

Knappers, Dunbartonshire: a reassessment

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INTRODUCTION

Between 1933 and the outbreak of the Second World War archaeological activity at Kilbowie, to the N of Clydebank, Dunbartonshire, revealed prehistoric burials, isolated objects and the apparent remains of a timber setting (NGR NS 506712–507712). The site, now destroyed, took its name from the then existing farm of North-East Kilbowie or Knappers in Old Kilpatrick parish, now Clydebank District. It lies approximately 2 km NE of the River Clyde at its junction with the White and Black Cart Water, flowing in from the SW. By the 1930s urban and industrial ribbon development along the N bank of the Clyde, in the vicinity of Clydebank and Kilbowie, had encroached within 0.25 km of its western side. To the N the ground rises gradually over a distance of 3 km to the southern slopes of the Kilpatrick Hills. To the W these slopes steepen and converge on the Clyde, dominating the whole of this section of the northern bank of the river and controlling communication along it.

Although the dual carriageway of the A82 cut through the area in the 1920s, the archaeological content of the site was not realised until sand quarrying began on the eastern flank of the road from 1933 onwards, subsequently spreading to the W of the road in the late 1930s. The site suffered damage during the Clydebank blitz of 1941 and, in the post-war period, housing development along the A82 spread onto it, the western part of the site now being occupied by high-rise flats.

Although sand quarrying had removed the original ground level, the site lies approximately 46 m above O D in a hummocky terrain, the result of deposition of glacial outwash from the last (Devensian) glaciation. The deep deposits filling the former valley of the River Kelvin are not yet well known but evidence suggests that there is a considerable variety of glacial tills, fossiliferous silts and clays, sand and gravel deposits, all within a limited geographical area (Jardine & Moisle 1967; Jardine 1969). Photographs of the working face of the sand quarry at Knappers indicate a thick deposit of water laid (probably fluvio-glacial) sands showing evidence of both horizontal and cross-bedding. Immediately to the E of the site the Cleddans Burn, flowing S at this point, has cut a shallow valley in the sands and gravels. Before the spread of housing the area was predominantly farmland, but older Ordnance Survey maps show evidence of earlier sand and gravel quarrying in the vicinity of Kilbowie.

In this section of the northern bank of the River Clyde the majority of the known archaeological sites are clustered on the south-facing slopes of the Kilpatrick Hills (RCAMS 1978b). The chambered cairn at Cairnhowit (Henshall 1972, 428) lies on the edge of Cochno Loch at a height of 275 m, within the plateau top itself. Lower down the slopes are three cairns, possibly of

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Bronze Age date, at Cochno Hill, Maidens Paps and Wester Duntiglennan; the first two roughly at a height of 250 m, the last at 150 m. In the 19th century cists, were noted at Cochno (Wilson 1863, vol 1, 195) and Duntocher (OS Name Book, Dunbarton, no 15, pp 113-14) and, later, two others were found at Old Kilpatrick during the excavation of the Roman fort (Callander 1933). On the lower slopes below 150 m there is a considerable concentration of cup-and-ring marked outcrops, mainly in the vicinity of Auchnacraig and Whitehill (Morris 1966; 1968). These cup-and-ring marked outcrops extend westwards, along the slopes, with further groups above Bowling and at Greenland.

The apparent lack of archaeological sites on the lower ground of the N bank of the Clyde need not imply that prehistoric communities shunned this area. It is more likely that the extensive urban and industrial development of Clydebank and Glasgow in the 19th century swept away many sites. The crannogs at Dumbuck (Bruce 1900), Old Kilpatrick and the records of a considerable number of dug-out canoes (not all of them prehistoric) attest to the use of the river in the Iron Age; upstream, the site at Shiels, Govan, on the S bank of the river, is a ditched enclosure of Iron Age date (*Discovery and Excavation in Scotland*, 1973, 66-7; 1974, 82-3).

At Knappers the discoveries on the E side of the road (fig 1) were supervised by J M Davidson, and he published a full account of his work in the *Proceedings* of this Society in 1935. Further work later in the 1930s was supervised by L MacL Mann and was, partly because of the outbreak of war, never fully published, although interim statements were made available (Mann 1939). R R Mackay noted two groups of pottery from the site in 1948 and 1950, but apart from these sherds (and an associated flint knife) which found their way into the collections of the National Museum of Antiquities of Scotland (NMAS EO 965-9; EX 3-4), the rest of the objects were kept

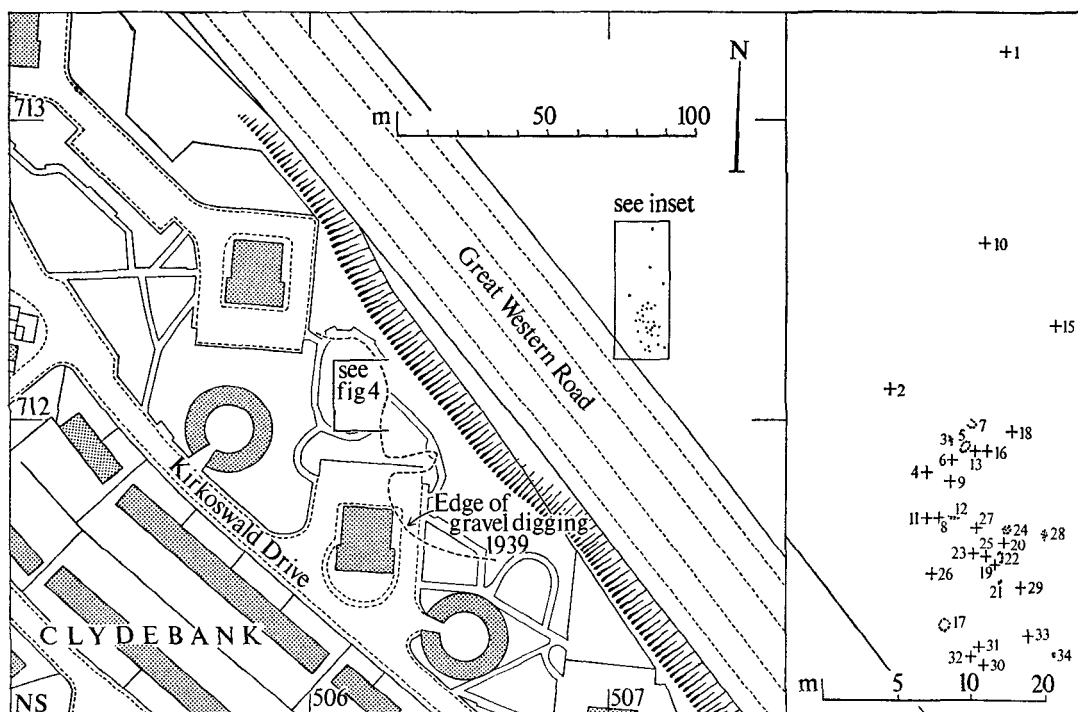


FIG 1 Knappers, Dunbartonshire: location map

privately. Mr G Applebey has kindly made available many of the objects as well as his collection of glass slides, Mann's notes, newspaper cuttings and plans; this has prompted the writers to attempt a new catalogue of the objects and a reassessment of the site. Uncertainties of interpretation remain; some of the small finds are still missing or cannot be attributed to the particular part of the site in which they were found. There is little doubt that Mann's advocacy of an astronomical interpretation of the W part of the site, excavated between 1937 and 1939, detracted from the archaeological attention due to it at the time, and it has also made it more difficult to sift through the interim reports for basic information about what was actually found. Our tentative interpretation is thus a personal one.

The two parts of the excavation are described in order of discovery – first that on the E side of the road, followed by that on the W. The individual site numbers allocated by Davidson are retained (sites nos 1–34; fig 1); surviving small finds, catalogued on pp 184–99, are prefixed with the letters SF in order to distinguish them from the various site numbers.

DAVIDSON'S EXCAVATIONS

Davidson identified 34 individual sites or find-spots the positions of which are shown on fig 1, and it is convenient to summarise his account of each site and to indicate which small finds were discovered. The original bone report is summarised and the surviving bones examined in an appendix.

- 1 Not seen by Davidson, a boulder-built cist, aligned N and S, with a large coverslab (fig 2). A flint adze (SF 14) was found inside, lying across the N end. After the initial discovery, one of the stones said to come from the cist was found to be decorated with pecked concentric rings and a U-shaped motif (SF 58).
- 2 Two food vessels (SF 9 & 10), found at a depth of about 0.9 m; not seen *in situ*.
- 3 Not seen by Davidson; apparently a cross-shaped pile of stones (fig 2) with scattered cremation deposits in two layers. 'The under burials lay, one on each of the two cross-arms, on a stone foundation and covered by a layer of stones about 12 inches lower than the two top burials' (Davidson 1935, 355). The bones are listed in the Appendix.
- 4 A bronze dagger (SF 15) on a flat slab of andesite may have indicated the position of a further burial (not seen by Davidson) with 'many traces of discoloured and much decomposed matter resembling bone having been discovered' (Davidson 1935, 355).
- 5 A pear-shaped setting of large stones laid end to end (fig 2), measuring 2 m by 1.3 m, and filled with sand. A food vessel (SF 11) was found below one of the stones of the setting.
- 6 A fragment of the rim of a food vessel (SF 12); no associated structure.
- 7 A horse-shoe shaped setting of stones open on the W side – apparently with stones graded in height, with the largest stones at the open end and the smallest at the back of the horse-shoe (fig 2). The external width was about 1.1 m, the depth 0.76 m, and the interior measured 0.45 m across. A food vessel (SF 8) containing carbonised material was found at the back of the setting, but there was no sign of any associated burial.
- 8 A small stone-built structure (fig 2) measuring about 0.45 m square and 0.4 m in depth, but, apart from many quartz and whin pebbles, there were no associated finds.
- 9 An unmarked burial consisting of a great number of bones and some teeth; a lignite bead was found with the bones, and riddling revealed a second (SF 17); small unornamented fragments of Bronze Age ware were also discovered. The bones are listed in the Appendix.
- 10 A saucer-shaped depression of discoloured (blackened) sand measuring 1.8 m in diameter



FIG 2 Knappers, Dunbartonshire: sketches by John Gentles of several of the sites excavated in 1933-4; sites nos 1, 3, 5, 7-8, 12, 17, 19, 21-2, 24 and 27.

and up to 0.22 m in depth; at the centre were discovered many pieces of crude red pottery together with a tiny piece of white flint. The pottery is described as being 'small crumbled fragments of similar aspect' to those from site no 9 (Davidson 1935, 376).

- 11 An extended inhumation to W of site no 8; the skull, found a little to the N, had apparently been 'incinerated' (but the body had not) and was buried separately. A piece of worked flint, burnt and broken, was also recovered. The bones are listed in the Appendix.
- 12 A small oval 'cairn' measuring 0.68 m by 0.3 m, consisting of eight stones (fig 2); finds included teeth (Appendix), charcoal and a small pointed worked flint.
- 13 A cinerary urn containing a cremation deposit (Appendix) accompanied by a faience bead (SF 16) was discovered at the topmost part of the gravel ridge; the urn was broken to pieces.
- 14 Not listed.
- 15 The site of the discovery of a fragmentary vessel (SF 6); the wall-sherd of another (SF 7); 'two small scraper-like flints and about six very diminutive flint flakes', a smooth lignite object (SF 18), slag-like material, two small objects of greenstone and a considerable quantity of charcoal (Davidson 1935, 362-3; Mackay 1950, 182).
- 16 'A compact mass of bones' (Appendix) about 1 m from site no 13; no associated structure or finds.
- 17 A well-built 'ring-cairn' of 30 stones, measuring 1.65 m from E to W and 1.5 m transversely (fig 2); on the S perimeter the stones were carefully set 'overlapping one another'. A small piece of pottery, which no longer survives, but was compared to a fragment of impressed ware from Glenluce, Wigtownshire (Callander 1929, 92, fig 55, no 8), a number of bone-fragments (Appendix) and a few pieces of charcoal were found by sieving. Within the stone setting Davidson discovered a cist, aligned E and W, measuring 0.76 m by 0.6 m and up to 0.45 m in depth. For a suggested re-interpretation of the 'ring-cairn' see p 176.
- 18 A fragmentary cinerary urn, a tiny flint flake, a piece of smooth shale and a piece of bone were recovered, though the associations are uncertain.
- 19 A series of stones in a hollow, possibly natural (fig 2); no associated finds.

- 20 Worked stone described as an 'anvil stone'.
- 21 Site of a burial indicated by three boulders (fig 2); minute pieces of bone and a small triangular flint.
- 22 Four stones in a line (fig 2); an inhumation noted, with the lower jaw-bone surviving in a reasonable condition (Appendix).
- 23 An unmarked inhumation burial, one small fragment of flint, fragments of charcoal, and some fragments of bone possibly cremated (Appendix).
- 24 A crescentic setting of stones about 1 m from tip to tip, with a number of stones in the central area (fig 2); a small flint and large quantities of charcoal were found in the upper levels, but at a depth of 0.6 m there was 'discoloured sand', 'decomposed matter', a fragment of bone and three tiny flints.
- 25 Several teeth (Appendix) and two small pointed flints.
- 26 Inhumation burial (Appendix).
- 27 Inhumation burial, marked by a single stone (fig 2); two small flints, charcoal, 'red oxide-like matter' and tiny fragments of bone.
- 28 A lozenge-shaped setting of 24 stones, 1.6 m by 1.1 m over all; fragments of bone, charcoal, flint chip and pebbles, some fire-blackened.
- 29 Skull and a few other bone fragments (Appendix) and also charcoal.
- 30 A few teeth and finely-worked black flint.
- 31 Skull and other fragments of bone (Appendix) and a small white flint.
- 32 Fragments of bone and teeth (Appendix) and roughly pointed piece of white flint.
- 33 Three inhumation burials (Appendix).
- 34 An inhumation burial with stones marking the head and feet.

