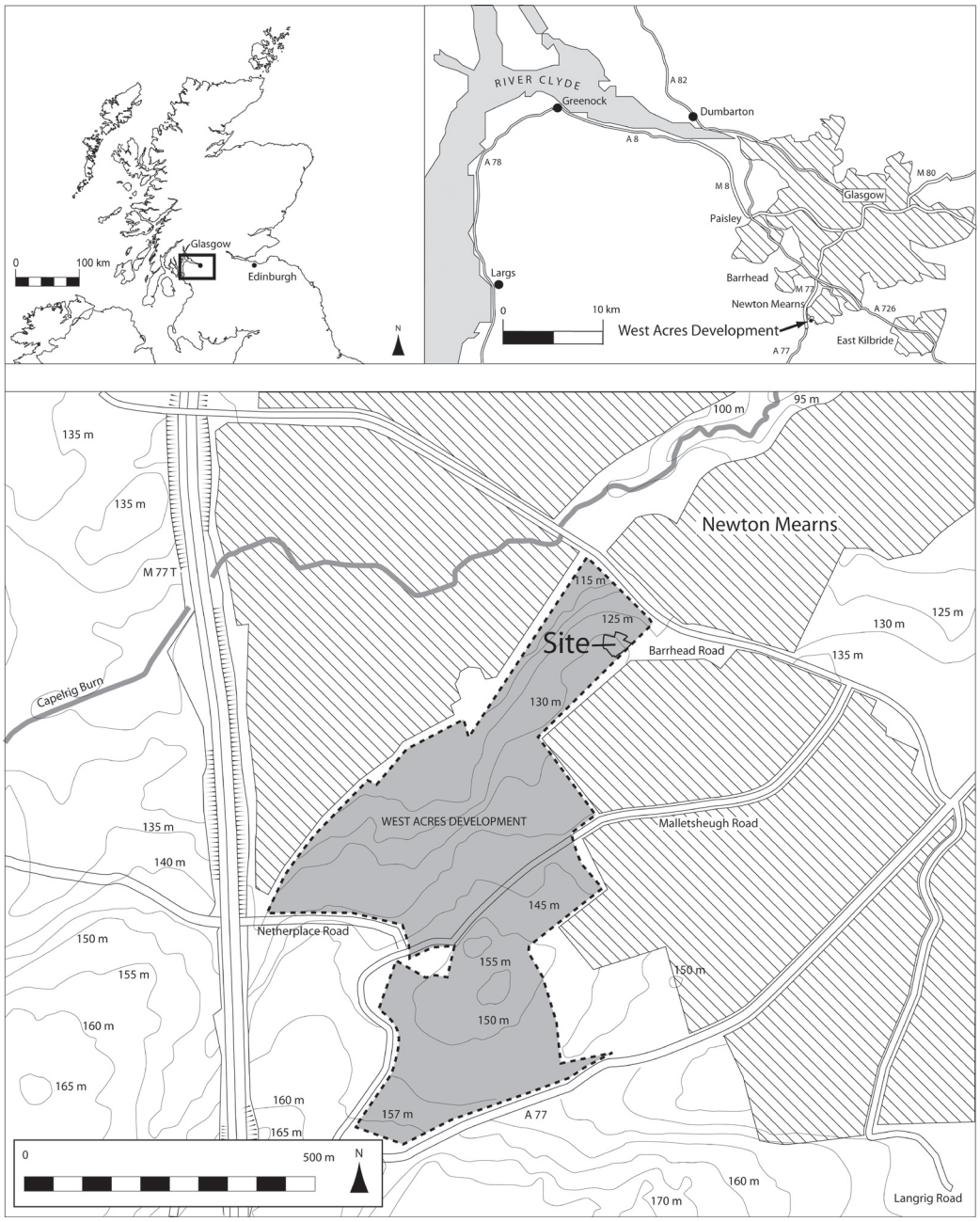


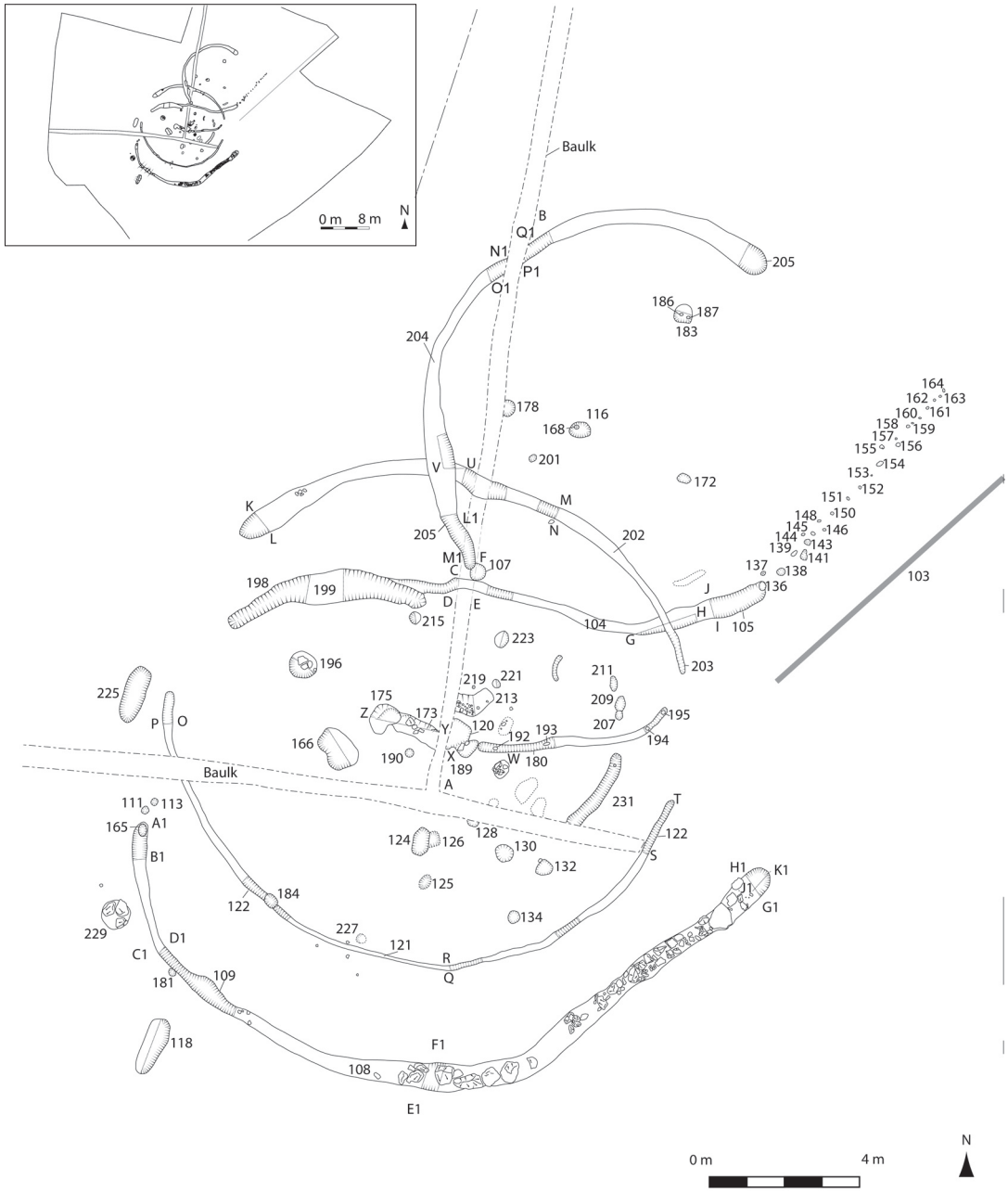
ILLUS 1 West Acres location plan

of 0.30m to a maximum of 0.40m depth and comprised soft dark brown silt with occasional stones, bioturbation and a negligible amount of modern detritus. The underlying natural subsoil predominantly comprised compact orange/greyish-brown gravel and clay with frequent inclusions of small sub-angular and angular stones.

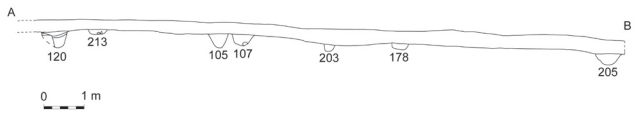
Table 1
West Acres context list

Feature no	*Dimensions (m)*	*Depth (m)*	*Fill no*	*Estimated post diameter (m)*	*Artefacts/ecofacts*	*Interpretation*
105	9.92×0.40	0.05 (E) 0.35 (W)	104	0.18 (east end) 0.10 (west end)	Burnt flint chip, hazel, alder, oak	Palisade trench
107	0.30 diameter	0.25	106	0.20	Quartz chip, burnt bone	Post-hole within roundhouse post ring
109	22.5×0.30–0.75	0.40 (E) 0.28 (W)	108	0.45 (east end) 0.10 (west end)	Pottery Vessel 8, hazel, alder, willow	Palisade trench
111	0.22 diameter	0.15	110	0.15		Post-hole at west terminal of palisade 109
113	0.15 diameter	0.15	112	0.09		Stake-hole at west terminal of palisade 109
116	0.45×0.36	0.08	114 & 115	0.29	Quartz flake	Post-hole associated with palisade 205
118	1.65×0.65	0.07	117	N/A		Pit
120	0.85 diameter	0.42	119, 170	N/A	Pottery, stone flake, burnt bone, oak	Pit
122	19.30×0.12–0.25	0.08	121	0.10–0.15	Flint chips, quartz flake	South part of ring-groove of roundhouse
124	0.60×0.50	0.16	123	0.30	Pottery, flint tool, burnt bone, hazel, alder, birch	Post-hole within roundhouse
125	0.45×0.30	0.01	125	*c* 0.25	Pottery	Post-hole within roundhouse post-ring
126	0.20 diameter	0.01	126	*c* 0.15	Burnt bone	Post-hole within roundhouse
128	0.35 diameter	0.42	127	0.20	Burnt bone, oak	Post-hole within roundhouse
130	0.40 diameter	0.12	129	0.30		Post-hole within roundhouse
132	0.33 diameter	0.07	131	0.30		Post-hole within roundhouse post-ring
134	0.26 diameter	0.18	133	0.15		Post-hole within roundhouse
136	0.26×0.21	0.12	135	0.18		Post-hole associated with palisade 105
137	0.16×0.13	0.13	104	0.09		Stake-hole associated with palisade 105
138	0.30×0.26	0.13	104	0.15		Post-hole associated with palisade 105
139	0.22×0.13	0.08	104	0.09		Stake-hole associated with palisade 105
141	0.34×0.21	0.11	140	0.12		Post-hole associated with palisade 105
143	0.20×0.18	0.18	142	0.12		Post-hole associated with palisade 105
144	0.08×0.06	0.06	104	0.04		Stake-hole associated with palisade 105
145	0.13×0.12	0.15	104	0.07		Stake-hole associated with palisade 105
146	0.08×0.07	0.06	104	0.04		Stake-hole associated with palisade 105
148	0.08×0.07	0.11	147	0.04		Stake-hole associated with palisade 105
150	0.08 diameter	0.06	149	0.05		Stake-hole associated with palisade 105
151	0.09 diameter	0.08	104	0.05		Stake-hole associated with palisade 105
152	0.10×0.09	0.05	104	0.05		Stake-hole associated with palisade 105
153	0.09×0.07	0.05	104	0.07		Stake-hole associated with palisade 105
154	0.23×0.16	0.16	104	0.09		Stake-hole associated with palisade 105
155	0.09×0.07	0.08	104	0.05		Stake-hole associated with palisade 105
156	0.19×0.18	0.10	104	0.09		Stake-hole associated with palisade 105
157	0.09 diameter	0.06	104	0.08		Stake-hole associated with palisade 105
158	0.10×0.09	0.10	104	0.08		Stake-hole associated with palisade 105