At Knappers, although bone was not well preserved, Davidson was able to record a range of prehistoric burial features that would normally pass unnoticed in the course of such industrial extraction. The presence of boulders indicated in many cases the discovery of an inhumation burial, with the stones in some instances at the head and feet of a burial (eg no 34) or placed apparently at the middle of the body (eg no 27). On some occasions it is possible that what were envisaged as upstanding settings or cairns of stones represent the boulder filling of a long grave or of a circular pit, and that these too were covered originally by sand. It might be possible to interpret the 'ring-cairn' of site no 17 as the packing stones set within the pit in which the cist was centrally constructed, presumably at a slightly lower level; this interpretation is confirmed to some extent by the illustrations of the comparable cist, to which Davidson himself drew attention, within the Roman fort at Old Kilpatrick, Dunbartonshire (Callander 1933). Fig 2 is a contemporary diagrammatic illustration by John Gentles of several of the stone settings; Gentles undertook much of the survey work involved in the recovery of the sites and his representation of the better-preserved features is confirmed by photographs. Unusual stone settings also broadly of Bronze Age date have been reported from Knocken, Lesmahagow and Springhill Farm, Baillieston, both in Lanarkshire (RCAMS 1978a, 74, no 151; 76, no 162).

MANN'S EXCAVATIONS

The chance discovery of a stone setting with a central pit on 12 July 1937 set in motion the close monitoring and subsequent excavation of an area on the W side of the Boulevard (fig 1). Two individual deposits are described first and then the finding of what appears to have been a series

of stake holes associated with further stone-filled pits; finally an interpretation of the archaeological remains is offered.

Eleven stones, forming an arc of a circular setting 1.5 m in diameter, surrounded a pit 1.5 m in depth, but only 'carbonised wood' and 'a carefully made scraping tool of white and green quartz with crescentic faceted edge' was found in the pit. No bones were recovered (*The Scotsman, The Glasgow Herald, Glasgow Evening Times*, 16 July 1937). Found in the vertical face of the sand pit, the second deposit is described as a roughly circular area about 1.2 m in diameter 'set with thirteen easily portable stones', beneath which was discovered a vertical cylindrical shaft some 2.7 m in overall depth dug into the fine white sand (fig 3). It was 0.6 m to 0.9 m in diameter except at the top, where the shaft expanded to 1.4 m. It was filled with brown earth and stones (95 of them); 20 'small quartz tools' were found in the shaft. Near the bottom of the pit were found the carbonised remains of a 'pannier like basket', about 440 mm in diameter, made of hazel twigs and with the main stays set at intervals of about 50 mm; the basket had a conical base. Within it were found the carbonised remains of a wooden bowl measuring 240 mm in rim diameter and 158 mm in height. Illustrations of the bowl show that it was a round-based vessel with a rounded and slightly out-turned rim, but neither it nor the basket now survives (*Glasgow Evening Citizen*, 28 July 1937; *Clydebank Press*, 30 July 1937). The sketch reconstruction of the section of this deposit (fig 3) has been drawn by Mr I G Scott, based on the evidence of a contemporary diagrammatic section, a series of photographs and a notebook sketch of the wooden bowl. The stones at the side of the pit are clearly illustrated in the photographs, but the basket and the bowl have been taken wholly from the diagrammatic section and the notebook.

Situated some 14.6 m N of the last site, a group of stones was discovered, one of them with a cup roughly hacked out; as the excavation progressed, it became clear that this was the central

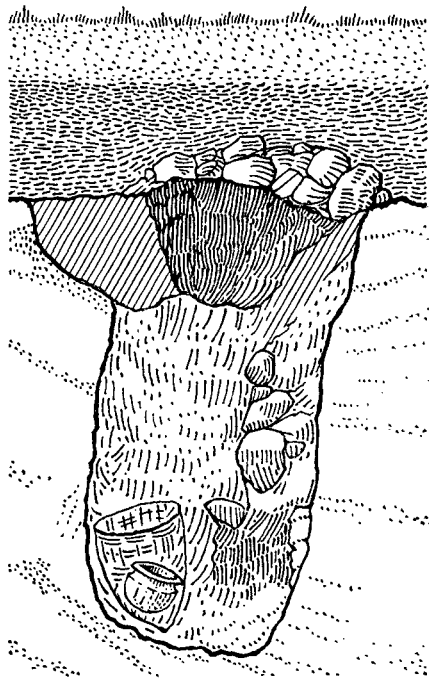


FIG 3 Knappers, Dunbartonshire: sketch reconstruction of section of deposit found 26 July 1937

point of a stake setting, and the several layers of stones found became known as the 'Altar' – the stones may originally have been the filling of a pit. A notebook shows the second layer of stones of the 'Altar' along with the first stake holes discovered; forming an arc on the NW side of the stones and with a diameter of about 0.66 m, there were '38 small vertical stakes equidistantly set along circumferences', and a second line 0.9 m in diameter, although neither line appears to have been complete. The tiny stakes were said to be 8 mm to 10 mm in diameter. The stones and small white wands that indicate the position of the stakes are illustrated in *The Glasgow Herald*, 17 July 1937 & *The Bulletin*, 31 July 1938.

Yet another site, about 50 mm SSW of Knappers Farm, was excavated and noted on 29 July 1937; it comprised six stones enclosing an area about 0.46 m by 0.36 m and surrounded by what are described as the remains of a stake circle having a diameter of 0.7 m. The stake circle was very poorly preserved, the E half having been destroyed and some of the marks that survived penetrating the subsoil to a depth of only 13 mm. The N and E axial stakes were 50 mm in diameter but the intervening stains were a mere 13 mm in diameter; the notes describe 'carbonised wood so much decayed that only a dark brown staining was noticed'.

At this point the character of the press notices issued by Mann changed. A new excitement enters the accounts – 'a miniature Scottish Stonehenge in wood', 'a site frequented by Druid astronomer-priests' – and it becomes more difficult to sift the archaeological information from reports designed to create national interest in the preservation of the site. The newspaper accounts, the originating source of which was Mann himself, may be considered in broadly chronological order; in the final section an alternative interpretation, of the site in the light of more recent excavations elsewhere in Britain, is tentatively put forward.

In *The Glasgow Herald*, 2 August 1937, the first detailed description of the new discoveries was published. The site 'is composed of a group of oval settings marked by equi-distantly placed vertical timber stakes, the socket holes of which are from two and a half to three inches in diameter. The wooden stakes are almost entirely carbonised and the socket holes remain full of darkened material in distinct contrast to the light coloured sand into which they had been placed. Towards the centre of the group of elliptical settings a few stones with oval cavities cut upon them were found. The socket holes of the original stakes have been replaced by Mr Mann and his assistants by little white stakes which show the exact position of the shrine or altar, which was at the centre of the scheme.' 'The 12 oval settings, one within the other, were all found to have been harmoniously arranged. The innermost oval had only seven stakes, the number of stakes in the other ovals increased in multiples from 19 to 76. The outer rings had larger stakes than those in the inner rows.' *The Bulletin's* reporter (2 August 1937) describes how 'several circles known as the Metonic and Saros circles were traced. The outside circle measured 43 feet [13.1 m] in diameter and in the centre of all the circles was found a group of stones that indicated a grave'. An accompanying photograph illustrates Mann 'inspecting the sanctuary and planetarium'. Even today it is impossible not to appreciate the enthusiasm that must have been generated by reports such as this, although a more cautious interpretation would now be put forward. Soon a police guard was required to protect the site from being trampled by charabanc-loads of eager visitors, and appeals were made for assistants to direct the visitors. Shorter newspaper accounts were published throughout Britain. *The People* (15 August 1937) describing the site as 'the Westminster Abbey of Scottish Druid times'; by September 1937 the timber setting had been exposed to a radius of some 25 m, the ground plan involving 'a large number of serpentine figures', and with an adjoining cemetery of 53 burials (*The Times*, 15 September 1937). On 18 September 1937 the site was visited by members of the Glasgow Archaeological Society and pl 8b shows Mann lecturing to the gathering, with the help of the 'large scale ground-plans' described in *The Glasgow Herald* report (20 September 1937).

'Members of the Glasgow Archaeological Society, with hundreds of other visitors, viewed the prehistoric temple at Knappers, near Kilbowie, on Saturday afternoon. The developments of the digging work during last week were examined with the help of large-scale ground plans.

'The wide circular area was shown to have been occupied by timber-built serpentine structures, the meaning of which was interpreted by Mr Ludovic Mann on astronomical grounds. The temple, he said, was put up apparently to commemorate the victory of light over darkness – that is, the triumph of the sun god over his arch-enemy, the demon of darkness, at the time of an eclipse. In that crisis the sun god called for the help of his colleagues, the planet deities, who assumed the guise of serpents and surrounded the dark serpent and defeated him.

'An additional group of serpents was revealed after clearing away the modern surface soil down to the prehistoric level. In this newly disclosed ring there were originally a group of 24 huge serpent figures. Their sizes and aspects could be identified with the different planet divinities, and they had been laid out in a very systematic manner.

'Reference was made to the analogies between the Celtic and the Egyptian myths, such as the fight between Horus and Set. The arrangement of the temple, Mr Mann stated, resembled a picture of that ancient Egyptian battle where the eclipse-causing demon is referred to by various names, such as Apepi and Suti.

'It is understood that if funds are forthcoming the exploration will be continued, but otherwise the site will be demolished by the getting of sand for commercial purposes.'

'Auld Monk' in the *Clydebank Press* (28 September 1937) wrote in verse about the excavations; the second stanza including:

' 'Twas mine, to see a plan arrayed,
Where once a Druid court was laid,
Near Knapper farm in recent days,
Great excavations there, did daze
The diggers as they turned the soil,
To see a "cist" their daily toil
Had brought to light, and it appears,
A period of five thousand years
Have come and gone since it was laid,
And Druid rites with honour paid,
To the departed one laid low,
Whose mouldering dust, therein doth show
The mark of a sacred mind.'

We have deliberately not attempted to minimise the astronomical and mythical interpretation Mann proposed for the site, for it so captured the imagination of the Scottish public that it is remembered to this day and there is little doubt that it coloured the attitude of other archaeologists to the excavation; it is interesting to reflect on this excitement at a time when similar interpretations are again in vogue.

A further burial is reported in *The Glasgow Herald* and *The Scotsman*, 24 September 1937; a small roughly circular grave with irregular boulder-built sides (Burial 53), it contained a pottery bowl (SF 1), a flint knife (SF 56), traces of calcined bones and 'carbonaceous earth' (Mackay 1948, 234). Rubbings of several of the slabs forming this setting, the largest measuring 0.55 m by 0.5 m, survive among the documentation of the excavation, but its location on the site is not altogether clear. (It may be noted at this point that the other Neolithic sherds published by Mackay in 1948,

and here SF 2–5, were found between 1937 and 1938 and were therefore not included in Davidson's original paper on the excavations).

In December 1937 a pit was found at a point about 43 m SE of the main site; about 1 m in diameter and 2.3 m in depth, it contained the remains of a wooden upright as well as packing stones. Unfortunately the pit was wrecked by vandals before it could be fully recorded (*The Glasgow Herald & The Scotsman*, 27 December 1937).

Popular interest in the site continued into the following year and on a day of record attendance (Saturday, 7 May 1938) 195,529 visitors are said to have examined the site (*The Glasgow Herald*, 16 August 1938) and Mann claimed that 'the circular area of the sanctuary appears to have a diameter of 245 feet (74.7 m), bounded probably by a ring of 19 large, hard, white sandstone pillars equidistantly set, and each about 8 feet in height' (*The Glasgow Herald*, 25 June 1938; see also *The Scotsman*, 25 June 1938). A model of Knappers, based on Mann's interpretation of the site (Glasgow Art Gallery and Museum '55–96) was made for an exhibition held in the McLellan Galleries, Sauchiehall Street, Glasgow, on 10 November, 1938, when the excavation committee of the 'Druid Temple' presented plans, maps, diagrams and the model to the public. That same evening J Harrison Maxwell gave a lecture on the interpretation of the site. In spite of the fact that admission cost sixpence, public interest was so great that two adjoining rooms had to be taken for the overflow. The following year many of the exhibits – but not the model – were taken to America to be displayed at the San Francisco 'Golden Gate' exhibition.

Four 'graves' very close to the centre of the site were opened at this time; all contained large stones and, in two cases, decayed timber and wickerwork. Several stones are also said to have been decorated in a style akin to cup-and-ring markings. The deepest shaft (2.4 m) contained about 50 stones in the filling; another about 1.8 m deep, containing 'stone implements and masses of wood char', is illustrated in *The Bulletin* (22 June 1938). Notes on glass slides showing a stone-filled grave pit some 5.5 m from the centre indicate that carbonised wood, pottery fragments and cremated remains were found inside the pit, which was about 1.5 m deep.

On the declaration of War in 1939 work was suspended, but to preserve the site Mann attempted to purchase the central acre.

The attention of the Office of Works had been drawn to the site as early as 1937 by Alexander Keiller (10 November 1937) and some correspondence and minutes are preserved among the Office of Works papers in the Scottish Record Office (MW/1/1264). Keiller, who employed the same newspaper cuttings agency as Mann himself (Durants Press Cuttings), sent three cuttings to the Office of Works, and James Richardson, Inspector of Ancient Monuments, visited the site on 18 November 1937. He reported that 'To schedule this ground would only bring ridicule on the Department and give an official stamp of authenticity to the fantastic diagrammatic 'restoration' of a 'wooden temple'. Brightly coloured stobs in red, blue, yellow, orange, green, black and white delineate the Serpent attacking the Sun and the planets rushing in to save Phoebus from extinction. The area forms part of a prehistoric urn field of late neolithic and bronze age date . . .'. 'The evidence of the existence of post holes is inconclusive – some being little more than dark dimples in the sand.' In a later minute Richardson describes the making of a Serpent's head: 'It resembled a fish-trap and was composed of willow wands' (22 November 1937). Keiller, who had felt that an independent survey might have been advisable, was reassured by an official reply from F J E Raby and also by reports from Gordon Childe and Stuart Piggott that the monument at Knappers was an 'urn field more or less on the lines of that at Loanhead of Daviot'.