Feature no	*Dimensions (m)*	*Depth (m)*	*Fill no*	*Estimated post diameter (m)*	*Artefacts/ecofacts*	*Interpretation*
159	0.09×0.06	0.08	104	0.05		Stake-hole associated with palisade 105
160	0.06×0.05	0.03	104	0.04		Stake-hole associated with palisade 105
161	0.09×0.07	0.11	104	0.06		Stake-hole associated with palisade 105
162	0.08×0.06	0.05	104	0.05		Stake-hole associated with palisade 105
163	0.07 diameter	0.06	104	0.06		Stake-hole associated with palisade 105
164	0.10×0.09	0.10	104	0.05		Stake-hole associated with palisade 105
165	0.24×0.28	0.33	108	0.10		Post-hole at west terminal of palisade 109
166	1.30×0.80	0.09	167	0.30		Pit or post-holes within roundhouse
168	0.13×0.10	0.11	115	0.04		Stake-hole associated with palisade 205
172	0.41×0.36	0.16	171	0.23		Post-hole associated with palisade 105
173	1.00×0.60	0.19	174	N/A	Pottery, burnt bone	Linear pit filled with debris from hearth
175	0.45 diameter	0.50	176	0.25	Pottery	Post-hole within roundhouse
178	0.45 diameter	0.20	177	0.30		Post-hole associated with palisade 105
180	5.30×0.25	0.12	179	N/A	Burnt bone, oak	Internal groove within roundhouse
181	0.20 diameter	0.10	108	0.04		Stake-hole associated with palisade 109
183	0.43×0.40	0.14	182	0.29		Post-hole associated with palisade 205
184	0.24×0.30	0.20	121	0.18		Post-hole associated with ring-groove 122
186	0.09 diameter	0.10	182	0.05		Stake-hole cutting through post-hole 183
187	0.09 diameter	0.09	182	0.02		Stake-hole cutting through post-hole 183
189	0.50×0.40	0.35	188	0.25		Post-hole within roundhouse
190	0.29 diameter	0.13	191	0.15		Post-hole within roundhouse
192	0.08 diameter	0.06	179	0.06		Stake-hole associated with slot 180
193	0.05 diameter	0.08	179	0.04		Stake-hole associated with slot 180
194	0.08 diameter	0.06	179	0.06		Stake-hole associated with slot 180
195	0.03 diameter	0.03	179	0.02		Stake-hole associated with slot 180
196	0.64 diameter	0.22	197	0.25		Post-hole within roundhouse post-ring
198	5.30×0.34–0.86	0.36	199	*c* 0.10	Pottery Vessels 1 & 2, burnt bone, oak	Internal groove within roundhouse
201	0.30 diameter	0.16	200	0.14		Post-hole associated with palisade 205
203	14.5×0.16–0.60	0.16	202	0.10–0.20	Pottery Vessels 3, 4, 5, 6 & 7, hazel, alder	North part of ring-groove of roundhouse
205	17×0.30–0.75	0.21 (S) 0.28 (N)	204	0.10 (south end) 0.40 (north end)	Pottery, alder, oak	Palisade trench
207	0.30 diameter	0.11	206	0.20		Post-hole within roundhouse post-ring
209	0.47×0.33	0.15	208	0.22	Pottery	Post-hole within roundhouse post-ring
211	0.35×0.19	0.08	210	0.15		Post-hole within roundhouse post-ring
213	0.89×0.53	0.07	212	N/A	Stone borer	Pit
215	0.30×0.34	0.32	214	0.20	Pottery, burnt bone	Post-hole within roundhouse
219	0.09 diameter	0.07	218	0.06		Stake-hole within roundhouse
221	0.28×0.24	0.14	220	0.15		Post-hole within roundhouse
223	0.59×0.32	0.30	222	0.18	Oak	Post-hole within roundhouse
225	1.32×0.58	0.14	224	N/A		Pit
227	0.14 diameter	0.10	226	0.10		Post-hole associated with ring-groove 122
229	0.72 diameter	0.32	228	0.40		Post-hole associated with palisade 109
231	>2.00×0.35	0.14	230	0.20	Chert chip	Groove incorporating roundhouse post ring



Illus 2 West Acres site plan

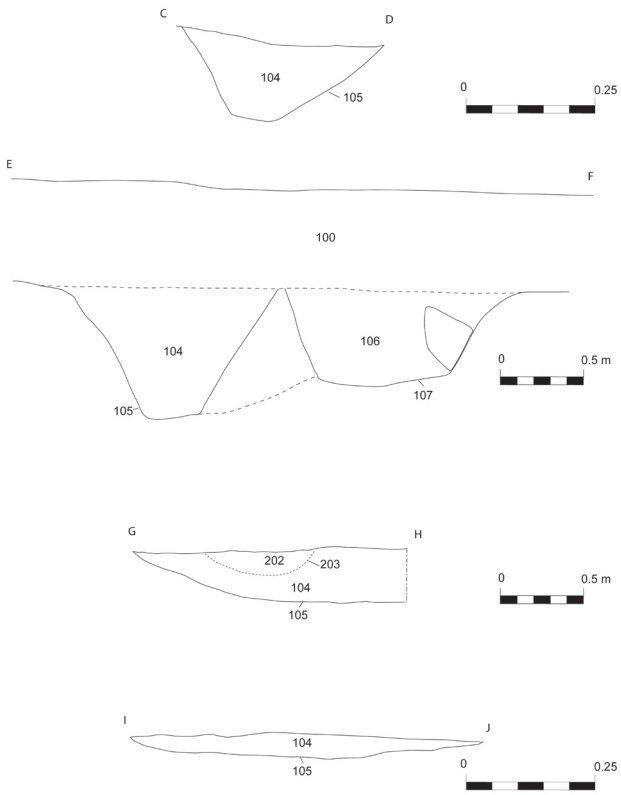


Illus 3 East-facing baulk section at West Acres illustrating truncation of site

PHASE I: PALISADE TRENCH

The earliest stratigraphic feature excavated at the site was a curvilinear trench (context 105; illus 4), which comprised a 9.92m long and up to 0.40m wide U-shaped groove filled with soft brown clayey silt (104) containing a mixture of hazel, alder and oak charcoal and a burnt flint chip. The base of this groove was no more than 0.18m wide at the east end and 0.10m wide towards its west end, indicating the maximum diameter of the posts that once filled it. The groove was up to 0.35m deep towards its western end but became much shallower close to its eastern end where it petered out after being cut by a line of post-holes and stake-holes (contexts 136 to 164) that appeared to follow the same course as the groove trench (illus 5). These post-holes and stake-holes cut not the fill but merely the base of the groove and were each filled with similar soft brown clayey silt with occasional small stones and charcoal flecks and were predominantly oval in plan ranging in dimensions from 0.34m long and 0.26m wide to 0.06m long and 0.05m wide. The estimated post diameters, based on the diameter of the basal break of slope, within this line of posts and stakes ranged from 0.18m to 0.05m. The curvilinear groove (105) was further cut by two features; its western end was truncated by another curvilinear trench (198); near its eastern end, the ring-groove trench (203) of the roundhouse cut through its fill.

Though impossible to establish a stratigraphic relationship with the curvilinear trench (105), a couple of post-holes (172 & 178) may be associated with it by virtue of their parallel proximity to it.



Illus 4 Section of Phase I palisade

PHASE II: RING-GROOVE ROUNDHOUSE AND PALISADE TRENCH

The second phase of activity at the site was represented by a ring-groove roundhouse composed of two curvilinear trenches (122 & 203), between 0.12m and 0.60m wide and 0.08–0.16m deep, both filled with similar soft, mid-brown clayey silt with occasional small stones and charcoal flecks (illus 6). Hazel and alder charcoal, five fragmented pottery vessels, flint chips and a quartz flake were recovered from these fill deposits. These grooves defined an internal area 12.5m in diameter with two gaps: 4.44m wide at the north-west and 3.26m wide at the south-east. On the southwestern part of the ring-groove (122), a post-hole (184) cut the base, but not the fill, of the trench. This was the only apparent evidence for an upright post within the ring-groove itself.

Within the space defined by the ring-groove was a circular arrangement of post-holes (196, 107, 211, 209, 207, 132 & 125) between 0.01 and 0.25m deep

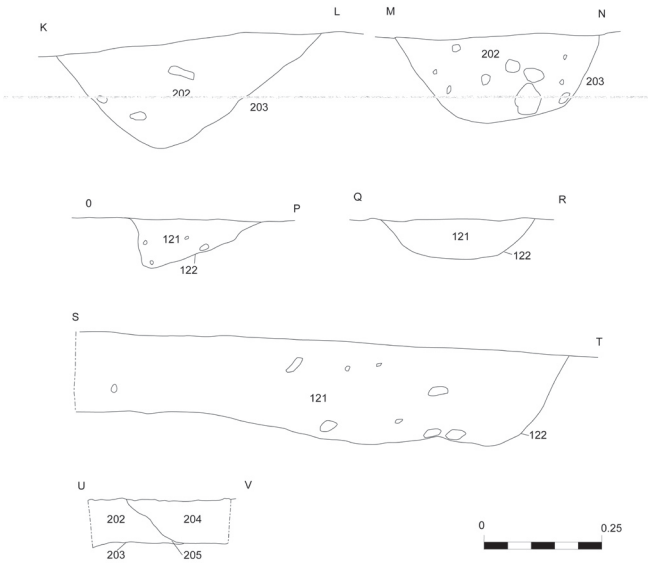
ILLUS 5 Line of stake-holes that follow course of Phase I palisade

(illus 2). This ring possibly incorporated posts set within two short curvilinear grooves (198 & 231). The post-holes and grooves held posts with estimated diameters, based on the diameters of the basal break of slope – between 0.15 and 0.30m – and were filled with similar brown clayey silt, amongst which were found pottery, burnt bone and a quartz chip. Packing stones were evident in only a few of these post-holes.

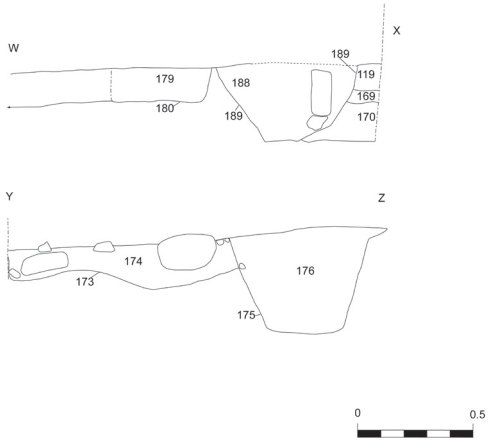
A cluster of excavated post-holes (126, 128, 130, 134, 166, 215 & 223) and unexcavated post-holes, which ranged between 0.01 and 0.42m in depth and held posts with diameters between 0.15 and 0.30m, was apparent around the centre of the ring-groove interior, particularly within the south-east quarter. These were filled with dark brown clayey silt with occasional inclusions of small stones, oak charcoal, pottery and burnt bone.

Evidence for more than one sub-phase of occupation was demonstrated by the truncation of Post-holes 209 and 126 by Post-holes 207 and 124, respectively, and the truncation of Pits 173 and 120 by Post-holes 175 and 189, respectively (illus 7). The central cluster of Pits 173, 120 and 213 were filled with dark greyish-brown clayey silt with frequent inclusions of charcoal and cracked burnt stones. Oak charcoal, pottery, burnt bone, a stone flake and a stone borer were recovered from amongst these pits. However, no evidence for in situ burning, such as heat-affected clay at the interface of fill and cut, was noted in any of these features. There were possibly two pairs of post-holes around this cluster. One pair (contexts 190 & 221) had similar depth and held identical dark brown clayey silt fills. The estimated diameters of posts, on a SW/NE axis intersecting the central pits, were also similar. The other pair of near identical post-holes (contexts 175 & 189) intersected the central pits on a SE/NW axis. These latter two posts were filled with similar dark brown clayey silt and frequent charcoal fragments and held posts with estimated diameters of 0.25m.

Close to the north-west and south-east gaps in the enclosing ring-groove were two curvilinear grooves (180 & 198) both filled with dark brown clayey silt. These measured 5.30m long, between 0.25m and 0.86m wide and between 0.12m and 0.36m deep. Burnt bone, oak charcoal and two fragmented pottery vessels were recovered from these features.



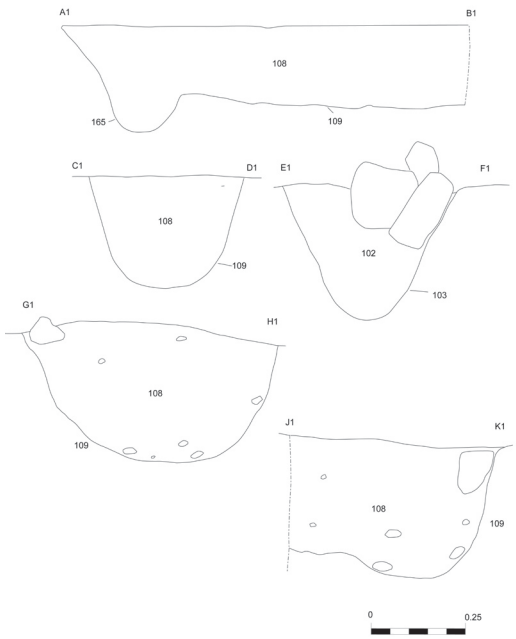
ILLUS 6 Sections of roundhouse ring-groove



ILLUS 7 Sections of internal posts within interior of ring-groove

Only Groove 180 demonstrated evidence of upright posts or stakes, its base being cut by four stake-holes (contexts 192–5) roughly 1m apart. As described above, another groove (231) 2m long, 0.35m wide and 0.14m deep also lay within the interior of the ring-groove and may have been incorporated into the post-ring enclosed by the ring-groove. A single stake-hole was evident within the base of Groove 231, situated 0.30m from its eastern terminus.

To the immediate south of the ring-groove (122) was a roughly parallel curvilinear trench (109) that defined a space or passage up to 2.5m wide and 20m long around the southern exterior of the ring-groove. This trench, filled with mid-greyish-brown clayey silt with frequent charcoal inclusions (illus 8), was up to 0.75m wide and 0.40m deep towards its eastern end and filled with large packing stones defining posts up to 0.45m in diameter and up to 0.40m wide and 0.28m deep towards its western end. Towards this western end, Trench 109 was devoid of packing stones and posts were estimated to be 0.10m in diameter. A post-hole (165) cut the base of the western terminal of Trench 109, and two post-holes (111 & 113) were situated immediately north of the western terminal, between it and the ring-groove (122). Sherds belonging to pottery Vessel 8 were recovered from near the western terminal of the palisade trench (109), while hazel, alder and willow charcoal was recovered from throughout the groove. A couple of post-holes (181 & 229) and a pit (118) filled with similar greyish-brown clayey silt may be associated with this feature.