With the preparation of plans for the rebuilding of Clydebank and other areas of Clydeside in advance of peace, the possibility of the preservation of Knappers was again discussed. The question of the development of the area was raised in the autumn of 1944, and in correspondence

with the Clyde Valley Regional Planning Advisory Committee in October 1944, and with the Town Clerk of Clydebank in December 1944, the Office of Works used Richardson's earlier report as the basis for their decision that so long as the burials within the area were properly recorded there was no occasion to schedule it for preservation – a decision that would have been virtually impossible to carry through without Mann's co-operation. In January 1945 the matter of the preservation of the site was raised at a meeting of the Glasgow Archaeological Society after the conclusion of formal business and after the President, J M Davidson, had left the meeting. An *ad hoc* committee resolved to petition the Secretary of State for Scotland to save the site, and this is reported in *The Scotsman*, 22 January 1945. The letter of petition and supporting correspondence are preserved among the Office of Works papers as well as a letter from Professor V G Childe advising the Secretary of State for Scotland against preservation. Childe had examined the site in 1938 in company with Dr Gerhard Bersu, and they came to the conclusion that the holes were made 'not by prehistoric stakes but by recent field mice. There is no doubt that there were burials of the Bronze Age in the area, and it is by no means impossible that some structures of stakes might have been connected with some of the burials. The area therefore deserves careful watching . . .' (26 January 1945). The Secretary of State therefore felt that there was 'no evidence to justify the placing of any restriction on the development of the area in question on the grounds that it is the site of a Druid Temple' (28 February 1945).

In April 1945 Mann issued a broadsheet *Moles or Men*: 'intimation was received that the outer area (where test diggings proved the existence, well under the surface, of important non-sepulchral prehistoric structures) was about to be sold for industrial or building purposes. Within 48 hours of the receipt of this intimation a special meeting of the Glasgow Archaeological Society unanimously passed a resolution to ask the Secretary for Scotland to receive a deputation, when the position would be explained to him and his support invoked. The Secretary for Scotland has replied that he has consulted the Director of the National Museum, Professor G V Childe (*sic*). The Professor has stated that the prehistoric pottery found on the site has "not been submitted for diagnosis". The excavators have, however, repeatedly placed the pottery and a host of other relics from the site on public exhibition before thousands of visitors. The relics have always been available for scrutiny and "diagnosis" by anyone and at any time. The excavators have no information as to whether the Professor has ever witnessed the exploring work in process. He has, however, published and widely circulated his dictum that the excavations have mistaken mole-holes for the sockets of ancient vertical timber posts which in the course of centuries have decayed and turned into carbonised wood. Interest is accordingly now being shown in the subject of socket-holes found occasionally associated with ancient remains. Careless digging and crude explorations of prehistoric structures have wrecked the records of very many of the sites. Seldom indeed have post-holes been discovered. The rapid spade of the navy usually sweeps away the finer features of ancient buildings and structures, leaving exposed only the obvious stone-built features. As an example of rude treatment of works of antiquity in Scotland in recent years there is an outstanding instance where the massive walls of a very early building were, in order to see the interior, deliberately smashed by explosives [Rahoy, Argyll, excavated by Childe]. Now, however, a few of the more sensible prehistorians use a hand-knife to reveal the positions and the nature of wood and stone features preserved under the modern turf and top-soil'.

An air photograph taken on 26 November 1945 shows the farm of Knappers, the Boulevard and the houses of Drumry Road with only fields in between (SDD Air Photo Library No A7, print 5198); the banks and pathways of the restored 'Druid Temple' are clearly visible. The site remains visible on air photographs taken in 1949, hemmed in by the houses of the SW side of Kirkoswald Drive (SDD Air Photo Library No A68, print 5506; 541A/417, print 4174), and the

area is now situated between two blocks of high-rise flats – Garscadden View and Gleniffer View (fig 1).

DISCUSSION

In summary Mann seems to have found a horse-shoe shaped setting of post-holes, open to the S (the posts oval in cross-section about 200 mm by 130 mm), with further lines of smaller holes extending to a diameter of about 11.5 m and a series of tiny stakes within the main circuit round a stone-filled pit. The post-holes were packed with clay and small stones to increase the stability of the uprights; Mann also records that there were rare instances of one post-hole encroaching on another indicating repair or replacement. Many of the stakes had pointed tips. The posts were plotted full size on site by placing sheets of tracing paper over the surface; the positions were also indicated area by area on separate sheets of paper by triangulation from the corners of each measured section. This has been painstakingly reconstructed by Mr I G Parker from the original measurements, and the central part is shown on fig 4, broadly confirming the extent of the stakes as shown on Mann's plan (1939). The greater extent suggested by Mann in 1938 may be the result of 'test-borings' and, although it has been plotted, makes a less coherent plan. The complete plot has however been deposited in the National Monuments Record of Scotland (DBD/37/11). At least two large post-holes, one to the NW and the other to the SE, appear to have been discovered, the posts set in pits up to 2.3 m deep. Several grave-pits were found. The outlying 'standing stones' do not seem to have been of prehistoric origin – one is certainly a gate post. At the outset it must be appreciated that the land surface of prehistoric times had been completely eroded and that what Mann excavated and planned was a severely truncated surface. The possibility that the stake-holes and stone-filled pits were of natural origin had been carefully considered in discussions with experts in geomorphology, and no natural agency can be put forward. The likelihood that some of the marks are 'wishful' excavation is impossible to disprove, but Childe's remark that 'some structures of stakes might have been connected with some of the burials' suggests that he and Bersu had felt that some of the stake-holes might indeed be genuine. The small size of many of the stakes makes Mann's original interpretation of the site as a free-standing timber structure unlikely and the very slight remains of the stakes cannot be overstressed; the majority of the stakes are very much smaller than the timbers from Durrington Walls, Wiltshire, the timbers of the first phase being 180 mm in average post diameter, or Woodhenge, Wiltshire, where the smallest average timber is about 270 mm in diameter (Wainwright & Longworth 1971, 26, 209). The slight size of the stakes also precludes their use in any domestic structure – at least as main timbers. But if the existence of some of the stake-holes is accepted, a close parallel may be put forward with stake-circles found beneath barrows and cairns. At Arretton Down, Isle of Wight, for example, a circle of 32 stakes, 75 mm to 100 mm in diameter and penetrating the chalk to a depth of 150 mm to 250 mm, surrounded a grave-pit containing a faience bead, a chalk bead and a fossil also used as a bead (Alexander & Ozanne 1960, 265–6); further lines of stakes, not from the same centre, were also found beneath the barrow (fig 4). At Knappers, if our interpretation is correct, the covering barrow would have been destroyed and even the original land surface truncated. Four concentric circles of stakes round a timber 'mortuary house' were discovered beneath a large mound of turves at Brenig No 40, Denbighshire (fig 4), which had originally covered a cinerary urn with a cremated burial (Lynch *et al* 1974, 19–23).

The range of small finds found on both sites at Knappers demonstrates that the sand terraces were the focus for burial and ritual for at least a millennium and a half (*see also* p 192); the rescue excavations by Davidson and Mann recorded many features that would otherwise have been lost.

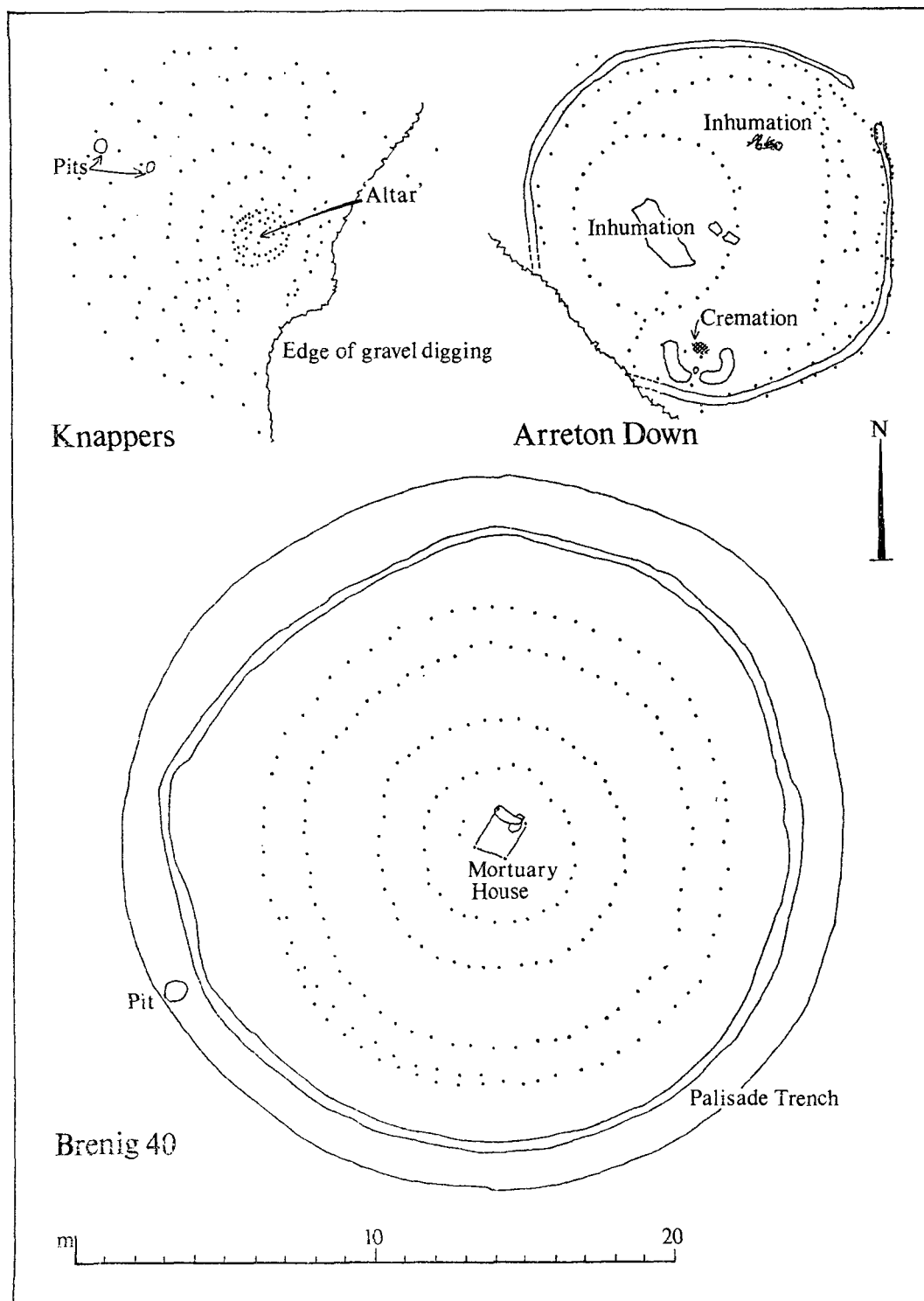


FIG 4 Knappers, Dunbartonshire: possible stake structure excavated in 1937-8; Arreton Down, Isle of Wight: stake setting under barrow; Brenig, Denbighshire: stake circles, palisade trench with 'posts' and packing under Barrow 40

Mann's 'reconstruction' of a 'timber ritual monument' made Knappers the centre of attention in the late 1930s, but detracted from more measured interpretation. We have suggested tentatively that the stakes may originally have been part of one or more barrows of Bronze Age date, the mounds themselves having been ploughed flat.

Working of flint on the site is perhaps also attested, although the flint was found scattered and only a few pieces have any firm findspot; SF 24-41, 43-55 are without exact location, SF 21-3, 42 and 57 are said to have been from burials, but these cannot now be identified, and SF 56 was found with a Neolithic bowl (SF 1) in a grave along with traces of cremated bones.

There is little to be said, however, about the distribution of the other finds; the earlier material, with the exception of the grooved ware from site no 15 (SF 6-7), occurred on the W side of the Boulevard along with the possible stake circles. The food vessels, cinerary urn, faience bead and dagger were found on the E, but whether this indicates a change in focus of ritual activities (in which case both the stake arrangements and the grooved ware would perhaps be out of place) or merely underlines the chance nature of the discoveries is not known. While all of the food vessels can be attributed to individual sites on Davidson's plan (site nos 1, 2, 5, 6 & 7), it is regrettable that none can be associated with burials or artefacts. Three of the find-spots (site nos 5, 6, 7) are close together with the fourth, as an outlier, 15 feet (4.6 m) to the NW. On the southern edge of this group are six other sites (nos 3, 4, 9, 13, 16, 18) which have produced evidence of inhumations or cremations and the majority of the small finds, including the bronze dagger and the lignite and faience beads. The bulk of the Bronze Age finds cluster, therefore, in an area approximately 9 m by 7.5 m; it is not at all impossible that these finds represent deposits beneath a single burial mound which had already been ploughed flat.

The range of finds from the excavations at Knappers is perhaps the most important feature of the rescuework; the Neolithic pottery in the 'Western' tradition and the sherds of grooved ware (SF 1-7) are examples of wares with wide distribution patterns. The flint adze (SF 14), like the faience bead (SF 16), indicates a knowledge of and a participation in wide-ranging patterns of trade and exchange (even if a 'local' manufacture of faience beads is accepted). With such contacts established the presence of stake-circle barrows becomes understandable. But a further suggestion may also be put forward. The presence of grooved ware and of stake and post rings, however exiguous and difficult to interpret, may perhaps indicate that a henge monument formerly existed on the gravel terraces at Knappers; only with the most sophisticated means was it possible to interpret the interior features at Balfarg (Mercer this volume pp 63-171), at Knappers a small part of what was a severely truncated land surface was examined before any such techniques had been evolved. Finally the area was used as a food vessel cemetery, comparable to discoveries on other sand and gravel terraces of the Clyde, including for example Ferniegair (Welfare 1975).