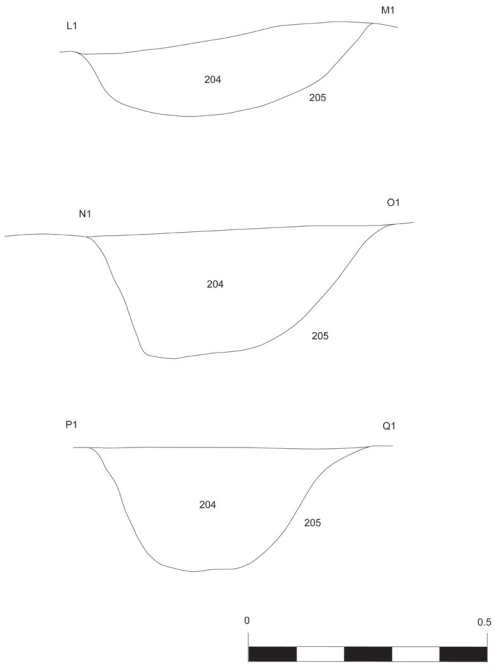
ILLUS 8 Sections of Phase II palisade

PHASE III: PALISADE TRENCH

The third phase of activity on the site was represented by a curvilinear trench (context 205), which defined a crescent arc and cut the northern side of the ring-groove (202). This curvilinear trench was of varying width (up to 0.75m wide) and was 0.28m deep at its northern terminal and 0.21m deep at its southern terminal (illus 9). It was filled with greyish-brown clayey silt with occasional stone inclusions and discrete patches of charcoal that included alder and oak. Pottery was also recovered from the southern terminus of this feature. A series of post-holes (116, 183 & 201) and stake-holes (186, 187 & 168) filled with similar clayey silt material may be associated with this feature, by virtue of their proximity to it.

PHASE IV: MODERN FIELD DRAIN

The latest feature on site was a SW/NE aligned modern field drain (context 103) that terminated before reaching the ring-groove.



Illus 9 Sections of Phase III palisade

POTTERY

Ann MacSween

Sherds from seven substantial bucket- or barrel-shaped vessels were recovered during the excavations of the roundhouse, from two contexts: 199 (the fill of curvilinear trench 198 within the roundhouse 'interior') and 202 (the fill of the curvilinear trench comprising the ring-groove roundhouse). All of the vessels are thick-walled (up to 21mm) and the rim diameters that could be estimated are in the range 300–380mm.

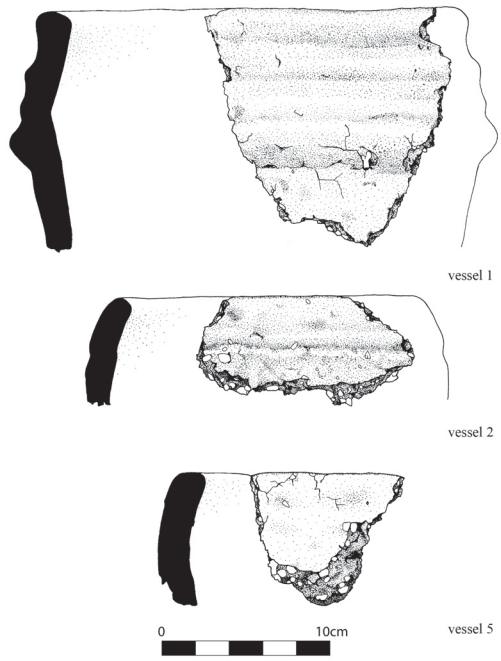
Rim form could be determined in five cases (illus 10 & 11). In all cases, the lip of the rim is flat or has an interior bevel, indicating that lids, possibly of stone, were being used. Two of the vessels, Vessel 2 and Vessel 7, have an inverted profile, whereas Vessel 1, Vessel 5 and Vessel 6 are straight or very slightly inverted. Ridging or cordons were noted on three of the vessels. Vessel 1 has a pronounced cordon 60mm below the exterior lip and two more slight ridges above it. Vessel 6 has two cordons, the upper one about 60mm below the lip and the lower one 14mm below that. Vessel 2 has at least two ridges on the upper portion of the vessel. This ridging is probably functional, to provide a means of gripping the vessels.

The exterior surfaces have been given a 'wet-hand' smoothing, with the interior surfaces being left less well finished; in the case of Vessel 2 the coil junctions have not been smoothed over in the interior. Sooting was noted on the exterior surfaces of most vessels, indicating that they were used on or near the hearth. The vessels are all very similar in fabric, comprising fine clay with 60–80% of angular rock fragments, which were identified as basalt in Dixon's thin section analysis report below. The pottery is in general very friable, due to the amount of temper that has been used. In section, the vessels are grey with red, brown or buff surfaces, indicating a short firing.

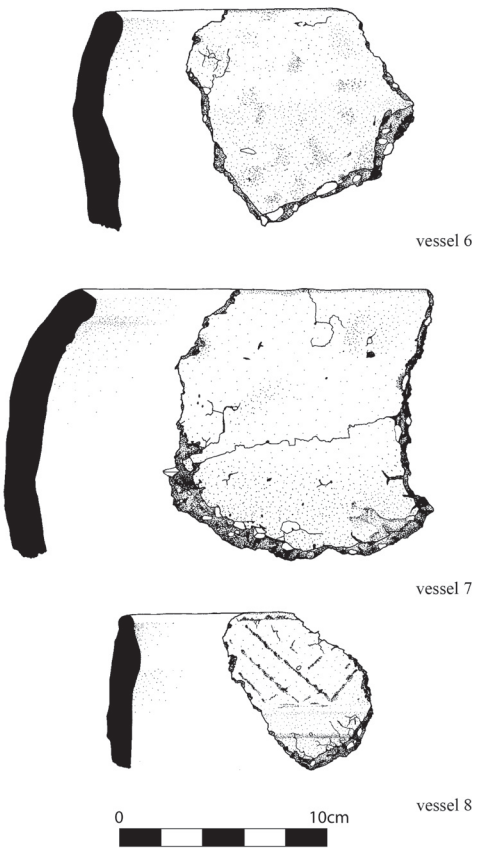
The amount of pottery from a single find spot which could be attributed to one vessel suggests that – in the cases of at least Vessel 1, Vessel 5 and Vessel 7 – whole vessels broken in situ are represented.

A number of small abraded sherds in similar fabrics to the vessels from the curvilinear trenches of the ring-groove roundhouse were recovered from features in the centre of the roundhouse. These fragments are listed in the catalogue.

Two sherds from an eighth vessel were recovered from the fill (108) of the palisade trench (context



Illus 10 Pottery vessel rims 1, 2 & 5



ILLUS 11 Pottery vessel rims 6, 7 & 8

109). These sherds are much abraded but it seems that the vessel had a rounded rim below which was a panel of decoration bounded on the lower side by a slight ridge. The decoration was probably impressed to have formed a lozenge-based pattern.

CATALOGUE OF THE POTTERY

Vessel 1, Context 199 This comprised sherds representing much of a large bucket-shaped vessel. The rim has an interior bevel and a slight lip to the exterior. 25mm below the lip is a slight ridge 8mm wide, with a further slight ridge 46mm below the exterior lip. 60mm below the exterior lip is a cordon 28mm wide and *c* 14mm deep. A thin slip or wet-hand finish has been applied over the exterior surface including the ridges. The vessel is coil-constructed with N-shaped junctions. The fabric is fine clay with *c* 80% of angular rock fragments which has fired hard and is grey with buff surfaces. The exterior surface (and the bevel of the rim), especially above the cordon, is sooted, with patches of residue. A few basal sherds were recovered, but these are from the angle or the flat part of the base. Some sherds are abraded with the exterior slip having worn off and the temper protruding through the surface. Most sherds are in a fresh condition although the fabric is fairly friable. 6 rim sherds; 214 body sherds; 17 basal sherds. Th 18mm; Dia 360mm; Wt 9292g

Vessel 2, Context 199 This comprised sherds from a vessel with an inverted rim. There are two slight ridges below the rim: 17mm and 38mm below the exterior lip. The vessel is coil-constructed with N-shaped junctions. The coil junctions have not been smoothed over in the interior. The exterior of the vessel has been given a wet-hand finish but the exterior surface is still fairly rough. The fabric is fine clay with *c* 80% of angular rock fragments which has fired hard and is grey with buff surfaces. The exterior surface is sooted. The sherds are slightly abraded. 5 rim sherds; 20 body sherds. Th 15mm; Dia 320mm; Wt 1208g

Vessel 2, Context 199, Additional sherds This comprised 18 body sherds, *c* 40 fragments and crumbs. The fabric is fine clay with *c* 80% of angular rock fragments up to 8mm long which has fired hard and is grey with buff surfaces. Th 14mm; Wt 323g

Vessel 3, Context 202 This comprised sherds from a thick-walled vessel with a slightly inverted rim with a flat lip. The exterior surface is slipped or wet-hand finished on the exterior. The fabric is fine clay with *c* 80% of angular rock fragments which has fired hard and is grey with buff/brown surfaces. The exterior surface is sooted. 1 rim sherd, 25 body sherds. Th 21mm; Wt 1066g

Vessel 4, Context 202 This comprised body sherds. The fabric is fine clay with *c* 60% of angular and rounded rock fragments which has fired hard and is grey with a red exterior surface. The interior surface is sooted. The sherds are slightly abraded. 3 body sherds. Th 11mm; Wt 128g

Vessel 5, Context 202 This comprised rim and body sherds from a ridged vessel. The rim has a slight internal bevel. The fabric is fine clay with *c* 80% of angular rock fragments which has fired hard and is

grey with buff surfaces. The exterior surface is sooted, heaviest below the rim. 7 rim sherds; 18 body sherds; 13 fragments. Th 18mm; Dia 380mm; Wt 2604

Vessel 6, Context 202 This comprised sherds from a cordoned vessel. The rim has an interior bevel. There are two applied cordons: the upper one is 12mm wide and *c* 60mm below the lip of the vessel and the lower one is 14mm below and 12mm thick. The exterior surface has been given a wet-hand smooth. The fabric is fine clay with *c* 80% of angular rock fragments which has fired hard and is grey with brown surfaces. The exterior surface is sooted. 7 body sherds, 7 rim sherds, 2 fragments. Th 14mm; Wt 860

Vessel 7, Context 202 This comprised sherds from a large coil-constructed vessel with an inverted profile. The rim has a flat lip. The fabric is fine clay with *c* 70% of angular and rounded rock fragments which has fired hard and is grey with red surfaces. There is a band of residue below the lip on the exterior. The sherds are fairly fresh. 5 rim sherds; 81 body sherds; 1 basal sherd. Th 18mm; Dia 300mm; Wt 3461

Vessel 7, Context 202, Additional sherds This comprised one body sherd and seven fragments. The fabric is fine clay with *c* 80% of angular rock fragments up to 26mm long which has fired hard and is grey with a brown exterior margin. Th 15mm; Wt 30

Context 123 This contained four body sherds, six fragments and three basal sherds from the exterior angle. The fabric is fine clay with *c* 80% of angular rock fragments up to 8mm long which has fired hard and is grey with a red exterior margin. Th 15mm; Wt 109

Context 125 This contained a single sherd from the angle of a flat base. The fabric is fine clay with *c* 80% of angular rock fragments up to 13mm long which has fired hard and is grey with a red exterior surface. Internal surface missing; Wt 8

Context 170 This contained a single body sherd. The fabric is fine clay with *c* 80% of angular rock fragments up to 5mm long which has fired hard and is grey with a buff exterior margin. Th 13mm; Wt 20

Context 216 This contained a sherd from the flat part of a base and three fragments. The fabric is fine clay with *c* 80% of angular rock fragments up to 14mm long which has fired hard and is grey with brown margins. The interior surface is sooted. Th 21mm; Wt 38

Context 174 This contained one body sherd (exterior fragment). The fabric is fine sandy clay with *c* 60% of angular rock fragments up to 7mm long which has fired hard and is grey with a buff exterior margin. Wt 2g

Context 176 This contained one sherd, possibly an exterior fragment. The fabric is fine clay with *c* 60% of angular rock fragments up to 4mm long which has fired hard and is grey. The exterior surface is sooted. Th 8mm; Wt 4g

Context 208 This contained one body sherd, exterior surface missing. The fabric is sandy clay with *c* 80% of rock fragments up to 7mm which has fired hard and is grey. The interior surface is sooted. Wt 9g

Context 204 This contained one body sherd, exterior surface missing. The fabric is fine sandy clay with *c* 80% of small rock fragments which has fired hard and is grey. The interior surface is sooted. Wt 7g

Vessel 8, Context 108 This comprised an abraded rim with a rounded lip. Below the lip on the exterior is a panel of decoration 35mm deep, probably impressed and probably forming a lozenge-based pattern. Below this panel is a slightly raised band *c* 14mm wide. The fabric is fine clay with *c* 60% of rock fragments which has fired hard and is grey with red surfaces. Th 15mm; Wt 100g

PETROGRAPHIC ANALYSIS

John Dixon

Three sherds from the West Acres assemblage were submitted for thin section analysis. All three sherds had abundant coarse, basalt fragments as temper, in a fine-grained clay matrix. In each sherd section the coarse temper was composed exclusively of fragments of one single basaltic rock type, different in each sherd, which is most consistent with the deliberate incorporation of crushed fragments of one single lava lump. The West Acres site appears to be within the northern edge of the extensive tract of Carboniferous lavas which outcrops from Strathaven

to the south-east, through Eaglesham, to Greenock in the north-west, the so-called Clyde Plateau lavas. The dominant three basaltic rock types present are quite consistent in their mineralogy, with derivation from within this tract or even from the Kilsyth Hills to the north of Glasgow where lavas of a similar type and age occur. In the opinion of British Geological Survey geologists consulted, there is no prospect of being able to identify a more precise location for the source.

The clay paste in each case contained some quartz grains, other possibly non-basalt-derived fragments of feldspar and some mica and clay mineral flakes. Two of the pastes were quite rich in this fine silt fraction and also contained a small percentage of very small fragments of fine-grained basaltic lava of similar texture to the coarse temper. The third was much finer-grained still and the only recognizable grains were clay-mineral or mica flakes. The nature of the clay paste component suggests that it was derived from glacial deposits which would have contained material derived in turn from the various quartz-bearing formations in and around the Midland Valley.

For these three pottery samples from West Acres, the simplest explanation is therefore that both clay and temper were locally derived. Although the basalt textures and mineral assemblages are different in the three, they could still have been derived from essentially the same locality as blocks in a stream bed draining the lavas. The different lava textures could have been from successive flows in the lava pile. The silty clay could have been a superficial deposit on the surface of this exhumed lava landscape.

DISCUSSION

Ann MacSween

The depositional pattern of the pottery, comprising large numbers of sherds from the same vessels grouped together, indicates that the vessels were smashed into the curvilinear trenches once the house was abandoned and the fences pulled out. It is possible that the vessels were too heavy to transport but were destroyed rather than being left in situ within the abandoned house.

The assemblage from West Acres is typical of what is currently recognized as 'Later Bronze Age domestic pottery' in Scotland, often labelled in the literature as 'Flat-rimmed Ware', which possibly represents continuity from the bucket-shaped vessels of the Grooved Ware tradition. The assemblages are not generally decorated. In Lowland Scotland, the relatively small number of excavations of domestic Later Bronze Age sites (see Ashmore 1996, 91 & 103 for summary maps) has meant that the Bronze Age domestic pottery of southern Scotland is as yet poorly defined.

Traits which recur in assemblages of the Later Bronze Age in Scotland include bucket- or barrel-shaped vessels, plain, flat or slightly splayed rims, a general lack of decoration and in some cases a band of fingertip corrugation around the upper part of the vessel. Assemblages have been recovered from sites throughout mainland Scotland (see, for example, Halliday 1988 for a summary of assemblages from the east of Scotland). From a British Isles perspective, they are part of a larger tradition with parallels in assemblages from much of the north of England and Ireland (see Gibson 2002, 107–8).

While there are subtle differences from assemblage to assemblage, such as that from Lairg in Sutherland, which included a vessel with twisted cord decoration between the fingertip grooves (MacSween 1998), the overall impression is of shared traits, probably largely dictated by function. Most of the vessels represented in these assemblages are large and heavy and would have been difficult to move when full. While there is some sooting on the West Acres pottery, it is less than what would have been expected from vessels that were repeatedly used for cooking and they may instead have been storage vessels or used for gentle heating near the hearth. This implies that smaller, non-ceramic, cups and bowls were also being used.

Within the south-west there are close parallels for the West Acres assemblage in the assemblage from Lintshie Gutter, an unenclosed platform settlement near the head of the Clyde Valley in Crawford, Lanarkshire (Terry 1995, 369–427). The vessel illustrated as 13.22 in Terry (1995), in particular, with its pronounced cordon with two slight ridges above, is very similar to Vessel 1 from West Acres, in diameter as well as form. Unfortunately there was no C14 date associated with this vessel, and the dates for the site have a 2-sigma range of 2580–1400 cal BC (ibid, 423). At both Lintshie Gutter (Smith 1995, 401) and West Acres, cordoned vessels are included in the assemblages, emphasizing the similarities between funerary and domestic assemblages in this period. This has been noted in the past, for example by Jobey in his analysis of the pottery from Green Knowe, Peeblesshire (Jobey 1981, 87).

The absence of vessels with a high carinated shoulder in the West Acres assemblage is perhaps worth mentioning here. These are present alongside vessels with fingertip ridging at, for example, Lintshie Gutter, Lanarkshire (Smith 1995, illus 10.12) and Blairhall Burn, Dumfriesshire (Cowie 1998, illus 12.50) but are also absent at, for example, Dalnagar, Perthshire (Coles 1962) and Myrehead, Falkirk (Barclay 1983, 58–9). Whether this will prove to be a chronological or cultural indicator, or simply a product of the relatively small number of vessels recovered from each site, should become clear with the excavation of more assemblages from well-dated contexts.

The currently available dates do not go far in refining our current understanding of the chronology of the ceramic assemblages in Later Bronze Age Scotland. The main settlement at Lintshie Gutter, for example, is interpreted as dating broadly to the first half of the second millennium BC (Terry 1995, 423). A major problem in interpretation is that it is the structural phases rather than the pottery that is being dated, with consequent problems in relating the dates to the sherds (see, for example, Cowie 1998, 72). Presenting some results from the National Museum of Scotland's Dating Cremated Bones Project, Sheridan (2003, 208) has noted with reference to Bucket Urns that the 'type' certainly spans several centuries, with funerary pottery that fits the 'Bucket Urn' description in use as early as first half of the second millennium BC in some parts of Scotland and as late as 800 BC elsewhere. For West Acres, C14 dates obtained for contexts with pottery (108, 123, 202 & 204) indicate a date in the second half of the second millennium BC. Taken with the dates for the assemblage at Lintshie Gutter, it is suggested that there was little change in the nature of the domestic pottery in this part of south-west Scotland, for much of the second millennium BC.

CHIPPED STONE

Rob Engl

A total of 10 pieces of chipped stone was retrieved from the excavation at West Acres. A complete catalogue of the material is given below.

The assemblage is composed of four pieces of flint, two of chert and four of struck quartz. One small fragment of the flint is burnt. All the items are inner pieces. Given the general condition of the assemblage, the materials probably all came from local river gravels. Where present, the cortex appears smooth and water-rolled, indicating a coastal or riverine pebble source. The quartz is mostly a fine-grained, translucent grey variety and appears to have good flaking properties.

Only two of the artefacts appear to have been used as tools. Item no 1 is a chocolate brown inner flint flake and has a denticulated right lateral edge. This probably occurred through use as a cutting tool. Item no 2 is a probable borer made on a small fragment of quartz rock crystal. The item has been burin-struck, creating a convergent working point. Of the other artefacts, two are small flakes while the rest are in the form of small chips.

CATALOGUE OF CHIPPED STONE

All artefact measurements are shown in millimetres and ordered length × breadth × thickness. Context and find numbers are given, followed by a short description of the artefact.

Context 123 Utilized flint flake with hinge fracture and pronounced bulb of percussion. The right lateral edge is denticulated through use. Probably as a cutting tool. 25 × 16 × 5; 2.90g

Context 212 Borer. Bilaterally burin-struck fragment of rock crystal forming convergent working point. 13.5 × 10 × 6

Context 114 Small regular flake of translucent quartz. 14 × 10 × 4

Context 170 Bladelike flake. 17 × 7 × 4

Context 104 Small chip of burnt, calcined flint. 7 × 3 × 2

Context 230 Small chip of dark grey chert. 10 × 6 × 2

Context 106 Small chip of translucent quartz. 9 × 5 × 2

Context 122 Small chip of grey flint. 10 × 5 × 2; Small chip of grey flint. 5 × 3 × 2; Small flake of quartz. 13 × 8 × 6

DISCUSSION

The limited size of the assemblage and the scarcity of diagnostic artefacts make any cultural and chronological inferences very difficult. The worked

pieces were probably used in a number of relatively expedient domestic tasks. There is evidence that a poorly controlled hard-hammer reduction technique was applied to the assemblage. This technique is often employed to work intractable and small raw materials such as quartz and small gravel-derived nodules of flint. The expedient use of quartz in particular is a recurring theme in lithic assemblages of later prehistoric dates within Scotland.

BURNT BONE

Murray Cook

A small collection of bones was recovered during the sieving of context samples. All the bones were burnt, therefore representing either cooking debris or rubbish thrown into a fire. Only two bones were identifiable to species. These comprised an ovicaprid (sheep or goat) proximal phalange (toe bone) from the fill of a post-hole (126) and an ovicaprid (sheep or goat) carpal/tarsal fragment (foot bone) from the primary fill (170) of a pit (120). The survival of ovicaprid bones is probably due to their small size. Similar bones from cattle would be broken into less recognizable fragments (one possible large mammal bone, perhaps cattle, was found from context 123). It is perhaps worth noting that all fragments of burnt bone recovered during the sieving process derived from features within the roundhouse.

SOIL CHEMISTRY

Robin Inglis

The characterization and comparison of the different sediments within a site can allow some degree of interpretation on their depositional history.

All sampled contexts were subjected to four analyses, using soil in a field-moist condition. pH was determined in a 1:2.5 soil to distilled water mixture. Loss on ignition (LOI) used *c* 10g oven-dry soil ignited to 400ºC for four hours. Determination of phosphate used a spot test for easily available phosphate (Hamond 1983). Samples were rated on a three-point scale using the time taken for a blue colour to develop following the addition of the two reagents to the sample. The scale was high (0–30 seconds), medium (30–90 seconds) and low (more than 90 seconds). Calcium carbonate content was assessed semi-quantitatively using a simple field test (based on Hodgson 1976, 57) and the samples assigned to the classes shown in Table 2.

Table 2
Calcium carbonate content in soil chemistry samples (based on Hodgson 1976, 57)

Test rating	*$CaCO_3$ (%)*	*Description*
0	0.1	Non-calcareous
1	0.1–1	Non- to very slightly calcareous
2	1–5	Slightly calcareous
3	5–10	Calcareous
4	10+	Very calcareous

RESULTS

The different sediments gave very homogeneous chemical characteristics that make secure conclusions very difficult. The pH of the samples was consistently slightly acidic: the lowest result came from context 185 and was 5.22; the highest pH was 6.69 and came from context 200, while the average pH was 5.98. The LOI revealed that the majority of the samples had a non-humose composition; that is under 7% organic matter. Only 12 samples had more than 7%, and all of these were under 10%. These samples are classed as humose, although due to the narrow margin over the 7% boundary, they can only be classed as mildly humose. The highest LOI came from context 179 and was 9.2% organic matter; the lowest was 1.9% and came from context 104 (north terminal end); the average was 5.4%. The phosphate content of the sediments analysed was split between low and moderate. Forty-two of the samples had moderate phosphate content, leaving 24 with low phosphate. There was no calcium carbonate noted within any of the samples tested.

DISCUSSION

The results from the various analyses give a very homogeneous reading throughout the field. However, there are some anomalies that may assist in the archaeological interpretation.

The pH and calcium carbonate results do not allow interpretation as they are too similar across the site. Calcium carbonate was not detected from any of the samples. The pH readings were consistently low, perhaps the result of the natural acidity of the underlying C horizon and solid geology, from which the fill sediments are derived.

The phosphate content and LOI did vary to a small degree across some features on site. In archaeological deposits the main sources of phosphorous are domestic refuse, food waste, plant and animal remains, excreta and bodies. Unfortunately, phosphorous can be extremely soluble and, in damp conditions, a great deal of the organic phosphorous can be lost through leaching. The more robust mineral phosphates are usually found when the phosphorous is either taken in by plants, animals or humans. There was a strong correlation between the LOI and phosphate determination with charcoal and burnt bone inclusions at the West Acres site. This was particularly evident within the main roundhouse structure (contexts 122/203). Most of the features within this ring-groove perimeter had a moderate phosphate and a higher LOI fraction and, along with charcoal and burnt bone inclusions, support the theory that these features were internal to the roundhouse phase and were open during its life, as the chemical indicators suggest a contemporaneous depositional environment. These features could possibly have been used as either refuse pits or post-holes. However, four of the features did not share the same chemical

Table 3
Plant remains and other components from the washovers from bulk-sieved samples from West Acres. Washover volumes given as '+' were <10 cu cm. Scores rendered as '+' or '++' for charcoal, grain and other components are on a four-point semi-quantitative scale (see text), with '1' standing for a single specimen for *Hordeum*; other figures represent largest dimensions of clasts (in mm). Modern contaminants are: E = earthworm egg capsules; I = insects; R = root/rootlet fragments; S = uncharred weed seeds. Nomenclature follows Tutin et al (1964–80)

Context	*Sample*	*Sample vol (litres)*	*Washover vol (cu cm)*	*Charcoal*	*Hordeum grain*	*Other components*	*Modern contaminants*
104	1041	10	+	–	–		R+
104	1042	10	+	–	–		R+
108	1	7	+	+5	–		R+
108	1081	11	+	+2	–		R+
108	1082	9	+	+5	–		E+ R+
114	2	2	80	++10	–	*Corylus avellana* L nutshell +5	R+
119	3	4	+	+5	+		R+
119	1191	10	15	+5	+	*Corylus avellana* L nutshell +5	R+
121	121	10	+	+2	1	?cinders +5	R+
122	122	7	+	+3	1		R+
123	123	17	+	+2	+		R+
126	5	5	20	+5	+	'char' ++5	R+
127	127	10	+	+2	+	*Polygonum persicaria* L seed +	R+
133	133	3	+	+5	+		E+ R+
167	167	10	+	+2	++	*Polygonum persicaria* seed +	E+ R+
174	174	10	90	++10	+		R+
176	176	10	+	–	+		R+
182	182	9	55	++10	–	*Corylus avellana* nutshell +5	E+ R+
188	188	4	+	+5	+		
199	1991	10 or 32	+	+5	+		E+ I+ R+
199	1992	10 or 32	25	+5	–	*Gramineae*/*Cerealia* (culm fragments) +	E+ R+
202	10	2	+	+2	–	Indet seeds +	R+
202	2021	12	+	+5	–		R+
202	2022	10	+	+5	+		R+
204	11	1	25	++10	–		R+
204	2042	12	+	+5	–		R+
206	206	2	+	+5	–		E+
212	212	8	+	–	+		R+
226	226	1	+	+5	–	*Polygonum persicaria* seed +; *Bilderdykia convolvulus* (L) Dumort fruit +	R+
228	228	10	15	+5	+	*Polygonum persicaria* seed +	R+

signature. Contexts 166, 211, 209 and 222 all had low phosphate, although contexts 166 and 222 did have a higher LOI. These features may represent later or earlier features incorporated into the roundhouse outline.