SMALL FINDS

Pottery in the 'Western' tradition by A S Henshall

- 1 Bowl, complete but broken and badly repaired so that the irregularity of its form has been exaggerated. The fabric is hard, mainly black shading in places to buff with a semi-burnished slip outside; the surfaces are uneven and in places are broken by quite large protruding grits; tool marks remain on the upper surface of the rim, on the internal surface, and in places forming a groove below the rim outside. No section of the fabric is visible. One perforation has been made from the outside. External rim diameter 150-162 mm, height 100 mm. NMAS EO 965. Fig 5, no 1.
- 2 Two rim sherds and four other sherds, all apparently from the same vessel. The fabric is hard, with a dark grey core, fairly heavily gritted mainly with small sharp speckled granite-type grits. The outer surface is rather uneven, slipped, buff to grey, with some grits showing; the inner surface

is rather rough with protruding grits, grey. The form has evidently been rather irregular; the two rim sections vary considerably, and the angle of the rim cannot be determined precisely, though the bowl appears to have been slightly contracted at the rim. Two wall sherds have a sharp curve in the vertical section suggesting the walls contract sharply towards the base. The external rim diameter is about 205 mm. NMAS EO 969. Fig 5, no 2.

- 3 Small wall sherd similar to SF2 but of a more friable fabric without speckled grits, and with a smooth inner surface. NMAS EO 969.
- 4 Small rim sherd from a bowl at least the size of SF2. The fabric is dull grey, fairly heavily tempered with speckled grits and including brown mica, the surfaces uneven. NMAS EO 968. Fig 5, no 4.
- 5 Rim sherd of hard compact dark grey fabric with fine grits. All surfaces have a semi-burnished dull brown slip. The outer surface of the bowl and edge of the rim have been damaged by scorching. The upper surface of the rim is rippled. The external diameter is 325 mm. NMAS EO 967. Fig 5, no 5.

The pottery was first published in detail by Mackay (1948). Bowl 1 and the two other bowls represented by the sherds 2 and 4 are carelessly made and roughly finished, irregular in form with uneven surfaces and visible toolmarks, though SF1 and 2 are of fairly hard fabric. The plain round-based bowl is found widespread in space and time in the British Neolithic. Bowl 1 has a heavy rolled rim above vertical walls, a somewhat distinctive feature, seen on other bowls in west-central Scotland, two at the settlement site of Townhead, Rothesay, and a single stray find in Dunagoil Cave, both on the Island of Bute, and several at the settlement site at Whitmoss, Renfrewshire (Scott 1977, 29–30; unpublished in Bute Museum; unpublished in the Hunterian Museum). A somewhat similar bowl, but with the heavy rim flanged rather than rolled, was found in the filling of the outer part of the chamber at Glenvoidean, also on Bute (Scott 1977, 22). The sherds of one of the Townhead bowls were associated with a hearth, charcoal from which has yielded a date of 2120 ± 100 bc (GaK-1714) (Scott 1968). However, it is likely that a type of bowl of such simple form would have been in use for a considerable time. Bowls of this general type are occasionally found farther E, for instance at Oatslie Sandpit and the Catstane, Midlothian, both stray finds (Stevenson 1948, 294–5; Cowie 1978, 197, fig 10).

Bowl 2 seems to have been a larger vessel of similar proportions to 1, though probably with a sharp inward curve low down where the wall contracted for a somewhat flattened base, as seen on the intact bowl from Oatslie Sandpit. The rim is everted with an internal bevel, and is noticeably irregular in profile. This form of rim is rather unusual, the best parallels being a bowl from the chamber at Bicker's Houses, Bute, a small sherd from Townhead, and two small sherds from Monamore chamber, Arran (Henshall 1972, 306, 416; Scott 1977, 29 fig 13c; Henshall 1972, 305, 380). A crisper version of this rim form appears on a bowl from the chamber at Port Charlotte, Islay (*Discovery and Excavation in Scotland* 1976, 12). The small rim sherd from bowl 4, of characteristic Neolithic fabric with mica in the tempering, is too simple and small to allow useful comment.

Bowl 5, in contrast to the others, is of outstanding quality, of hard compact fabric with a semi-burnished slip, but is only represented by a single damaged rim sherd. It clearly belongs to a group of bowls found in W Scotland, which have wide flanged rims, vertical collars and are carinated, though the carination angle may be softly rounded. The rims have a sharp inner angle, and vary from a horizontal flange to a down-dropping flange giving a hook section. There is generally rippling or fluting on the rim or on the body as well. Bowl 5 has rippling across the rim. The bowl is unusual in having a slightly everted collar. The closest parallel comes from Townhead (Scott 1977, 29 fig 12 c), though the distribution of the type is fairly wide from the Outer Isles to Argyll and Arran. Except for Townhead and Knappers, the sherds come from chambered tombs. This group of bowls was described in 1972 (Henshall 1972, 100–1, 172–3, though it may have been rash to include the little Tormore sherd) and more recently discussed by Scott as the most distinctive element in his newly defined Rothesay style of pottery (1977, 32–5).

Scott has argued for the first appearance of this pottery style somewhat before the middle of the third millennium, based on its postulated origins in two styles of English pottery (1977, 36). Apart from this, there are two pieces of dating evidence relating to flanged bowls, but neither wholly

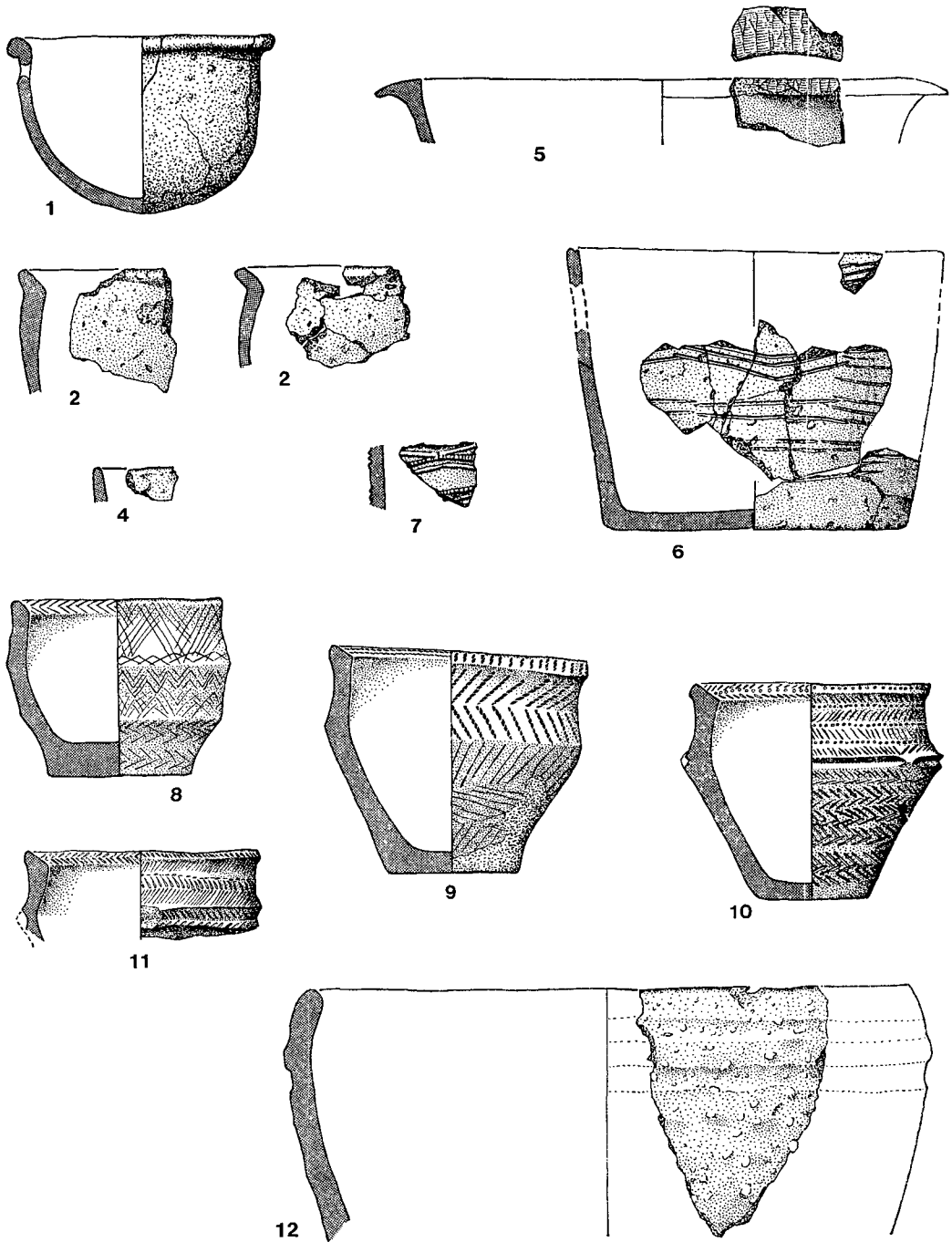


FIG 5 Knappers, Dunbartonshire: pottery (scale 1:4)

satisfactory. In view of the similarity of three of the Knappers bowls to four Townhead pots, it may indeed be justifiable to regard the pots from each site as a group, and to recall that one of the Townhead bowls is associated with the radiocarbon date quoted above. At the tomb of Monamore, Arran, the flange from the rim of a bowl and one of the sherds compared to bowl 2 were found in the forecourt, in the middle of a thick layer of redeposited soil. Charcoal from the top of this layer gave a date of 2240 ± 110 bc (Q-676), but there is conflicting evidence as to the length of time the deposit took to form (MacKie 1964, 13-19). At present, then, the indications are that all the Townhead and Knappers pottery discussed here, which in Scott's scheme would not be early in the Rothesay style, belongs to the early centuries of the third millennium in terms of calibrated radiocarbon dates. It should be noted that the grooved ware from Knappers can be compared with similar sherds from Townhead, and although there is no evidence at either site for the association of the products of the two pottery traditions, such a date for the pottery under discussion would allow this (see below). Further, yet another of the plain round-based bowls from Townhead has an incised line on the internal rim bevel, a feature alien to the 'western' tradition but characteristic of grooved ware. However, when an overall view of N British Neolithic pottery is taken, and in particular the early date for ripple-decorated carinated bowls in NE Scotland, such as Boghead, Moray, with five radiocarbon dates centred on 2981 bc, and Tulloch of Assery B, Caithness, where it pre-dates a passage-grave (Henshall 1982), it would not be surprising if an earlier date emerged for some of the pottery described here.

Pottery in the Grooved Ware tradition by A S Henshall and J N Graham Ritchie

- 6 Sherds from site no 15, comprising part of the wall of a vessel, part of the lower wall and base, and also a small rim sherd probably from this vessel. The fabric is hard, dull brown, fairly heavily tempered including some quite large grits. There is a tendency to break along building rings. The outer surface is uneven, with a slip, and in places there is faint vertical fluting from paring the surface. Decoration is by roughly and mainly deeply incised lines, the upper register of triple shallow chevrons, the lower register possibly intended to repeat this. The two pieces of wall, although not joining, appear to overlap, the bottom of the main wall portion having broken on the same building ring as appears midway down the wall of the lower wall portion. The position of the rim in relation to the wall, and its angle, is uncertain. Besides incised lines outside there is a roughly and deeply incised line on the rim bevel. The diameter of the base is 190 mm. NMAS EX 3. Fig 5, no 6.
- 7 Wall sherd of a pot from site no 15, of similar size and similar fabric to SF6 but with a noticeably smooth slipped outer surface. Decoration is by fine applied cordons crisply defined by neat tooling, some cordons with transverse nicking. NMAS EX 4. Fig 5, no 7.

The grooved ware pottery was originally published in detail by Mackay in 1950; it must be admitted that Davidson's account of the discovery of sherds at site no 15 (1935, 362-3, 376) does not mention the fact that they are decorated, but Mackay's attribution to this deposit is unequivocal. The more complete vessel (SF 6) belongs to the Clacton Style of grooved ware (Wainwright & Longworth 1971, 236-7); in Scotland comparable vessels have been found for example at Townhead, Bute, mentioned above, and Tentsmuir, Fife (Mackay 1950, 182; Longworth *et al* 1967, 75, 90-1). The incised line on the rim bevel may be compared to a pair of irregular lines along the rim edge of a vessel from the Stones of Stenness, Orkney, the surface of which is also decorated with slack lozenges formed by triple line incisions (Ritchie 1976, 24-5, SF 16). From the deposits within the chambered tomb of Quanterness, Orkney, similar surface and rim decoration may be quoted (Renfrew 1979, 79, vessels 2 & 10). The tendency of the Quanterness vessels to break along the building rings is also found on SF 6. Radiocarbon dates from both Stenness and Quanterness indicate a *floruit* of this style, in terms of corrected radiocarbon dates, early in the third millennium BC. A vessel with very similar proportions to SF 6 has been found within the henge monument at Balfarg, Fife, belonging to the first phase of activity on the site, that is shortly pre-dating the first structures for which radiocarbon dates comparable to those from Stenness and Quanterness have been obtained (Mercer, this volume, p 130, fig 43, no 8); decoration in this case, however, is rather simpler consisting only of a band of three or four deeply incised lines below the rim. Sherd 7 belongs to the Woodlands Style of grooved ware outlined by Wainwright and Longworth (1971, 238-40); it possesses distinctive plain converging cordons as well as cordons decorated with

transverse nicking or slashing. Comparable sherds from Scotland include examples from Rinyo, Orkney; Tentsmuir, Fife; and Luce Sands, Wigtownshire.