Outwith the central roundhouse, it was more difficult to make secure conclusions from the chemical data. The moderate phosphate levels continued to appear across other features, including the other linear features. However, the series of post-holes to the north-east of context 105 does not compare well with the other linear features. This may exclude this line of features (stake-holes) from being part of the same phase of activity as the rest of the feature, or this may indicate that these stake-holes served a very different function from context 105.

Features 109, 205 and 105 all gave similar chemical results and are therefore very difficult to distinguish. The high phosphate of most of the features on site may be the result of intensive agriculture within the topsoil during modern times although the low phosphate level observed in the topsoil would imply rapid leaching of phosphate through the soil profile. Alternatively it could be due to the influence of animals, plant remains, domestic refuse, excreta or human remains during the lifespan of the site.

CHARRED MACROPLANT

Alan Hall

Macrofossil plant remains from 30 samples were examined. The samples had been disaggregated with water and sieved, the washovers being collected on 0.3mm mesh. For some very small washovers, the material was inspected within the polyethylene bag in which it had been submitted; for larger samples, the material was resieved into fractions of 4, 2, 1 and 0.3mm, and some or all of each fraction was examined under a low-power binocular microscope. Plant remains and other components of the washovers were recorded using a four-point semi-quantitative scale from 1 (one or a few fragments or a trace) to 4 (the bulk of the volume of the original sample, very abundant remains).

The original samples varied in size from 1 to 17 litres, the washovers from a mere trace of material to at most about 90cu cm. Modern roots were generally present, and some of the rather few 'weed' seeds noted were uncharred and probably of recent origin.

Semi-quantitative information concerning the washovers is shown in Table 3. Although charcoal fragments >4cu mm had been removed prior to this analysis, most of the samples yielded at least a little charcoal (mostly from diffuse-porous taxa), sometimes a considerable quantity. With this there were often small numbers of cereal grains (exclusively barley and probably mostly naked barley, *Hordeum vulgare* var *nudum*) and a very few charred weed seeds. A little charred hazel (*Corylus avellana* L) nutshell was also present in some samples. Some unknown material consisting of a somewhat resin-like organic substance with a surface characterized by pustule-like morphology was quite frequent in Sample 5.

Preservation of charcoal was generally quite good although this material and the charred cereal grains were often somewhat 'silted'.

DISCUSSION

No particular light can be shed on the nature of the site other than that there was some use of cereals (barley), but no direct evidence for crop cultivation or processing, and some collection of wild-growing resources (a very little hazel nutshell). The differences between contexts in the concentration of charred cereal grains, which were almost always very sparse, is probably of no significance.

Whether the charcoal represents material burnt deliberately as fuel or from the destruction of structural timber cannot be determined from these small fragments. No twig material was available. The relatively unrounded nature of most of the charcoal fragments perhaps suggests relatively rapid accumulation of sediment rather than slow accumulation with reworking.

CHARCOAL

Anne Crone

Charcoal samples from 19 contexts were submitted for assessment as to their suitability for radiocarbon dating. The assessment consisted of a visual scan of each sample to determine whether oak was present, because long-lived fragments of this species should be avoided, and whether distinct fragments of non-oak roundwood were present, because this type of short-lived material is ideal for radiocarbon dating. The samples were also scanned to assess the degree

Table 4
Charcoal identified at West Acres

Feature and context no	*Weight (g)*	*Species*	*No of fragments*
Early palisade, context 104 (fill of 105)	2.84	*Corylus avellana* (Hazel)	4
		Alnus glutinosa (Alder)	5
		Quercus sp (Oak)	1
Middle palisade, context 108 (fill of 109)	17.17	*Corylus avellana* (Hazel)	3
		Alnus glutinosa (Alder)	7
		Salix sp (Willow)	1
Internal post-hole, context 123 (fill of 124)	11.23	*Corylus avellana* (Hazel)	7
		Alnus glutinosa (Alder)	2
		Betula sp (Birch)	1
Ring-groove roundhouse, context 202 (fill of 203)	0.56	*Corylus avellana* (Hazel)	4
		Alnus glutinosa (Alder)	3
Later palisade, context 204 (fill of 205)	5.07	*Alnus glutinosa* (Alder)	7
		Quercus sp (Oak)	3
Internal pit, context 119 (fill of 120)	17.24	*Quercus* sp (Oak)	–
Internal post-hole, context 127 (fill of 128)	4.24	*Quercus* sp (Oak)	–
Internal groove, context 179 (fill of 180)	20.66	*Quercus* sp (Oak)	–
Internal groove, context 199 (fill of 198)	74.58	*Quercus* sp (Oak)	–
Post-hole, context 222 (fill of 223)	10.51	*Quercus* sp (Oak)	–

of fragmentation and thereby the ease with which species identification could be carried out.

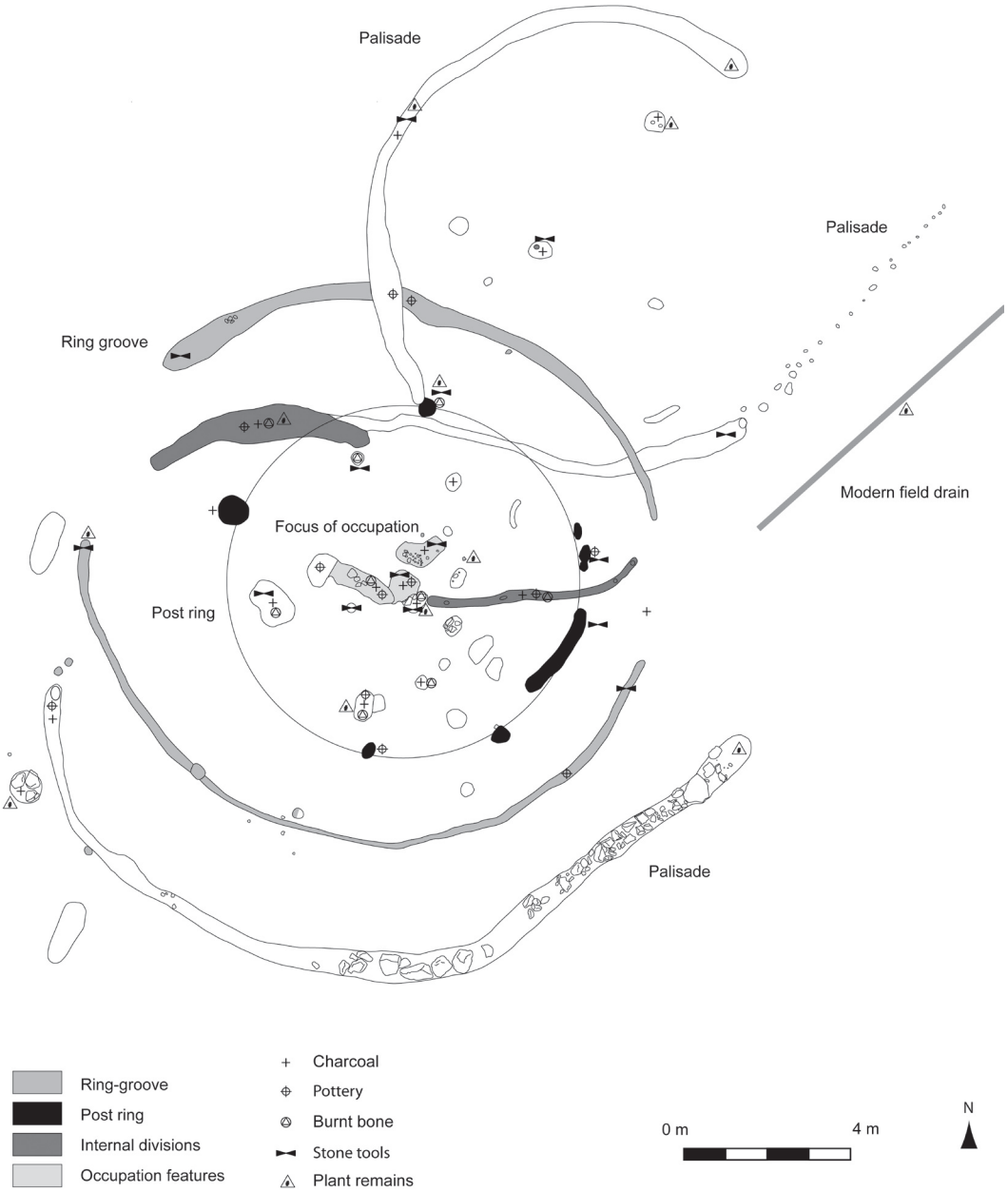
As oak was present in at least seven of the 19 contexts, it was decided that radiometric dating of bulk samples was undesirable in case small fragments of oak, which had gone undetected, might skew the sample. It was therefore recommended that AMS dating of single entities would be undertaken, particularly of discrete fragments of roundwood (Table 4). The hypothesis set out for the dating strategy was that, because the charcoal from each context would derive from short-lived material, the charcoal from each context would represent a single event or activity and not be a mixture of varied-age charcoal. Because of the widespread distribution of charcoal across the site and the absence of any large concentrations (with the exception of Pit 198), it was recommended that, wherever possible, three single entities from one context would be submitted for dating. As a maximum of 15 dates were envisaged this meant that five contexts should be targeted for dating, at least one from each phase (Table 5). Four contexts were suggested on purely stratigraphic grounds (104, 108, 202 & 204). The fifth context would be a feature within the roundhouse (123).

GENERAL DISCUSSION

Despite the plough truncation of the archaeological remains, which had removed any original surface, a sufficient amount of evidence survived at West Acres to provide some insight into the nature of the occupation of this site.

The most coherent structure apparent at West Acres was the roundhouse. The outer wall of this roundhouse was defined by the ring-groove and enclosed an area 12.5m in diameter. While West Acres falls within the size range of prehistoric roundhouses recorded across Britain (Hill 1984, 83), it is placed within the upper size

range of nearby contemporary roundhouses, such as Green Knowe, Peeblesshire, where roundhouses ranged between 7.7m and 10m in diameter (Jobey 1981, 78–80); Lintshie Gutter, Lanarkshire, where roundhouse diameters ranged between 8m and 11m (Terry 1995, 379–91); and Lamb's Nursery, Midlothian (Cook 2000, 98) and Picketlaw, Renfrewshire (Alexander 2003), where roundhouse diameters measured 12m. The defining ring-groove at West Acres was largely



ILLUS 12 Ring-groove roundhouse at West Acres

devoid of post impressions. Only at one point, on the south-west side, was a post evident and this may represent a secondary strengthening of the outer wall. That no stake-holes, post-holes or even packing stones were discernible at the base of the rest of the ring-groove cannot be explained away by ground conditions because stake-holes, post-holes and packing stones were recorded within other features on the site. However, if the wall cannot be visualized as composed of upright posts, or even upright supports, it must have comprised wattle panels that did not require fixing to the ground but were presumably either fixed onto a sleeper beam, as envisaged at other roundhouses where little or no trace of an outer wall has survived (Guilbert 1981, 299), or simply attached to other wattle panels end to end. Although outer walls composed of wattle screens were similarly suggested for the Platform 5 roundhouse at Lintshie Gutter (Terry 1995, 422) and second phase Platform 2 roundhouse at Green Knowe (Jobey 1981, 78), the West Acres roundhouse apparently differs in the way the wattle screens were anchored. While at Lintshie Gutter and Green Knowe upright posts placed c 40–50cm apart apparently held the wattle screens in place, at West Acres the ring-groove trench itself may have provided the only anchor that this continuous wattle wall required.

An inner ring measuring 8.5m in diameter and composed of at least seven posts, each measuring between 0.15 and 0.30m in diameter, lay within the space defined by the ring-groove (illus 12). The ratio between the diameter of the ring-groove and the inner post-ring was 1:0.68, not significantly different from Hill's optimum ratio of 1:0.707 (Hill 1984, 81). Given the diameter of the posts of this inner ring, compared to the general width envisaged for the ring-groove trench, these appear to be the weight-bearing posts that would be required to support the ring-beam needed to exert an outward pressure against the roof (Reynolds 1982, 51).