Food Vessels and Cinerary Urns

- 8 Food vessel (site no 7); a tripartite bowl of fine reddish-brown ware, well-smoothed externally but rougher and with larger grits showing internally. The inward bevelled rim is decorated with incised chevrons. The external decoration is in three zones, of which the upper comprises roughly-incised overlapping chevrons, with a band of incised lozenges, doubled for about a quarter of the diameter. The two lower zones contain roughly-incised stacked and vertical chevrons. External rim diameter 125 mm to 130 mm, base diameter 80 mm, height 104 mm (Davidson 1935, 375–6, fig 10). The vessel contained carbonised material occupying about one tenth of its capacity (Davidson 1935, 358, 380–2). Fig 5, no 8.
- 9 Food vessel (site no 2) of fine reddish-brown ware, medium-sized grits showing, partially reconstructed. The inward bevelled rim is decorated internally with two lines of twisted cord impressions and externally with short horizontal cord impressions. The vessel is carinated with the lower three-fifths decorated with irregular zigzag incisions and the upper part with more evenly laid out horizontal chevrons of cord impressions. External rim diameter 148 mm to 153 mm, base diameter 80 mm, height 130 mm (Davidson 1935, 373, fig 7). Fig 5, no 9.
- 10 Food vessel (site no 2), now lost and therefore not illustrated (Davidson 1935, 373–4, fig 7). The lower half of the vessel survived to a height of about 75 mm, decorated with incised zigzags.
- 11 Food vessel (site no 5), restored, with some damage to the ribs and stops, brown gritty fabric. The rim is inwardly bevelled with two lines of strokes incised in opposing directions with impressed circles at the centre; the outer bevel of the rim is also decorated with circular impressions. The lower three-fifths of the vessel has roughly impressed horizontal herring-bone pattern; the upper part has been more neatly decorated with an elaboration of the stroke and dot motif of the rim. Rim diameter 140 mm; base diameter 60 mm; height 130 mm (Davidson 1935, 374, fig 8). Fig 5, no 10.
- 12 Food vessel fragment (site no 6); about a third of the rim survives of fine brownish ware. The inward bevel of the rim is decorated with lightly incised chevrons. There are three lines of incised zigzag above the carination, where the grooved cordon is decorated internally with herring-bone incisions. Estimated rim diameter 140 mm (Davidson 1935, 374–5, fig 9). Fig 5, no 11.
- 13 Rim and body sherds of a large bucket-shaped vessel with an estimated rim diameter of 180 mm; dark, heavily gritted fabric; rounded rim; the only decoration is provided by two finger-impressed channels. Fig 5, no 12.

The tripartite bowl (SF 8) belongs to the category of Irish bowl food vessels described by Simpson (1965). It has a less well-defined profile than many of the tripartite bowls from SW Scotland illustrated by Simpson or Young (1951) and the crude, incised decoration is much less elaborate than the zoned, horizontal repeating patterns found on bowls such as Dalton School, Cambuslang, Springhill Farm, Baillieston and Patrickholm Quarry, Larkhall (Simpson 1965, nos 33, 39, 40). A close parallel to SF 8 is a bowl from Ferniegair, Lanarkshire (Welfare 1975, 10, fig 5, 10), found in a cist with an inhumation. Although this is a slightly larger vessel with a shallow, circular groove on the base, it has a similar triple-zoned, decorative motif incorporating stacked chevrons, in this case impressed with a comb. The inner, bevelled rim of both is decorated; SF 8 with an incised chevron pattern and Ferniegair with rows of comb impressions. Each has crude, angular stabbings emphasising the carination of the central zone, stacked chevron decoration with triangular notches accentuating the carination can be seen on a food vessel from Brown Head Cairn, Arran (Young 1951, 40, fig 1, 6) which was found in association with disc beads in a cist. A food vessel from cist no 12 in the cairn at Balnabraid, Kintyre (Ritchie 1967, 86, fig 3, 4), which falls into the Ribbed Bowl group within the category of Irish Bowls, has a similar incised chevron pattern on the interior bevel of the rim while the body decoration consists of crude vertical and slanting incisions, separated by a row of chevrons.

SF 9 can be compared with food vessels from Kyle Park, Uddingston, Annathill (Simpson 1965, nos 45, 50), Drumpellier Estate, Coatbridge and Old Kirk Farm, Balloch (Morrison 1971, 25, fig 3, 3 & 22, fig 2, 4). The twisted cord impressions on the rim are closely paralleled with those on the Old Kirk Farm vessel while the use of cord-impressed chevrons on the upper third of SF 9 is

similar to that used on the food vessel from Kyle Park. The mixture of twisted cord and incised decoration is found also on the Annathill food vessel whereas, on those from Kyle Park and Old Kirk Farm, the overall decoration is, respectively, incised and of twisted cord.

Although SF 10 is now lost, the published photograph suggests that it might have been a similar type to SF 9.

A close parallel to SF 11 is a food vessel from Ferniegair (Welfare 1975, 9, fig 4, 6) which was found in a cist with an inhumation and remnants of a moss fabric. Also similar are two others from Newton, Cambuslang (Simpson 1965, nos 47, 48). SF 11 may have had six unperforated stops in comparison with the Newton vessel (Simpson 1965, no 47), which had four only. The incised chevron pattern is similar on both food vessels although the Newton vessel lacks the horizontal rows of circular impressions on the upper part of the body and on the internal and outer rim. These dot impressions can be seen on the exterior of the rim of a tripartite bowl from Springhill Farm, Baillieston (Simpson 1965, no 39) and on the interior and exterior of the rim of a vessel from Teaths Farm, Lesmahagow (Simpson 1965, no 43). One of the food vessels from Newton, Cambuslang (Simpson 1965, no 47) shows similarities to SF 12 in the decoration of the rim and in the use of three lines of incised zigzags on the upper part of the body. Both have a grooved cordon decorated internally with incisions.

SF 13. The surviving fragments are too small to allow restoration of this bucket-shaped vessel. The heavily gritted fabric can be compared with a cordoned urn from Dippen Farm, Arran (Balfour 1910, 130, pl xxi, fig 47 b-c) but this vessel has two well-defined cordons whereas SF 13 has only two shallow, finger-impressed channels.

The Knappers pottery fits well into a series of small Bronze Age cemeteries containing food vessels and cinerary urns found on the sand and gravel deposits of the lower Clyde valley (RCAMS 1978a, 14, 17-19). The site at Knappers may indicate that these cemeteries continued downstream along the N bank of the Clyde, but there appears to be no comparable evidence of their continuation on the S bank, in the lower reaches of the river.

14 *The flint adze-blade and its cultural context* by J B Kenworthy

Introduction

This is a later Neolithic edge-ground tool of Duggleby adze type; of fine workmanship, it may be considered as being socially prestigious rather than of 'everyday' significance. Following a description, the means of manufacture and possible use are discussed; finally, the broader cultural and chronological context of the piece is sketched.

Description

The raw material is a variegated light to dark grey flint with occasional pale spots. The adze-blade (fig 7, no 3), found on site no 1, is 134 mm long and weighs 104.2 gm; the width varies from 53.5 mm at the blade to 31.5 mm at the waist and 36 mm at the butt. It reaches a maximum thickness of 17 mm at a point 68 mm from the blade edge and thins to 4 mm at the butt. The cross-section is generally D-shaped, though the underside is slightly concave near the blade, grading to a convexity which becomes more pronounced at the waist before finally flattening out to a fish-tail butt. The plan is basically symmetrical, the blade edge curved and expanded. The edge angle is about 60°. Grinding ('polish') is concentrated towards the blade edge, most notably on the underside (where, however, there is a narrow patch some 72 mm from the blade edge). On the dorsal face grinding extends from the blade area along the spine of the tool to a point 75 mm from the edge. The faces meet to form an acute angle at butt and sides. Glasgow Art Gallery and Museum LA5719 d.

The asymmetrical section and the axial symmetry of plan clearly define this tool as an adze, in conventional terms. It is now customary to question such functional identifications made on morphological grounds alone (cf Sonnenfeld 1962); the following section attempts to remedy this through microscopic evidence, as well as considering the mode of manufacture of the piece.

Technology and use

The adze was examined using a binocular microscope at magnifications between 10x and 80x, the results being combined with details of the flake-scar pattern. Judging from the final form, the blank

for the adze head may well have been a large flake, but no evidence survives of its original blocking-out. The next step would have been to 'turn the edges' to provide micro-platforms for the shaping of the faces (Knowles 1944, 14-16; 1953, 38-43). The form of the secondary flaking suggests that following cross-flaking (? with a 'soft' hammer), 'pull' flaking, using a levering action and a blunt pressor, was employed for the most part, with perhaps some finishing of the dorsal face by finer 'push' pressure flaking along the sides and butt (Patten 1978). Examination of the sides under magnification shows crushing, with micro-flare hinges and micro-cones (pl 9c; Schousboe 1977). This is due to the scrubbing of the sides using a hard antler or stone tool to render the outline more regular (cf Bonnicksen 1977, 132, 133, 164, pl 12c). (My interpretation of the 'scrubbing' on the axe from Greenbrae, Cruden, Aberdeenshire, is probably incorrect; this too is most likely due to a final tidying up of the sides of the axe: Kenworthy 1977, 90). The final stage of manufacture was the grinding. Without experimental work, it is impossible to be sure whether a polishing-stone or leather was used, but examination of the striations (pl 9d-e) shows that the medium used left U-section grooves 0.025 mm to 0.075 mm wide and about half as deep running approximately parallel to the long axis of the tool. This corresponds to the use of fine sand and coarse silt (BS 410, 1969); there was no evidence for the successive use of finer materials (cf Semenov 1964, 70). As can be seen, the striations form 'facets' up to 1 mm broad. These occur on both faces. Again there has been no opportunity to carry out experimental work, but this pattern seems to be due to a single phase of grinding and sharpening, despite some similarity with wear on a chert adze from Verkholsensk, Lake Baikal, USSR, which Semenov (1964, 130-3, pl 63-4) interpreted as the result of use, the tool being, he claimed, self-sharpening. In this case, the absence of any other striations, their angle to the blade edge and their presence on both faces, including areas which would probably not be exposed to wear when the tool was hafted, make it likely that the observed traces are to be considered as the final stage of manufacture. Examination of the edge at 80x shows that it is all slightly blunted by micro-step fractures, usually about 0.1 mm deep and wide, and mainly removed from the dorsal surface. There are also a few flaring micro-hinge fractures up to 1 mm deep and 1 mm across, occasionally in multiples up to 3 mm across (pl 9e). Few of the micro-flakes are removed from the ventral face. Some of this damage may be due to post-excavation handling, but the rest of the removals suggest slight and short-lived use (perhaps no more than a few minutes) before the tool was buried. It should, however, be noted that the microwear pattern is similar to that adduced by Brink (1978, 33, pl 2-3) as evidence for spontaneous retouch on scraper edges. A consideration of the mechanics of fracture suggests that the effect of the reaction between the adze and the material (possibly wood) it was cutting would lead to the same result as that produced by spontaneous retouch. The position of the wear further suggests that the tool was indeed used as an adze, and that it was hafted with the curved face upwards, although comparison with ethnographic examples suggests that it is more normal for the equivalent face to lie against the shoe of the haft. In order for the tool to function effectively, it would have to have an angle of attack between 40° and 60°. The forms and uses of adzes have been discussed by Blackwood (1950, 13-27) and recent useful work by Best (1977) has shown that an adze with a curved edge has a chopping action, rather than slicing evenly in and out of the wood. Best's work shows that much experimental work is necessary, including stress tests, before we can hope to understand the precise function of our adzes. *It is important to remember when dealing with axe- or adze-blades that they were only part of the tool, and with this in mind a suggested reconstruction is offered (fig 6).* The real thing may well have been more ornamental than the drawing shows. The size and weight of the tool show that it was for medium to light duty tasks.

Discussion

Recent publications by Kinnes (1979), Green (1980), Manby (1979) and Pierpoint (1980) allow more to be said about the context and significance of the find than has hitherto been possible. Manby (1974, 95) defined this type as the 'Duggleby adze', closely related to edge-polished Seamer axes. Kenworthy has recently discussed the axes and their context in Scotland, to which the reader is referred for further details (1977). As is to be expected, these types occur mainly in W Scotland and NE Scotland - areas of major find concentration. In the W, apart from the Knappers adze, there is a very fine example from Dalgarnen, Kilwinning, Ayrshire (Glasgow Art Gallery and Museum, LA6436b), and a much battered example from Lochgoin, Fenwick, Ayrshire, probably

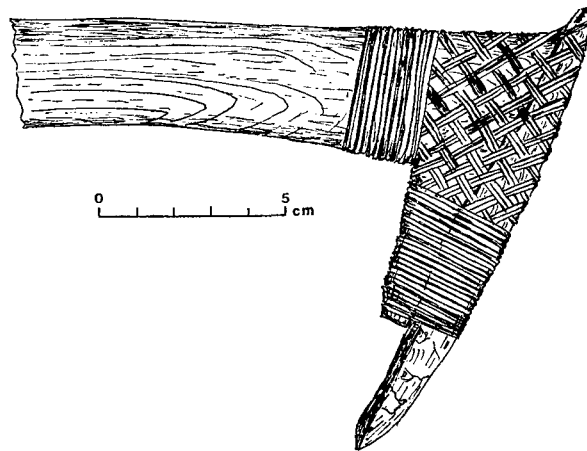


FIG 6 Knappers, Dunbartonshire: Duggleby adze, proposed reconstruction (scale 1:2)

associated with a large kite-shaped projectile point (Paton 1890, 3–4). This may well be an Irish type (cf Wilde 1859, 26, fig 27 for an almost identical example from Co Down). Green (1980, 94, 97, considers that large kite-shaped arrowheads in England are indicative of the Duggleby phase of his Towthorpe tradition, possibly a short phase. Radiocarbon dates are lacking, but he assigns this most probably to the first half of the second millennium bc mainly because of the association of Seamer and related axes with a barbed-and-tanged arrowhead in the York hoard of flint tools (Radley 1968; Manby 1979, 81). For reasons stated below, this dating must be rejected, and in any case the York association is not entirely certain. Other Duggleby adzes from Scotland include one of ochreous flint from Castlesteads, Dalkeith, Midlothian (NMAS AF 1047) and a fine, all-over polished example from Ferniebrae, Slains, Aberdeenshire (NMAS AF 63), of mottled grey flint. An example in stone of related type from Little Barras, Drumlithie, Kincardineshire (NMAS AF 267), and an unprovenanced fragment in St Andrews University Archaeological Museum may be compared with similar finds in Yorkshire (Manby 1979, 69). Like the English examples, these are both of greenstone. The type and related forms have a wide distribution in Southern Britain, from Dorset (Smith 1969) to the Thames (Adkins and Jackson 1978, 35, especially no 185), East Anglia and the East Midlands (Cottrill 1941, 234; Moore 1979, 86), but the main weight of the distribution is in Yorkshire. From an examination of the location of finds, Pierpoint has suggested a centre in the area of Rudston and the possibility of a specialist production centre (1980, 186–7). It is of interest here to note that independently Green (1980, 103) has noted that the distribution of ripple-flaked oblique arrowheads, which is similar to that of the finds under discussion, may have had a centralised production area in the Yorkshire Wolds, W of Bridlington. They are less uncommon in Scotland than Green's map suggests, and, although somewhat later (about 2000–1800bc) than the Duggleby/Seamer tool series, may well form a continuation of a pattern of the same network of what may be ceremonial exchange of specialist and prestige goods in later Neolithic Britain. All commentators (eg Manby 1979, 69; Pierpoint 1980, 186) agree that the Duggleby adzes and Seamer axes are not only of specialist production, but of social importance – in other words they are 'ceremonial' rather than 'work' tools. As a contrast, it is worth noting the stone adze fragment from Knappers (SF 57); this is of mudstone, in contrast to the greenstone (possibly Group VI) used for stone adzes of Duggleby-related type. The reason for the presence of such a fragment in a grave is unclear, but the original tool seems to have been of 'everyday' type. The ethnographic evidence for such objects and their social context has recently been discussed by Phillips (1979).