The post-ring also appeared to incorporate a curvilinear groove on its south-east side that may have formed an internal division within the roundhouse. This was not the only internal division apparent. Probably associated with the south-east entrance was an internal wattle fence, aligned east/west, fixed into a narrow groove with small stakes placed roughly 1m apart, separating access into the north and south sides of the roundhouse from this direction. Another curvilinear internal feature was apparent inside the north-west entrance and though this too may have divided access into the internal space, this feature was considerably wider than the others and showed no evidence of stake-holes at its base. It was not possible to discern any obvious pattern amongst the remaining post-holes but it is perfectly feasible, given the size of their estimated post diameters, that many of these fulfilled weight-bearing functions too, though probably belonging to different phases of occupation.

Although it cannot be confirmed that the modest and mixed quantities of oak, alder, hazel and willow charcoal fragments distributed across the site derived from material burnt deliberately as fuel or from the destruction of structural timber, it should be noted that this assemblage largely corresponds to the structural wood recovered from Lintshie Gutter and Green Knowe (Terry 1995, 422).

Close to the centre of the space defined by the post-ring was the largest cluster of charcoal-rich deposits, which filled three pits and associated post-holes. Although none of these could be identified as a hearth, due to the absence of evidence for in situ burning at the interface between the fill and the cut of these features, it is likely that hearths or ovens were situated very close by and were not apparent only due to plough truncation of the site. While these central features are simply pits filled with the debris from a hearth or oven, it is not inconceivable that they represent the approximate location of successive hearths or ovens within the roundhouse. It is possible therefore that the pair of large post-holes that cut through two of the pits perhaps represent a structure associated with

an overlying hearth such as the support posts for a spit that reached across the hearth in a SE/NW alignment. Another pair of posts either side of the central pits may have supported another spit aligned SW/NE across the hearth area.

While the central focus of the roundhouse can be identified by the indirect evidence for hearths, the distribution of artefacts correspondingly indicates a zone of occupation closely surrounding this. Although there was a thin scatter of artefacts across the site, there was a marked concentration within the ring-groove and particularly within the inner post-ring (illus 12), a pattern that mirrors other Scottish Bronze Age roundhouses (Strachan & Dunwell 2003, 158). As Inglis noted above, the strong correlation within the roundhouse of phosphate concentration and LOI to charcoal and burnt bone distributions supports the theory that the features within this area were internal to the roundhouse and were open during its life.

In general, the stone tools, pottery vessels, burnt animal bones, barley grains and hazelnut shells that comprise the artefactual assemblage are consistent with a domestic nature to the occupation of the roundhouse, but examined in more detail the artefacts do reveal a modest amount of detail about the lifestyle of the inhabitants. The minimal sooting apparent on the potsherds indicates that the vessels were not used for cooking but were instead stored near the hearth. This not only implies that smaller, non-ceramic, cups and bowls were also probably being used but that another vessel or vessels were used for cooking. The small collection of burnt bones, recovered only from within the roundhouse, indicates that sheep or goats were consumed by the occupants. This does not exclude other animals from their diet, as cattle and pigs are common in Bronze Age contexts (Cowie & Shepherd 1997, 164) but it does associate the site with at least the produce of pastoral agriculture. The presence of barley, the dominant cereal crop in Bronze Age Scotland (Cowie & Shepherd 1997, 164; Ashmore 2001, 2), similarly connects the occupants with arable agriculture, but as no direct evidence for crop cultivation or processing was recovered, this connection might have been limited solely to the consumption of cereals rather than the growing of cereals. The consumption of wild-growing resources, such as hazelnuts, was also apparent at West Acres.

While the distribution of artefacts indicates where the focus of occupation within the West Acres roundhouse was, the distribution of features indicates the sub-division of the interior space (illus 12). At the south-east entrance a wattle fence, organized in a radial manner, appears to have channelled access into the north and south zones of the roundhouse. This was perhaps associated with a concentric division incorporating the inner post-ring that divided the central interior of the roundhouse from the annular exterior of the roundhouse, a pattern apparent in other Bronze Age roundhouses (Terry 1993, 61; Cook 2000, 109). It is perhaps worth noting also that the inner post-ring was not precisely concentric with the ring-groove, a pattern also evident in other Bronze Age roundhouses such as Lamb's Nursery, Midlothian (Cook 2000, 109) and Platform 5, Lintshie Gutter, Lanarkshire (Terry 1995, 385), where the excavators postulated that the positioning of the post-ring may have been affected by social or functional as well as engineering factors, especially when it defined the central and outer annular spaces. The variation of the annular space within the West Acres roundhouse, between 3m at the west side and 1.5m at the east side, may have been deliberately planned, for instance, to allow greater space at the west side, though there survived no evidence to suggest why this might be desirable. At Ednie, Aberdeenshire, the outer annular space was similarly devoid of features, which led the excavators to believe that it had been provided with a floor surface of organic materials (Strachan & Dunwell 2003, 158). On the other hand, the outer annular space may have been reserved for animals, which may account for the wide entrances and need to channel access into different interior areas from the

south-east entrance. Further sub-division may also be hinted at by the four features that do not share the same chemical signature as the other post-holes within the roundhouse; this need not necessarily represent earlier or later features as suggested by Inglis above but may represent differential use of space within the roundhouse. An internal division of space that would prevent organic debris from entering features but would be sufficiently ephemeral to leave no sub-surface trace was suggested at Lairg, for instance, where differential erosion within the interior of House 3 was interpreted as indicative of a pallet composed of an organic and therefore archaeologically ephemeral material (O'Sullivan 1998, 104–5). The siting of the entrances, facing south-east and north-west and therefore aligned roughly with sunrise and sunset, may have divided zones around the hearth on some form of ritualized basis but alternatively it may simply have served to provide light at the beginning and end of each day (Oswald 1997, 93–4).

However, although these features provide evidence of perhaps how the interior of the roundhouse was divided, the distribution of artefacts does not reveal why the interior was divided thus. While the cluster of artefacts around the central hearth deposits may reflect the general occupation zone within the roundhouse, the deposition of most of these artefacts probably owes more to the abandonment and post-abandonment phases of the roundhouse than to its occupation (LaMotta & Schiffer 1999, 20–5). The only internal feature to hold artefacts possibly pertaining to its original use was the wide curvilinear pit close to the north-west entrance of the roundhouse. This feature contained a considerable amount of fragmented pottery representing at least two vessels, which may have been deliberately placed into the pit to hold milk set to curdle for cheese, as suggested for a similar coincidence at Dean Moor, Dartmoor (Fleming 1988, 103). The largest concentration and quantity of pottery sherds, representing at least five vessels, however, was found at one point within the north side of the ring-groove. At this feature the pottery was distributed across the entire width of the trench and therefore did not respect any upstanding feature such as a wattle wall, which implies that there was no wall anchored within the feature when the pottery was deposited. Large numbers

Table 5
Radiocarbon dates from West Acres

Lab code	*Context*	*Feature*	*Species (charcoal)*	*Years BP*	*$\delta^{13}C$ (‰)*	*Calibrated 1-sigma (years BC)*	*Calibrated 2-sigma (years BC)*
SUERC-2056	104	1st Palisade trench	*Inus*	3315 ± 35	–27.2	1630–1520	1690–1510
SUERC-2057	104	1st Palisade trench	*Corylus*	3145 ± 35	–27.5	1450–1380	1520–1370
SUERC-2058	104	1st Palisade trench	*Corylus*	3245 ± 40	–26.9	1530–1440	1620–1420
SUERC-2059	108	2nd Palisade trench	*Corylus*	3030 ± 35	–24.8	1320–1250	1400–1160
SUERC-2063	108	2nd Palisade trench	*Alnus*	3105 ± 40	–25.8	1430–1310	1450–1260
SUERC-2064	108	2nd Palisade trench	*Salix*	3320 ± 35	–26.2	1630–1520	1690–1510
SUERC-2066	123	Post–hole	*Alnus*	3045 ± 40	–26.0	1390–1250	1410–1210
SUERC-2067	123	Post-hole	*Alnus*	3050 ± 40	–26.0	1390–1260	1410–1210
SUERC-2068	123	Post-hole	*Corylus*	2985 ± 35	–28.4	1300–1120	1320–1110
SUERC-2069	202	Ring-groove	*Corylus*	3355 ± 35	–26.0	1690–1600	1740–1520
SUERC-2073	202	Ring-groove	*Corylus*	3100 ± 35	–24.7	1430–1310	1440–1260
SUERC-2074	202	Ring-groove	*Alnus*	3255 ± 35	–25.4	1530–1490	1620–1430
SUERC-2075	204	3rd Palisade trench	*Alnus*	3105 ± 35	–24.3	1430–1370	1440–1260
SUERC-2076	204	3rd Palisade trench	*Alnus*	3145 ± 35	–28.1	1450–1380	1520–1370
SUERC-2077	204	3rd Palisade trench	*Alnus*	3045 ± 35	–23.5	1380–1260	1410–1210

of sherds from the same vessels were found together at this discrete find spot, indicating that whole vessels broken in situ are represented by this assemblage. The picture this presents is of whole vessels being smashed into the empty trench after the wattle walls had been pulled out during the abandonment or dismantlement of the roundhouse. Although some form of ritual could be apparent in this, the fact that most of the vessels were large and heavy and could only be gripped by means of the ridging, means that these vessels were not easy to transport very far. A more prosaic explanation is that the vessels were simply too heavy to transport, at least by hand. That they were destroyed, rather than being left in situ within the abandoned dwelling, may suggest nothing more than locally made pottery such as this was not deemed worth keeping intact, whether because the occupants had enough vessels to take with them or that new pottery vessels could be readily provided or received at whatever new site the occupants intended to move to.

The radiocarbon dates, which altogether ranged between approximately 1700 and 1100 BC (Table 5), clearly place the occupation of West Acres within the second millennium BC. However, the results do not present a simple picture. The original hypothesis behind the dating strategy was that because the charcoal from each context derived from short-lived material, the charcoal from each context represented a single event or activity and was not a mixture of varied-age charcoal. The range of the radiocarbon dates obtained from three of the examined contexts – the Phase I palisade trench, the Phase II palisade trench and the ring-groove – proved that although the charcoal derived from short-lived material, each context included a mixture of varied-age charcoal, perhaps indicative of the incorporation of residual charcoal. Two of the radiocarbon dates obtained from each of these features were so far apart as to be statistically different. Neither could be discounted, however, because both outer dates from each context were close enough to the middle date as to be statistically similar to it. Each set of dates therefore outlines the time-range of deposition of the relevant context. The results indicate a time-range of 1690–1370 BC for the Phase I palisade trench, 1690–1160 BC for the Phase II palisade trench and 1740–1260 BC for the ring-groove. This group of time-ranges obviously does not illuminate the stratigraphic sequence very well, implying only that the roundhouse and palisades belonged to various points within a period of occupation spanning much of the second millennium BC. It is not possible to ascertain the length of time, if any, of the periods between each stratigraphic phase.

If the general time span of site occupation at West Acres can be understood to a limited degree, the question remains as to the duration of each structure. The radiocarbon dates might appear to indicate an extremely long duration for each of the structures, perhaps as much as 500 years, but there exist serious reservations before this interpretation can be accepted. Detailed dendrochronological examination of the lifespan of timber houses from wetland environments, such as Buiston crannog in Ayrshire, Clonfinlough in Offaly and Island MacHugh in Tyrone, shows these structures to have been short-lived settlements, occupied for no more than two or three generations (Barber & Crone 2001, 71–3). For example, although the radiocarbon chronology for Phases III and IV at Buiston spanned 475 'radiocarbon years', the tree-ring chronology demonstrated that the duration of the occupation lasted no more than 33 years (Barber & Crone 2001, 71). While it should be considered what extent wetland environmental circumstances played in the short lifespan of such buildings (Halliday 1999, 61), evidence from waterlogged dryland sites, such as the roundhouses at Deerpark Farms, Co Antrim, again indicates a short lifespan for prehistoric timber buildings (Barber & Crone 2001, 73–4). A strong argument has been made that the Bronze Age roundhouses at Tormore, Arran (Barber 1997, 7–25) and Lairg, Sutherland (McCullagh 1998, 37–8, 43–4) were also of short duration

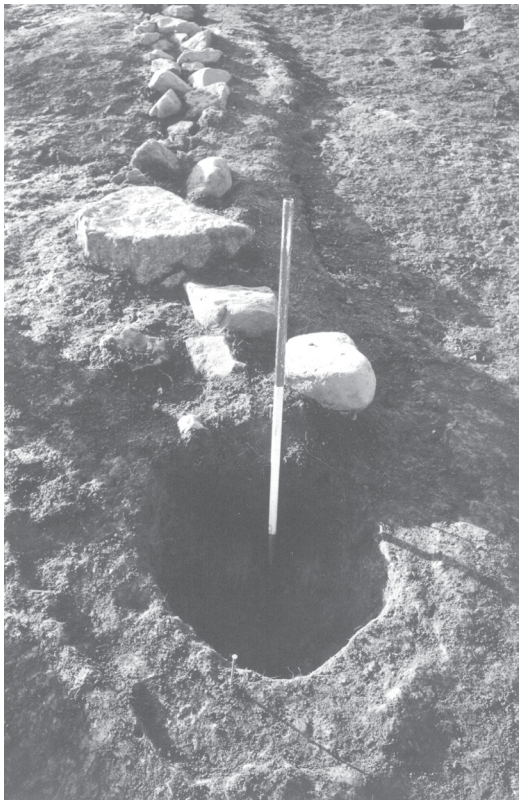
(Barber & Crone 2001, 77). In view of this, the inclination is more towards the occupation of the roundhouse and the three successive palisades at West Acres being only of short durations encompassed within the extensive time-range outlined by the radiocarbon dates.