Perhaps the most important recent contribution to our knowledge of the context of these implements has been that by Kinnes (1980) in his discussion of the neglected area of Neolithic funerary sites outside the long barrow and chambered tomb traditions. Using a simple matrix-sorting technique he has produced a series of six stages (A–F) ranging from the early to the latest Neolithic. Edge-polished axes and adzes clearly belong only to his phase D, equivalent to Green's Duggleby

phase. It is interesting to note some other features of this clearly-defined stage: Mortlake pottery, polished and polished-edge knives, lozenge arrowheads and jet sliders (these continue into phase E). Transverse arrowheads, including ripple-flaked forms belong to phases E and F, while grooved ware does not appear until the final phase, F. Cists, as a burial form, seem to be restricted to phase D. This clearly conflicts with Green's late dating for the phase, and in the absence of radiocarbon determinations, a date in the second half of the third millennium bc, perhaps centred on 2200 bc, can only be suggested tentatively. This, of course, in terms of Scottish sites would not pre-date the appearance of grooved ware, certainly present on the mainland by 2300 bc. Kinnes' scheme is of much interest, in that for the first time it provides some degree of separation of later Neolithic assemblages, and hence for the Scottish finds under discussion. We may now add jet beads of Greenbrae type to phase D (Kenworthy 1977) alongside the jet sliders, and are able to be slightly more precise about the context of the Knappers find.

On the basis of the above, the occurrence of the Knappers adze in a boulder cist fits well (site no 1). Cists are a feature of phase D, and Duggleby/Seamer series tools are not uncommon in funerary contexts, underlining their social significance. The possibility of a ritual centre at Knappers may be strengthened, but on the basis of the English evidence alone, it is impossible to connect the find with the grooved ware from the site. We have, however, another glimpse of what must have been a complex series of exchange systems operating between different parts of the British Isles, covering the whole island, even if no one system did this in itself. It is against this background that ideas, as well as goods, would travel, and we should not be surprised to find that ideas indeed travelled widely between societies where prestige seems to have been gained and maintained through control of ceremonial 'power' and the acquisition and possession of socially-valuable goods derived from an exchange network.

Details of plates

Plate 9c shows the side of the adze at the waist (c 24x); 9d shows the ventral face near the centre of the cutting edge (c 12x); and 9e shows the dorsal face near the centre of the cutting edge (c 12x).

Miscellaneous Objects

- 15 Bronze dagger (site no 4); triangular dagger, rather thicker at the centre than near the edges of the blade, the surface patinated and with patches of accretion. The positions of the three rivet holes at the heel of the dagger are clearly indicated, although two have been damaged; the edge of the hilt is also clearly shown with traces of an omega-shaped recess still visible on each side. The dagger is 104 mm long, 35 mm broad at the hilt and about 2.5 mm in maximum thickness. The two surviving rivets are angular in section, 8 mm long and 3 mm in diameter. Fig 7, no 4.
- 16 Faience bead (site no 13); segmented bead with five sections, pale blue in colour with accretions. 14 mm long, with central circular longitudinal perforation 1 mm in diameter; the accompanying urn does not seem to have survived. Fig 7, no 5.
- 17 Two oval beads of lignite (site no 9), the larger 14 mm long, 9 mm thick with a central longitudinal perforation 3 mm in diameter; the smaller, less regular, 8 mm long and thick, with a central perforation 3 mm in diameter. Fig 7, no 6.
- 18 Oval disc of lignite (site no 15), 22 mm long, 14 mm broad and 3 mm thick, slightly curved in longitudinal section. Fig 7, no 7.
- 19 Dome-shaped piece of fired clay, possibly a playing piece, about 14 mm in base diameter and 13 mm in height. No association. Fig 7, no 8.
- 20 Lignite disc, 56 mm by 40 mm and 8 mm thick, with marks of drilling on each side not quite opposite each other. Fig 7, no 9.

The presence of a dagger (SF 15) on a flat slab along with 'decomposed matter resembling bone' at site no 4 may suggest the discovery of a dagger grave (*see* Henshall 1968); the dagger belongs to a group outlined by Piggott (1963), Coles (1969, 46) and Gerloff (1975, 165, no 287, pl 25); the identification of the omega hilt-mark for the first time on the Knappers piece adds it to a more localised type of east-central Scottish daggers, comparable to that from Ashgrove, Methilhill, Fife (Henshall 1964, 169-72). The faience bead (SF 16), which accompanied a cremation deposit in a cinerary urn (site no 13) is one of a small number of segmented faience beads from Scotland

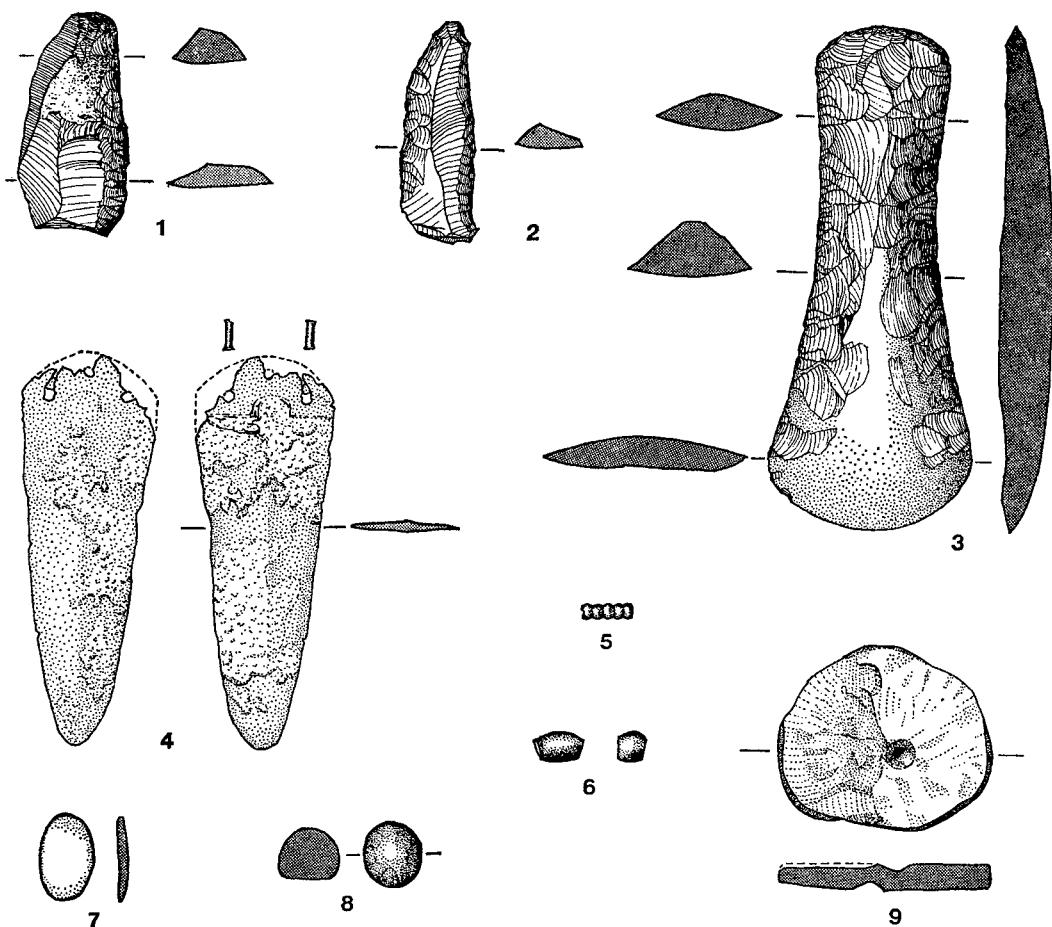


FIG 7 Knappers, Dunbartonshire; flint, bronze, faience and lignite beads, lignite and clay objects (scale 1:2)

(Stone & Thomas 1956, 78-9); it is unfortunate that the urn no longer survives as very few beads have associated objects. From Misk Knowe, Ardeer Sands, Ayrshire, two segmented beads and a star-shaped bead of faience accompanied a cremation in a small bucket urn (Morrison 1968, 106). At Mill of Marcus, Brechin, Angus, an encrusted urn with a cremation and segmented faience bead was found in 1808 (Hutcheson 1890). Among isolated examples are those from Culbin Sands, Morayshire, Shewalton and Stevenston Sands, Ayrshire, and Luce Sands, Wigtownshire. In the most recent general review of the problems of origin of such beads (Megaw & Simpson 1979, 228-9), the variety of composition discovered by analysis is stressed, implying either lack of controlled conditions in local manufacture or access to a wide variety of foreign markets (E Mediterranean or Near Eastern).

Flaked Stone by Caroline Wickham-Jones

Introduction

The assemblage of flaked stone from Knappers comprises only 32 pieces in addition to which there are four unworked pebbles and one flake broken from the end of a ground stone adze. Two of the pebbles are flint but one is quartz and one siltstone. Neither of the latter two stones are represented amongst the flaked pieces which are all of flint with the exception of one chert flake. Except as noted, the discussion that follows will refer to the flaked pieces of flint and chert only.

Sources

It is most likely that the flint represents the flaking of small pebble nodules collected from local gravels. Both the range of colours present and the smoothed state of any surviving cortex suggests that the original nodules were not of fresh black flint but had already eroded out of their chalk matrix and had had time to develop different colours and undergo abrasion. Pebble sources of flint are relatively common throughout Scotland particularly in gravels such as alluvial or beach deposits (Wickham-Jones & Collins 1978).

Two unworked flint pebbles, nos 21 and 24 are present in the collection. Both are small but it seems that the nodules chosen for knapping were of a similar size. The flakes in the main assemblage are all small and there is a relatively high number of primary and secondary flakes, both of which retain some of the original outer surface of the pebble, compared to that of inner flakes. Apart from the size, the lack of bad flaking amongst the assemblage suggests that the knappers were able to obtain pebbles of good quality flint.

The two retouched pieces, nos 55 and 56, are both larger than any of the other flakes in the collection and it is possible that they represent a different, although still pebble-based, source of flint.

Throughout the catalogue both cortication and patination have been recorded and affect most of the pieces. Both conditions have occurred after deposition (*see* Shepherd 1972, 114–18) and do not necessarily represent the state of the flint when knapped.

Technology I: Primary Knapping Processes

The small size of the assemblage and absence within it of any cores might be held to argue against knapping having taken place on-site. However, other evidence suggests that the collection is largely made up of knapping debris so that it does represent an amount of on-site flint working.

There is one core trimming flake present and a high percentage of the pieces are small and exhibit features such as irregularities and a lack of platforms or ventral surfaces. Such flakes are rarely purposefully knapped but rather represent *débitage*, the waste that is inevitably produced in large amount by any knapping process. In addition there is little indication amongst the main collection of the actual use of pieces. Only two of the flakes are retouched and, in fact, the large size of these pieces differentiates them from the rest of the assemblage (*see* above). While it is perfectly possible to use unretouched flakes as efficient tools few of those present are regular enough to lend themselves easily to unaltered use. It is important to remember, however, in the absence of any definite evidence such as knapping floors that *débitage*-like pieces may also have other causes such as post-depositional breakage.

Whether knapping took place on-site or not it is possible from a close examination of the pieces to reveal some detail of the methods used in the creation of the assemblage. Some of the flakes are broken, but where the platforms are preserved they are invariably artificial, formed by the removal of a flake from the nodule in order to create a flat surface upon which to strike. In one case the platform has been further flaked to remove small facets which provide a better seating for the hammer and aid the production of more regular flakes. Two of the flakes also have evidence of trimming by the knapper on the edge below the platform. This trimming strengthens the edge and facilitates the strike.

Seven of the flakes retaining platforms have also preserved enough of their detachment characteristics for the types of hammers used in their production to be postulated. Five of these have pronounced bulbs of force and well developed characteristics such as ripples, fissures and *érraillure* which suggest the use of hard stone hammers. On the other two of these features, while still present, are less apparent so that softer, medium hammers such as antler or bone were probably used. There is no evidence for the use of soft, wooden hammers in the collection.

These hammers were probably used with direct percussion upon nodules that were held in the hand or supported upon the knee or thigh. Hinge fracture is present upon some of the distal ends and spontaneous retouch is also to be seen on some of the flakes. Both may result from the knapping of hand held nodules. Hinge fracture occurs where a lack of sufficient force in the blow has caused the flake to terminate abruptly in a rounded surface as the ventral face curves towards the dorsal side. A variety of causes may contribute towards this lack of force such as the use of too soft a

hammer, too little strength on the part of the knapper, or the 'give' that often occurs when a hand held core is struck. Spontaneous retouch may occur when flakes pivot inside the hand grip as they are struck from the core. If the edge of the flake comes into contact with the core the ensuing force may cause the removal of a series of tiny, often rounded, 'retouch' flakes along that edge. There is no indication amongst the collection of the use of the bipolar technique where nodules are rested upon an anvil to be struck either directly or through a punch.

Technology II: Secondary Work

Two of the flakes, only, have been altered by secondary work, both retouched. Both are considerably larger and more regular than any other piece in the collection. As noted above they may not derive from the same source as the rest of the pieces and it is possible that, as the only retouched pieces, they do not belong to the same knapping activities. One, indeed, was contextually separated, having been found in a cist.

The retouch on no 56 has served mainly to consolidate two edges for use. The flake has a regular shape which has been altered little by the irregular, invasive retouch on the right side and distal end. On no 55, however, similar retouch has been used to shape the flake as well as to consolidate edges. The flake has been narrowed and the edges blunted by the retouch that has also shaped the rounded distal end.

In both cases the retouch could have been carried out in many ways but the use of a narrow rod such as an antler tine together with a pressure-based force would seem most likely.

Function of the Assemblage

The possible use of unaltered flakes as tools has already been recorded. However, it is likely that many of the smaller, irregular, *debitage* flakes were never used and the microscopic analysis necessary to recognise used flakes and the exact tasks involved was not within the scope of this study. One of the retouched pieces, however, no 55, is interesting as it is possible to see with the naked eye that the distal tip has become very smoothed and rounded. Such wear commonly occurs upon flints that have been used as strike-a-lights, as may have been the case here, although once again microscopic analysis would be necessary to confirm this.

The other retouched piece, no 56, has less visible wear. It does have macroscopic edge damage on the unretouched left edge but this may be the result of many things only one of which is use. It may be noted that although the piece might traditionally have been called a knife, here in the absence of functional analysis, a less functional name has been preferred.

Distribution of Pieces

A few of the pieces are distributionally separated from the main assemblage; three of the pebbles, nos 21-23, were found together in a grave 'at the farm nearest to the fields'; the grave 'at three metres SW' had one inner flake, no 42, and the adze fragment, no 57; and one of the retouched pieces, no 56, was found in a boulder-built grave (p 179) along with a Neolithic bowl (SF 1). The rest of the assemblage has a more general distribution and contains very little evidence for the secondary working and use of pieces, the emphasis is more upon knapping activities. If no 55 is not directly associated with this part of the assemblage then there are no examples of secondary work here at all.

As no exact locational evidence exists for any of these pieces it is impossible to tell whether or not an actual knapping floor is represented but in view of the lack of retouched tools and unretouched regular flakes the likelihood must remain.

Summary and Conclusions

The assemblage is a small one in which all of the flaked pieces are composed of flint, with the exception of one of chert. In addition to two unworked flint pebbles, a pebble of quartz and one of siltstone are present although there is no evidence that either of these two stones were ever knapped. The flint was collected as small, good quality pebbles from a gravel source and was probably

reduced using hard and medium hammers with direct percussion upon artificial platforms. It is likely that the pebbles were hand-held when hit.

Two flakes were altered by retouch to prepare them for use. There is, however, little indication that any of the other, unretouched, flakes were used, the majority are small and irregular with little evidence of macroscopic edge damage. Besides standing out as retouched both no 55 and no 56 are much larger, more regular flakes than the rest of the assemblage. No 56 was found separately within a grave (p 179); neither is necessarily to be directly associated with the main body of pieces: they may represent both a different source of flint and have been made elsewhere.

Although no functional analysis has been involved it would seem that the main collection represents debris from knapping with little evidence of the actual use of pieces. Unfortunately, due to the lack of locational evidence the existence of working floors can neither be proved nor disproved but it does seem possible that the assemblage is the result of on-site knapping activities. The lack of both regular and retouched flakes could be accounted for by their removal for use and/or retouching elsewhere. In addition to this main collection there are three groups from burial contexts. One consisted of unworked pebbles only, one of a flint flake and the flake of a stone adze, and the third of a retouched flint tool. The deposition of stone, both worked and unworked, with the dead was a widespread practice involving many different cultural contexts and burial rites. While it is unlikely that these groups represent the same activities upon the site as the main collection it is impossible to infer any greater detail of, for example, behavioural or sociological information from these finds.

In addition it should be noted that the predominance of knapping debris within the collection has increased the importance of technology as a primary determinant, together with raw material, of the nature of the assemblage. As a result, the parts played by culture and chronology in the formation of the assemblage are small. It is no longer possible to infer in any simple way either cultural or chronological information from a flaked stone assemblage, and at Knappers the stone collection offers no detail of this sort.

Stone Adze Fragment

In addition to the flaked pieces within the assemblage, no 57 is a fragment from the blade of a ground stone adze. The presence of parts of ground edges on two sides of the fragment indicate that it has been removed from the left side of the tool. From the nature of the fracture it seems unlikely that the tool broke in use but there are smaller flakes removed from both sides of the left edge that do seem to be an indication of use-damage.

The adze was made of mudstone. Groups of parallel striations of varying lengths, some truncated by the damage, are clearly visible to the naked eye and run in different directions over the remaining polished areas, sloping obliquely to the edges. The upper surface of the tool seems to have curved quite steeply up from the flatter lower surface and there is some indication that the sides were faceted although too little of the implement remains for such detail to be noted clearly.

This piece was found together with a flint flake, no 42 in one of the graves but it is not the only evidence of ground stone tools from the site as another complete adze does exist.

Notes

- i All pieces are flint unless otherwise stated.
- ii When examining the pieces they are always held with the dorsal face uppermost and the proximal end towards the observer.
- iii Dimensions are given in millimetres in the order; length : width : thickness. In the case of pebbles, chips and chunks these axes have been arbitrarily chosen.
- iv Length is measured along a line at 90° to the platform of the piece, width is in the same plane and at 90° to the length along a line across the widest part of the flake, thickness is measured from the ventral surface to the highest point of the dorsal surface along a line perpendicular to both length and width. Each measurement gives a maximum reading.
- v Chips and chunks have neither a platform nor a ventral surface. The largest dimension of a chunk is over 15 mm, that of a chip is under 15 mm.
- vi When typing the retouched pieces few items are readily paralleled by conventional morphological

types and allocation of a name has been left to the end of an entry as this is largely a subjective matter. No functional information is implied by these terms. As conventional type-names imply a degree of function in the few cases where they might be considered appropriate they have been placed in parentheses following a morphological type-name.

- vii Where possible the hammer technique used to detach a piece has been noted. See general text (p 194) for the detachment characteristics reflecting the use of different hammers. Note that individual flakes can never be used reliably as indicators of technique, the detail is drawn from a comparison of all the flakes of an assemblage.
- viii Macroscopic edge damage has been noted where apparent. This generally consists of the removal of small flakes and may be due to use although this cannot be verified without the use of a high powered microscope.
- ix Cortication refers to the matt discoloration, usually white or cream, which may cover the surface of a flint with time. Patination is the lustrous sheen that may subsequently develop (Shepherd 1972, 114-18).
- x The following abbreviations have been used; l: left edge angle, r: right edge angle, d: distal edge angle, p: proximal edge angle.

Catalogue

Unworked Pebbles

- 21 Grey; corticated; patinated; 40:29:21.
- 22 Quartz; white; 33:29:15.
- 23 Siltstone; green/grey; flawed; 33:24:13.
- 24 Dark grey/orange; corticated; patinated; 43:15:13.

Core Trimming Flake

- 25 Secondary flake; white; corticated; patinated; artificial platform; medium hammer; platform edge trimmed; macroscopic edge damage on left side; 18:20:05; 1 52°.

Inner Chunks

- 26 Pale grey; corticated; lightly patinated; flawed; 23:20:07.
- 27 Grey; lightly corticated; patinated; 21:14:10.
- 28 Pale grey; corticated; patinated; 21:14:05.

Primary Flakes

- 29 Pale grey; corticated; artificial platform; medium hammer; hinge ended; 27:27:04.
- 30 Pale grey; corticated; lightly patinated; broken; middle segment surviving; 16:22:06.
- 31 Orange; corticated; lightly patinated; 15:17:08.
- 32 White; cortical; broken; distal surviving; 18:15:03.
- 33 Grey; lightly corticated; patinated; 11:17:04.

Secondary Flakes

- 34 Pale grey; corticated; lightly patinated; broken; proximal surviving; artificial platform; hard hammer; spontaneous retouch on right edge; 28:27:08.
- 35 Pale grey; lightly corticated; patinated; artificial platform; hard hammer; hinge ended; 32:21:08.
- 36 Pale grey; corticated; patinated; hinge ended; spontaneous retouch on distal end; 20:35:05.
- 37 Pale grey; corticated; patinated; broken; segment surviving; 24:26:06.
- 38 Pale grey; corticated; lightly patinated; broken; distal surviving; hinge ended; 15:28:07.
- 39 Orange; corticated; patinated; artificial platform; hard hammer; 24:17:07.
- 40 Translucent grey; patinated; broken; distal surviving; hinge ended; 16:13:03.
- 41 Pale grey; corticated; lightly patinated; broken; segment surviving; 15:12:07.

Inner Flakes

- 42 Pale grey; corticated; artificial platform; hard hammer; hinge ended; 28:20:03.
 43 Dark grey; lightly corticated; patinated; artificial faceted platform; platform edge trimmed; macroscopic edge damage on left and right edges; 30:21:06; l 47°; r 31°.
 44 Dark grey; lightly corticated; patinated; 34:16:13.
 45 Pale grey; corticated; lightly patinated; 23:21:06.
 46 Pale grey; corticated; patinated; 21:20:04.
 47 White; corticated; broken; proximal surviving; artificial platform; 18:12:05.
 48 Pale grey; corticated; patinated; broken; segment surviving; 18:12:04.
 49 Cream; corticated; broken; proximal surviving; 14:14:04.
 50 Pale grey; corticated; patinated; broken; proximal surviving; artificial platform; hard hammer; 15:13:02.
 51 Pale grey; corticated; broken; segment surviving; 11:10:04.
 52 White; corticated; patinated; 13:08:02.
 53 Pale grey; corticated; patinated; artificial platform; hinge ended; 19:10:03.
 54 Chert; black; patinated; broken; proximal surviving; 20:24:05.

Retouched Pieces

- 55 Inner flake; pink/orange; corticated; patinated; straight sides converging to blunt point at distal; wide straight proximal; steep irregular retouch on both sides and around distal; irregular inverse retouch at proximal; distal end blunted and smoothed; 59:20:07; l 67°; r 52°; blunt-nosed tool; (strike-a-light). Fig 7, no 2.
 56 Secondary flake; pale grey; corticated; lightly patinated; broken; distal surviving; straight sides converging from break to blunt curve at distal; irregular invasive retouch on right side and distal; macroscopic edge damage on left side; 59:30:10; l 62°; r 57°; d 45°; single edge retouched tool; (knife). NMAS EO 966. Fig 7, no 1.

Part of a Ground Stone Adze

- 57 Mudstone; green/grey; groups of parallel striations cover remnants of original outer surfaces; inner surfaces roughly flaked and damaged; polishing survives on both ventral and dorsal with remnant ground edges at distal and left sides; 45:40:15; l 109°; d 73°; left side fragment of blade of ground adze.

58 *Decorated slab* by Alastair MacLaren

The decorated slab, which is said to have formed one end of a boulder-built cist (site no 1), is of grey sandstone and measures 0.89 m by 0.55 m and 0.18 m in greatest thickness. It is irregular in shape, and its surface is rough and uneven except for the decorated portion, where it appears to have been partially dressed to provide a relatively level area for the designs. The markings were all made by the pecking technique, and although shallow they have a fresh appearance, as if they were never for long exposed to weathering. As viewed on pl 9b, and as at present on display in Glasgow Art Gallery and Museum (55–96), the decoration comprises: (a) at the top of the stone, two double ellipses; the two on the left measure 120 mm by 90 mm and 180 mm by 130 mm over all respectively, and the other two 125 mm by 110 mm and 180 mm by 150 mm; (b) from the outer groove of the pair on the right a very lightly pecked, yet distinct, line runs obliquely downward for about 90 mm before it develops into the outer of twin grooves forming an elongated U-shaped figure 175 mm long over all; at its open end it has a width of 85 mm, expanding to a maximum of 145 mm as it approaches the closed end; (c) to the left of the closed end of (b) there is a single 'ring' of irregular shape, perhaps better described as D-shaped, with the chord lying nearest to the U-shaped figure; along the chord it measures 85 mm, and 95 mm from the centre of the chord to the farthest point on the arc.

The grooves that form (a) and (b) all maintain a width of about 10 mm and a depth of not more than 3 mm, whereas in (c) the groove is slighter, being only 8 mm wide and 2 mm deep.

The sinuous transverse shadow visible below the closed end of the U-shaped figure is not

decoration but a scar; likewise, what may appear to be a rough channel leading away from the left side of the twin ellipses (a) is probably of natural or accidental origin.

Comment, some of it speculative, is now offered about the stone, its possible use as part of a cist, and the decoration that it bears. The marked difference between the two halves of its decorated side may not be fortuitous: the decorated half looks as if it was deliberately brought to a level surface before receiving the pecked designs; is it possible that the undecorated half, too, was crudely brought to a blunt point, perhaps to enable it to be lodged more easily, if not more firmly, in the ground? If it was inserted at the appropriate angle, and to the appropriate depth, the shape of the other end would provide a relatively level and stable platform to support the coverslab of a cist. Such stability might be all the more relevant to a cist which 'was said to have been formed of rounded boulders' and which was sunk into a drumlin composed of 'a fine regular sand with a comparative absence of shingle', as Davidson's report records (1935, 352-3). If the 'pointed' end was, in fact, buried, and if the exposed part protruded far enough to leave the decoration visible, this might suggest that the cist measured something like 0.55 m in width and 0.45 m in depth - dimensions in keeping with a short cist of the second millennium BC.