The difficulty with this, however, is that the chemical indicators at West Acres (Inglis above) suggested a contemporaneous depositional environment, at least for the interior of the roundhouse. Furthermore, the relatively unrounded nature of most of the charcoal

Illus 13 West Acres Phase plans

fragments (Hall above) suggested relatively rapid accumulation of sediment rather than slow accumulation. This indicates that much of the charcoal recovered from the features was residual and that it only found its way into each context when that feature was backfilled during an abandonment phase. Therefore, while the time-range of the radiocarbon dates indicates that the *site* was probably occupied over a lengthy period, it does not necessarily follow that any of the archaeologically visible structures were occupied for the same period or can be confidently placed at any *specific* points in time during this period.

The dichotomy between the apparently lengthy occupation of the West Acres site and the probable short duration of each individual structure brings attention to the crescent-shaped palisades associated with the roundhouse at West Acres. As significant as the roundhouse is, it is perhaps not as fundamental to the nature of the West Acres site as the palisades. The roundhouse lay stratigraphically between what seemed to be two curvilinear palisades (illus 13). The roundhouse also appeared to be associated with a stout curvilinear palisade, its contemporaneity suggested by the fact that the palisade terminals respected the entrances of the roundhouse and that the course of the palisade ran parallel to the course of the southern perimeter of the roundhouse. Despite the obvious truncation that had reduced all of the features comprising the site, the level plane across the site implies uniform truncation across the site. The absence of any features on the course of the southernmost palisade beyond its apparent terminals, despite the presence of fairly deep features to the north, precludes the dismissal of these terminals as simply representing a point beyond which the feature had been truncated. The same pattern applies to the other semi-circular features. The significance of these features is that they demonstrate stratigraphically that the site was used for some form of activities prior to, during and succeeding the occupation of the roundhouse. This could imply that the function of these features was pertinent to the nature of the occupation of the roundhouse itself.



Illus 14 Eastern terminus of Phase II palisade associated with roundhouse

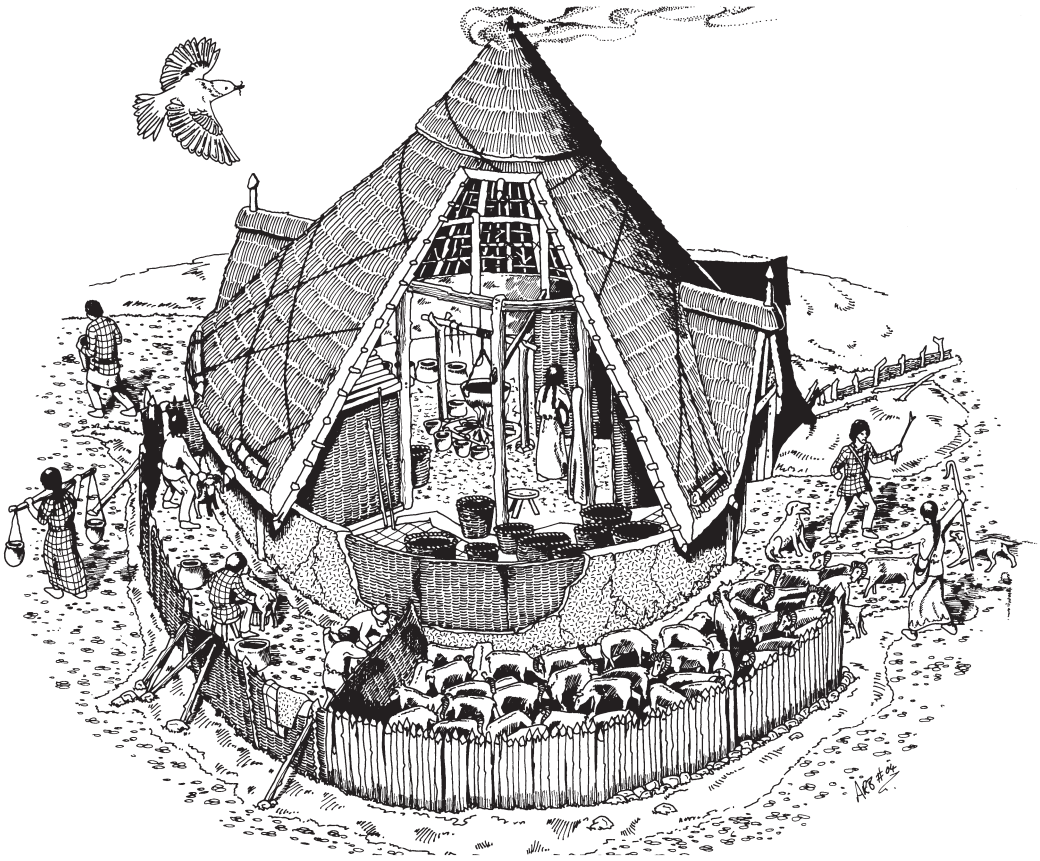
Given the argument for uniform truncation of the site, none of the curvilinear features form full enclosures. This would surely exclude defence, prestige or social exclusion as their function, in contrast to many other boundaries in later prehistoric sites (Bowden & McOmish 1987, 77; Rideout et al 1992, 141; Armit 1997, 59–61). In addition, the size of the post-holes evident within the palisade fence to the south-west of the roundhouse seems too substantial to simply represent a windbreak (illus 14). While the features do not form enclosures, they do control movement at certain areas of the site, either across the space cut by the palisades or along the space either side of the palisades. It is the latter that seems the more plausible

explanation. For example, the palisade to the south of the roundhouse might be understood as channelling movement along the passage between the southern wall of the roundhouse and the palisade itself. The nature of this palisade may even indicate in what direction movement was channelled. The extremely large post-holes and substantial packing stones evident towards the eastern end of this palisade indicate that here it was quite strong, where perhaps more resistance to being channelled along the passage was expected. The narrower and shallower dimensions together with the absence of largely any packing stones towards the western end of the palisade indicates that the palisade was much slighter here, perhaps constructed in a similar manner to the outer wall of the roundhouse, because less resistance was expected along this length of the fence. This would be consistent with the behaviour of a flock of sheep, for instance, where after a bit of jostling at a gate, once channelled the flock will follow the appointed route (A Aspinall, pers comm). It is then tempting to interpret the two small post-holes adjacent to the western terminus of the palisade as gateposts or posts holding a moveable section of wattle fence that closed the exit from the passage.

What is suggested here is that the stouter eastern end of the palisade defined the entrance into the passage, between the palisade and the roundhouse. Movement may have then been channelled along the passage towards a gate or moveable fence controlling access beyond into the space west of the roundhouse. While it may, of course, have been the movement of people who were channelled along this passage between the palisade and roundhouse, the stronger inclination is towards the movement of domestic animals as the object of the exercise. The passage forms the funnel, drafting race and parting gate elements of a sheep-handling pen (Goodwin 1979, 159) and although too wide to channel animals into single file it could still have functioned as a holding pen. Sheep-handling pens from the Bronze Age have been recognized elsewhere in Britain such as Fengate, Cambridgeshire (Pryor 1996, 318–20) and West Deeping, Lincolnshire (Pryor 1998, 109–13). Semi-circular embanked structures have been recognized throughout upland areas in Northern Britain and suggested either as stock shelters (Burgess 1984, 148, 151) or stock pens (Burgess 1995, 146–7; Richmond 1999, 96).

The milking of sheep, for instance, may have occassioned the need to channel a flock down along a narrow passage, allowing milking to become more manageable, in the same manner as sheep buchts were used in the 17th century (Ward 1998, 19–20). A gate or moveable fence at the end of this passage would allow milked sheep to be separated from those animals in the passage still to be processed (illus 15). However, it need not have been simply one process such as milking that was carried out. Such a pen could have been used for a wide range of processes such as selection, marking, castration and shearing at various times of the year (Coggins 1985, 171). The importance to stock management of holding sheep and other animals in such a pen is that a flock is by instinct more docile and easier to manage when closely confined (Pryor 1996, 317).

While this theory may seem far-fetched, it does bear consideration. Not only are the apparent pattern and dimensions of the southernmost palisade consistent with the behaviour of a flock when channelled into the defined space, there are demonstrable similarities between all three curvilinear palisades. The Phase I palisade, which preceded the roundhouse, also appeared stouter towards the west and slighter at the opposite eastern end. Likewise, the Phase III palisade, which succeeded the roundhouse, was also wider and deeper towards the north and slighter at its opposite southern end. Both may also be associated with discrete post-holes roughly parallel with and within the 'inside' curve of the palisades. If each of these sets of posts held wattle fences, the same function of channelling or penning in a flock within the inward curve of a palisade fence can be proposed, in much the



ILLUS 15 Reconstruction of Phase II West Acres site

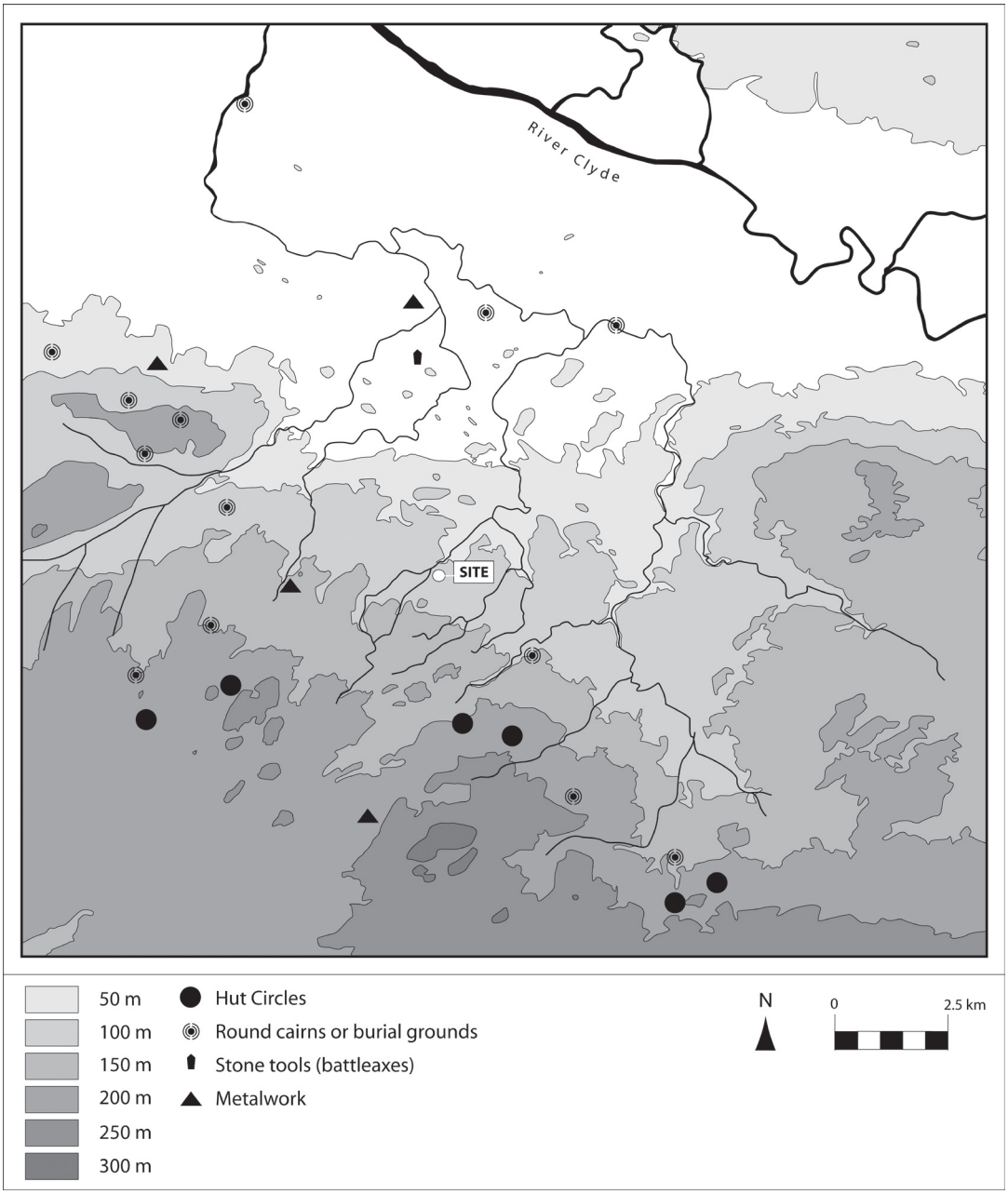
same way that a modern shepherd, with the help of a sheepdog, might hold the sheep in the corner of a field (Goodwin 1979, 103). It is therefore possible that the site was used for the same purpose before, during and after the occupation of the roundhouse. It is suggested here that this purpose was the processing of stock. While the soil chemistry results (Inglis above) cannot confirm this, neither do they exclude the influence of animal husbandry during the lifespan of the site. Only with the series of stake-holes that eventually peter out to the north-east of the site was a particularly low phosphate level recorded, which together with their stratigraphic relationship with the Phase I palisade fence, implies a different function, perhaps as a field boundary created to lead towards a stock pen.

If the West Acres site functioned as a place in the landscape where stock were penned and processed over much of the second millennium BC, albeit in short episodes, its surrounding Bronze Age landscape requires exploration. There survives very little evidence for anything other than a thin scatter of dispersed Bronze Age settlement in the uplands of Renfrewshire, between the lower Clyde Valley and Ayrshire (Newall 1964, 160; Alexander 1996, 12), a pattern reflected in Upper Clydesdale and Upper Tweeddale (Ashmore 2001, 5). While, of course, this may be due to archaeological visibility, investigations such as an archaeological survey at South Moorhouse Farm near Eaglesham, East Renfrewshire, discovered only a single unenclosed roundhouse (Hunter & Hunter 1997,

31). A more recent investigation of a 16km long corridor through this upland area (Cook 2002, 45) revealed no more than two roundhouses (Wilson forthcoming). The evaluation of 17ha of farmland at West Acres itself revealed only one roundhouse (Toolis 2003, 65–6). This would support assertions that the sparse distribution of hut-circles in this upland environment actually reflects the Bronze Age regional settlement pattern (Alexander 2003) where poor agricultural quality and low population pressure produced a very thin scatter of dispersed settlement in the upland areas. Pollen evidence from Walls Hill in Renfrewshire and Bloak Moss and Kennox Moss in Ayrshire (Ramsay 1996, 61; Ramsay & Dickson 1997, 145) reveals that human impact on vegetation appeared only for the first time during the Bronze Age. This comprised small temporary woodland clearings used for pasture during the second millennium BC, consistent with the idea of small populations moving around the area clearing woodland to provide grazing for their animals (Ramsay 1996, 61–2). The marginal location and absence of evidence for cereal cultivation at Picketlaw hut-circle, some 7km south-west of West Acres and dated to the second millennium BC, led the excavator to argue that the site necessitated strong links with lower-lying communities and degrees of economic specialization, thus implying seasonal transhumance in this area during the Bronze Age (Alexander 2003). The hut-circle at Picketlaw, along with many of the known Bronze Age hut-circles in the upland areas of Renfrewshire, may have fulfilled the role of summer shielings within such a landscape.

West Acres lies near the lower edge of this upland landscape (illus 16). Its location is neither defensive nor particularly prominent, being not on the highest point of the spur on which it lies but rather on the north-eastern slope and, at 130m above sea-level, corresponds closely with the edge of the upland/lowland zone interface as defined by Cowie & Shepherd (1997, 158). The durability of the site over much of the second millennium BC indicates that it perhaps served as a focal point between the upland summer pastures and the lower lying farms of the Clyde Valley. The development of focal points related to the gathering of stock during the Bronze Age has been postulated for sites elsewhere in Britain (Fowler 1983, 193–5). Though the West Acres structures appear fairly impermanent, as most Bronze Age settlements probably were (Cowie & Shepherd 1997, 153), the longevity of occupation implies that there survived a shared memory of the site as such a focal point, which manifested itself from time to time as a structure to collect and process animals between the upland pastures and the lower valley.

There survives little evidence, however, for settlement in the lower lying ground to the north of West Acres but, given that this ground is occupied by Glasgow and its suburbs, this is not altogether surprising. Nevertheless, Bronze Age metalwork, stone tools and burial cairns have been recorded within this area (Alexander 1996, 12–16) and these surely imply settlement. The lowland gap in the Bronze Age settlement record in Scotland is generally considered to be due simply to archaeological visibility (Cowie & Shepherd 1997, 162). In recent years, Bronze Age settlements have been discovered in lowland areas such as Ednie (Strachan & Dunwell 2003, 159 & 167) and Kintore (Cook forthcoming) in Aberdeenshire, Lamb's Nursery in Midlothian (Cook 2000), Myrehead in Falkirk (Barclay 1983), Blairhall Burn in Dumfriesshire (Strachan et al 1998) and Ailsa View in Ayrshire (Gooder forthcoming). The survival of cropmark sites such as Shiels (Scott 1996) and Braehead (Ellis 2001), albeit Iron Age enclosed sites, and the more recent discovery of a palisade enclosure at Mearnskirk (Rees 2002, 45) shows that the lower Clyde Valley was not devoid of prehistoric or early historic settlement either. The sheer number of houses evident at Lintshie Gutter (Terry 1995, 423) and Green Knowe (Jobey 1981, 94), though almost certainly not all occupied at the same time, nevertheless indicate intensive settlement if not a sizeable Bronze Age population in places. Given the evidence



ILLUS 16 Topographic plan of West Acres location (archaeological distribution based on Alexander 1999, fig 9)

recovered from Rattray, Aberdeenshire (Murray et al 1992) and Lairg, Sutherland (Carter 1998, 156) for arable agriculture at lower altitudes during the second millennium BC, there seems little reason to doubt that it was in the more fertile lower lying ground like, for instance, the Greater Glasgow area, where arable cultivation took place during the Bronze Age. That the bulk of Bronze Age settlement evidence in the agricultural and urban heartlands of Scotland

has been obliterated by a combination of factors (Cowie & Shepherd 1997, 151–3; Strachan & Dunwell 2003, 167) should not prejudice our perspective of Bronze Age settlement patterns.

The question remains, however, of how feasible it is that West Acres formed a focal point connecting an upland landscape of summer pastures with a lowland landscape of mixed arable and pastoral farming during the Bronze Age. There is no evidence that West Acres belonged within a field system on the scale of Fengate (Pryor 1998, 106), the Thames Valley (Yates 2001, 65) or the Dartmoor Reave Systems (Fleming 1988, 105). However, while Scottish field systems lack the coherence and systematic planning of these English systems (Barber & Brown 1984, 186; Barber 1997, 146; Ashmore 2001, 4), and are inherently difficult to securely associate with settlements (Halliday 1982, 75), stock management clearly took place in Bronze Age Scotland as demonstrated by a number of sites such as Black Moss of Achnacree, Argyll (Ritchie et al 1974, 69–70; Barrett et al 1976, 283–87); An Sithean, Islay (Barber & Brown 1984, 186); Tormore, Machrie North and Kilpatrick, all on Arran (Barber 1997, 145–6); and perhaps Tulloch Wood, Moray (Carter 1993, 231). Herding or direct supervision of stock could easily have augmented the field enclosures apparent in upland locations throughout Scotland attributed to the Bronze Age (Cowie & Shepherd 1997, 163). Pasturage, as well as arable agriculture, was linked to the land surrounding the Bronze Age roundhouses at Carn Dubh, Perthshire (Rideout 1995, 184–6) and Cùl a'Bhaile, Jura (Stevenson 1984, 153), and the cluster of platforms at Lintshie Gutter included a small stock enclosure (Terry 1995, 423). Excavations at Ailsa View in Doonfoot, Ayrshire revealed a stock enclosure of *c* 42m diameter, dated to the second millennium BC (Gooder forthcoming). Its entrance may have held some form of two-way, drafting gate, just outside of which lay a contemporary ring-groove roundhouse (Gooder forthcoming). Altogether, the scale of this stock management may have been lesser than further south but assertions that this was merely at a derisory subsistence level (Pryor 1998, 146), based purely on the example of one site on a small island off the coast of Dyfed (Evans 1990, 249), seem a little unfair, especially given that the uplands of southern Scotland were of sufficient quality to support a significant woollen industry from the medieval period onwards (Butt 1967, 75; Yeoman 1995, 69–70). While the stock pens at West Acres may not have held the same number of sheep as the pens at Fengate, for instance, they were large enough, based on the same calculations (Pryor 1998, 105), to each hold almost 200 sheep at any one time. Whether this is merely subsistence or something a little grander is open to debate, but the expansion and intensification of farming during the second millennium BC apparent across Britain (Bradley 1984, 89–91) is evident in Scotland too (Cowie & Shepherd 1997, 165).

A complementary lowland arable and upland pastoral economy has in fact been argued as instrumental in the development of large redistribution centres in southern Scotland during the early first millennium BC (Macinnes 1982, 59; Armit & Ralston 1997, 179), despite the apparent decline in upland exploitation from the end of the second millennium BC (Burgess 1985, 212; Halliday 1999, 62). It could be argued that the evidence from Renfrewshire, amongst other places, pushes the chronology for such an economic system back into the second millennium BC. As others have recognized, it is difficult to see an alternative form of export to beasts on the hoof (Barber 1997, 148) that supported the 'weak but persistent long distance connectivity' apparent in Scotland during this period (Ashmore 2001, 6). Indeed, the pollen evidence from Picketlaw showed a notable decline in pastoral activity between the end of the second millennium BC and the end of the first millennium BC (Alexander 2003), indicating perhaps that a more intensive pastoral economy utilizing the uplands of Renfrewshire was in decline when the first large enclosed settlements, such as Craigmarloch hillfort, appeared in

Renfrewshire during the early first millennium BC (Nisbet 1996, 56).

Although some may baulk at the mention of transhumance, with its 'Highland zone' connotations of a pastoral-dominated subsistence economy, rightly viewed by many as no longer tenable (Topping 1989, 175; Cowie & Shepherd 1997, 165; Richmond 1999, 97), it should be considered that the proposed role of the stock pens at West Acres was essentially the same as sheep buchts, the purpose of which was to exploit the resources of the animals pastured in the uplands while at the same time preserving crops lower down the valley (Ward 1998, 20). As such, they implicitly formed part of a mixed farming economy, albeit one that was based on shifting cycles of occupation (Halliday 1999, 62–3). Arable and pastoral agriculture are complementary in all but the most specialized systems of farming and were almost certainly so in prehistoric society (Yates 1984, 228). While West Acres itself may have possessed a predominantly pastoral nature, this does not mean that the economy it belonged to was predominantly pastoral. However, an association of upland unenclosed settlements with summer transhumance cannot be easily discounted (Stevenson 1982, 191; Halliday 1985, 238) as perhaps happens when evidence merely for the consumption of cereals is tacitly assumed to be evidence for the growing and processing of cereals (Jobey 1981, 95; Terry 1995, 424–5). Is it perhaps significant that sheep buchts examined at the Upper Clydesdale site of Glenochar (Ward 1998, 9) were adjacent to probable Bronze Age house platforms?

The practice of transhumance is increasingly evident from a range of Bronze Age sites, commonly found on the edge of low-lying fenland (Pryor 1996, 314; Pryor 1998, 107–8; Bell 1999, 23–4) but also in upland areas (Denford 1975, 194–5; Fleming 1988, 103–5). The transhumance postulated around West Acres may seem of a much lesser scale than the transhumance apparent at sites such as Fengate but it was still transhumance, or rather the intelligent exploitation of different environments for appropriate crop and animal husbandry techniques (Halliday 1999, 53). Simply because it was a different kind of marginal environment that was seasonally exploited does not preclude an essentially similar economic basis (cf Pryor 1998, 146). Bronze Age farming across Britain was far more sophisticated than is perhaps commonly perceived. Studies of animal husbandry from this period show patterns of efficiency parallel with modern practice (Legge 1981a, 169). Given the importance of milk in prehistoric animal husbandry practices (Legge 1981b, 222) – and especially sheep's milk (Clutton-Brock 1981, 222; Ryder 1981, 182–95; Pryor 1998, 128) – it is not surprising that lowland communities would desire to draw down from upland pastures on a regular basis important food commodities, such as milk, cheese and butter. While the pasturing of domestic animals in the uplands during the summer may have been desirable in order to keep them away from the crops in the lower-lying ground, this does not mean that those of the community residing in the lowlands necessarily expected to go without the food commodities that those same domestic animals provided. Furthermore, the consumption of cereals, such as the barley evident at West Acres, indicates that the provision of food commodities was not one way.

CONCLUSIONS

Like many other Bronze Age sites (Cowie & Shepherd 1997, 161), what first superficially appeared to be simple archaeological remains at West Acres turned out to be rather more complex. If the interpretation of the archaeological remains at West Acres, as a focal point for the processing of animals during seasonal episodes of transhumance, is correct, this has two implications. First, it implies that at least one agricultural practice apparent in Clydesdale in the post-medieval period (Ward 1998, 19–20; Winchester 2000, 18) was practised in the Bronze

Age. This does not, however, imply continuity between farming practices from the Bronze Age to the post-medieval period. It simply indicates that Bronze Age farmers exploited a range of environmental resources for appropriate animal husbandry in a similarly intelligent manner to their post-medieval successors.

The second implication is that Bronze Age settlement existed in the low-lying areas of the Clyde Valley as well as the higher ground where the Bronze Age distribution pattern is more apparent. Given the growth of Glasgow in the modern era, much of this settlement has undoubtedly been irretrievably lost. It is, however, hoped that the planning controls exercised by local authorities will eventually lead to the discovery of at least a fragment of the Bronze Age settlement pattern nearer the Clyde.

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