If it was the end-slab of a cist, then it takes its place in the group of 55 sites in the British Isles that have produced decorated cists or associated stones, as listed, illustrated and discussed by Simpson and Thawley (1972, 81-104). Of the designs on the Knappers slab, the ellipses and the D-shaped figure are discussed briefly by MacLaren (1966, 212; 1970, 138); and to his list of 'ring' markings (without central cups, radial grooves, etc) that occur in Scotland should be added the decorated side-slab of cist 4 at Ferniegair, Lanarkshire (Welfare 1975, 7-8, 11-12). The elongated U-shaped design seems to have no direct counterpart. A possible parallel, however, may be seen in the horseshoe-figure attached to the cup and double ring on the stone at Braids, Kintyre, Argyll (RCAMS 1971, 53, fig 27).

APPENDIX

Skeletal Remains from Knappers, Dunbartonshire.

A summary of the original report by Professor J C Brash prefaces a re-examination of the surviving material by Dr D A Lunt, Department of Oral Biology, University of Glasgow Dental Hospital and School, and Dr A Young, Department of Anatomy, University of Glasgow.

Human Remains (1935) by J C Brash

- 3 'Skull bones from two top cross burials'; fragments of skull cap and facial bones; young adult. 'General bones of two top burials of cross site'; small quantity of fragmentary bones of limbs and trunk. 'Bones together with skull bones of bottom burial of cross site'; small quantity fragmentary limb bones, all these bones appear to have been incinerated (?).
- 9 'General bones of burial from lignite bead site'; fragmentary limb and trunk bones. 'Skull from lignite bead burial'; fragmentary skull-cap bones; young adult (?); all these bones appear to have been incinerated (?).
- 11 Very fragile portions of upper and lower limb bones; male adult; few fragments of skull including fairly complete right temporal bone.
- 12 Crowns of two molar teeth.
- 13 Quantity of very fragmentary incinerated (?) bones.
- 16 Quantity of very fragmentary incinerated (?) bones; probably young person or female.
- 17 Few small fragments of skull bones; incinerated (?).
- 22 Few skull fragments and number of teeth, mostly crowns; adult; plaster cast dental arch of mandible; a detailed account of the mandible by J H Russell is superseded by Dr Lunt's discussion (p 200-1).
- 23 Quantity of incinerated (?) fragments.
- 25 Five teeth, crowns only.
- 26 Fragments of skull cap; adult; mature; several loose fragile teeth. Portion of base of skull with attached portion of right maxilla; three molar teeth *in situ*. Portion of body and right ramus of mandible.

- 29 Skull; left parietal; portion of right parietal; occipital bone; no apparent union of sutures; young mature adult. Portions base of skull including two temporal bones; several cervical vertebrae, including broken atlas and axis. Fragmentary portion symphysis region of mandible. No teeth.
- 31 Few fragments limb bones. Portion left parietal, probably young adult. Portion left side of body of mandible. Three molars *in situ* moderately worn. Fragments of temporal bones and atlas and axis. Seven or eight broken crowns of teeth.
- 32 Fragments of bones of skull including both temporals; fragments of atlas and axis. Six broken crowns of teeth.
- 33 Portion of left temporal bone.
The condition of all the bones is such that no conclusions of any value can be based upon them, other than the tentative suggestions regarding age.

Surviving dentition (1980) by D A Lunt

It seems quite certain that there has been some mixing of the remains from different graves during storage. There also appears to be a considerably smaller quantity of material than is listed in the original report.

The burials reported to contain teeth are as follows:

Site no:

- 12 Crowns of two molar teeth.
- 22 Number of teeth, mostly crowns. Plaster cast of mandible.
- 25 Five teeth, crowns only.
- 26 Portion of right maxilla with three molar teeth *in situ*.
Portion of right mandible with two upper molar (*sic* - ? premolar) and three molar teeth *in situ*. Several loose fragile teeth.
- 31 Portion left mandible with three molar teeth *in situ*.
Seven or eight broken crowns of teeth.
- 32 Six broken crowns of teeth.

Of this material, only the plaster cast of no 22 and the portions of right maxilla and right mandible of no 26 are now identifiable with absolute certainty. Some loose teeth in a box marked 22 are quite possibly from that burial, and have been considered to be such for the purposes of the report. Similarly the four loose teeth found with no 26 are most probably the 'several loose fragile teeth' mentioned in the original report. But in view of the evidence that the material has become to some extent mixed, it is impossible to be absolutely certain that all these teeth did belong to burials 22 and 26.

The portion of mandible of no 31 has disappeared completely. Of some 21 further loose teeth recovered from burials 12, 25, 31 and 32, only one premolar is now present - in a box labelled no 29, of which the original report says 'No teeth'.

Site no 22

Fragments of eight recognisable upper teeth and six lower teeth are present, together with three unrecognisable fragments and a cast of a lower dentition. It seems probable that the upper and lower teeth are from the same dentition, and although the cast is not very clear it is likely that it too represents the same dentition. The teeth may be identified as follows:

R		L	
87	43	4	678
87654			8

The cast shows that a complete lower dentition was present in the ground.

The molars show a relatively slight degree of attrition. There is so little wear of the second molars that it seems likely that these teeth had been in function for only a few years. The cast shows quite clearly that the lower third molars had not erupted, and the interpretation given in the original report is that these teeth were impacted. While the angle at which these teeth are lying is such that they might well have become impacted, the possibility should not be overlooked that they were still developing. The roots of both lower third molars have been broken post mortem but the pulp chamber of the right molar is so large as

to suggest that the tooth may not have been fully developed. The root of the upper third molar is better preserved and its appearance suggests that the tooth was almost certainly incompletely formed at the time of death. The stage of development of this tooth suggests an age at death of about 16–19 years. This accords well with the slight degree of attrition of the first and second molars.

There is no evidence of dental caries. The crown of the upper right third molar has a large hollow in the centre of the occlusal surface which appears to be a developmental defect. Two similar but smaller areas of defective enamel formation may be seen on the occlusal surface of the upper left third molar.

Wear of the upper left first molar has resulted in an unusually deep wear facet on the mesiolingual cusp, and it seems possible that there was some anomaly of the occlusion at least on this side. It is a pity that the lower left first molar has not been preserved, and the cast is not sufficiently clear to show the wear facets on this tooth.

Site no 26

A small portion of the right mandible is present, carrying both premolars and all three molars. In addition there are two fragmentary lower molars and two fragmentary upper molars. Together with these specimens is part of the odontoid process of an axis (2nd cervical vertebra). This latter is not mentioned under no 26 in the original report, although fragments of the second cervical vertebra are listed under nos 29 and 31.

In a separate box without a number there is a portion of the base of a skull with a fragment of right maxilla attached, which can be recognised from the original report as belonging to burial 26. Along with this is a small portion of the buccal plate of a mandible with parts of the sockets of three molars. The configuration of the sockets shows this to be part of the right side of the mandible, so it does not belong to burial 26, nor is it the missing mandible fragment from no 31.

The teeth from burial no 26 are poorly preserved, and have suffered a good deal of post mortem chipping of the enamel. X-rays confirm that the roots of the third molars are fully formed. Wear of the maxillary molars is slightly less than that of the mandibular molars, but the difference is not so great as to suggest that two separate individuals are present. The degree of attrition of the mandibular molars suggests that the individual was a young adult, perhaps about 19–25 years old.

There is no evidence of dental caries, and the alveolar bone appears healthy, suggesting freedom from periodontal disease. Slight deposits of calculus (tartar) are present on the maxillary molars.

The teeth present have been identified as:

R	L
876	78
87654	78

Site no 29

A small fragment of the lingual side of the anterior part of the body of the mandible is present, with parts of the sockets of four teeth, possibly in the canine-premolar area.

There is also the enamel shell from the crown of a mandibular right second premolar. The tooth shows slight wear only and is most likely to have belonged to a juvenile or young adult (perhaps about 15–25 at death).

The fragment of mandible is mentioned in the original report for no 29. However, this report says of no 29 ‘No teeth’. Nos 31 and 32 both have entries ‘broken crowns of teeth’, but no material is now present bearing these numbers, and it is impossible to guess where the premolar may really belong.

There is also a broken fragment of root apex in the same box.

Surviving Skeletal material (1980) by A Young

There were in one box several pieces which I feel reasonably belong together and to correspond with no 29 in Professor Brash’s report. Further, the basal portions seem to fit the three major portions in another box, and all as part of Professor Brash’s no 29. The vertebrae seem to be cervical 1–6 and there is a piece of another vertebra – possibly an upper thoracic. Included in this box there was also a piece of the shaft of a clavicle with a foramen/canal for a branch of the supraclavicular nerves. In a third box the

major portions seem to belong to Professor Brash's no 26; in addition there is a L petrous temporal bone, lying separately (however this seems to belong to the rest of the collection); there is also part of the anterior arch of a smallish first cervical vertebra. In a small shallow glass box there are some fragments of incinerated long bone and rib and the body pedicles and neural arch of a cervical vertebra which has, I think, also been incinerated despite the note 'Inhumed'.

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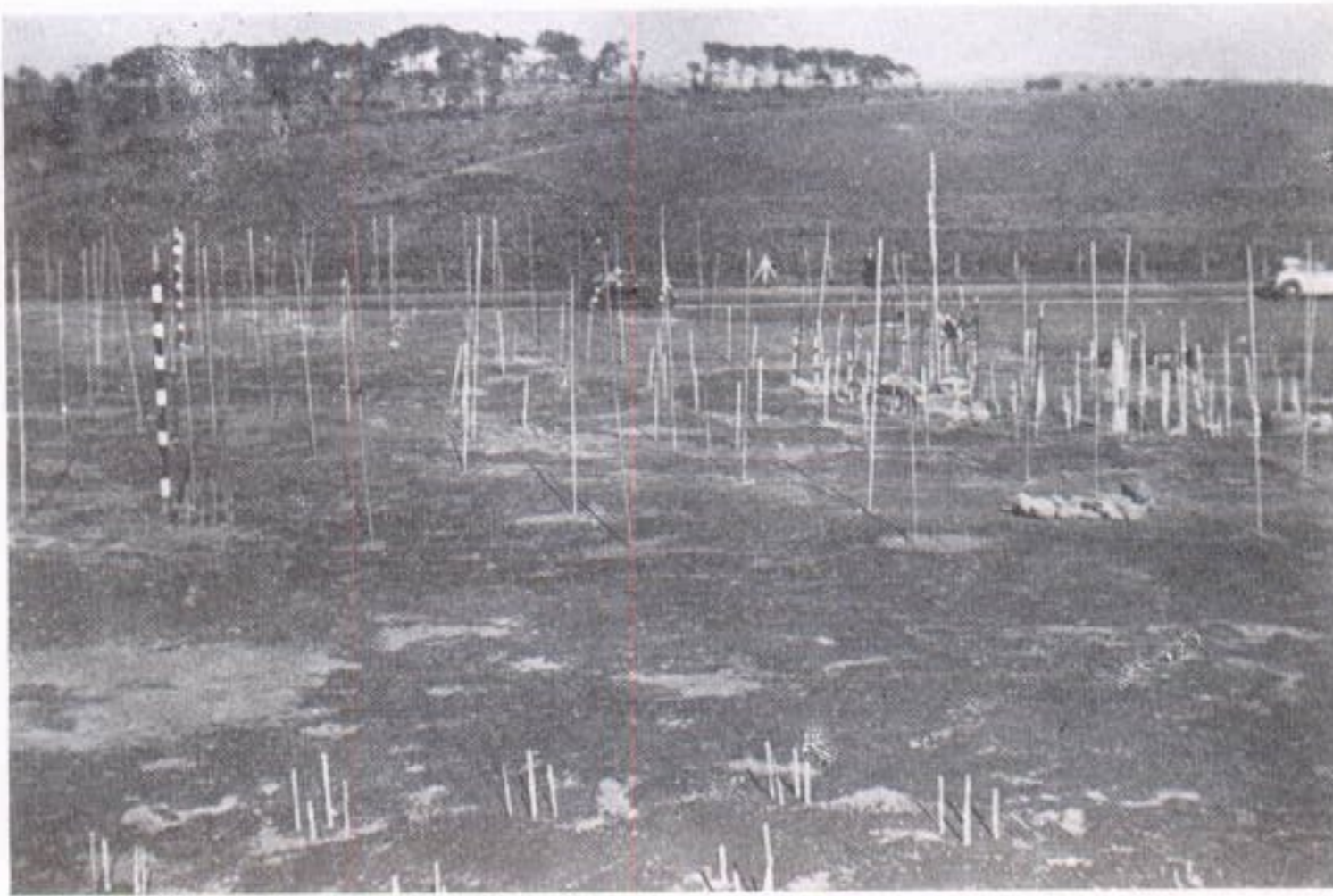
The authors are greatly indebted to Mr George Applebey for making available the plans, photographs, note-books and books of newspaper-cuttings on which much of the description of the site depends, and to both Mr and Mrs Applebey for their hospitality and encouragement during the preparation of this account. Mr Applebey's careful custody of Ludovic Mann's material has made possible the reconstruction of most of the evidence recovered during the excavations. The Society of Antiquaries of Scotland awarded a research grant which has enabled the work to proceed. The authors are indebted to all those who have examined and reported on material from the site: Miss A S Henshall, Mr J B Kenworthy, Dr D A Lunt, Mr A MacLaren, Miss C R Wickham-Jones and Dr A Young, as well as to those who helped in other ways including Mr W Britnell, Mr P Clay, Mrs C A Dickson, Miss F Lynch, Dr A Ritchie and Mr J G Scott. The introductory section has been compiled with the help of Dr W G Jardine, Department of Geology, University of Glasgow; we are also grateful to Dr C Ballantyne, Department of Geography, University of St Andrews for advice on periglacial geomorphology. The drawings have been prepared by Mr J Gentles (fig 2), Miss A S Henshall (figs 5 & 7), Mr J B Kenworthy (fig 6), Mr I G Parker (figs 1 & 4) and Mr I G Scott (fig 3), plate 9b was taken by Mr Rupert Roddam, Glasgow Art Gallery and Museum.

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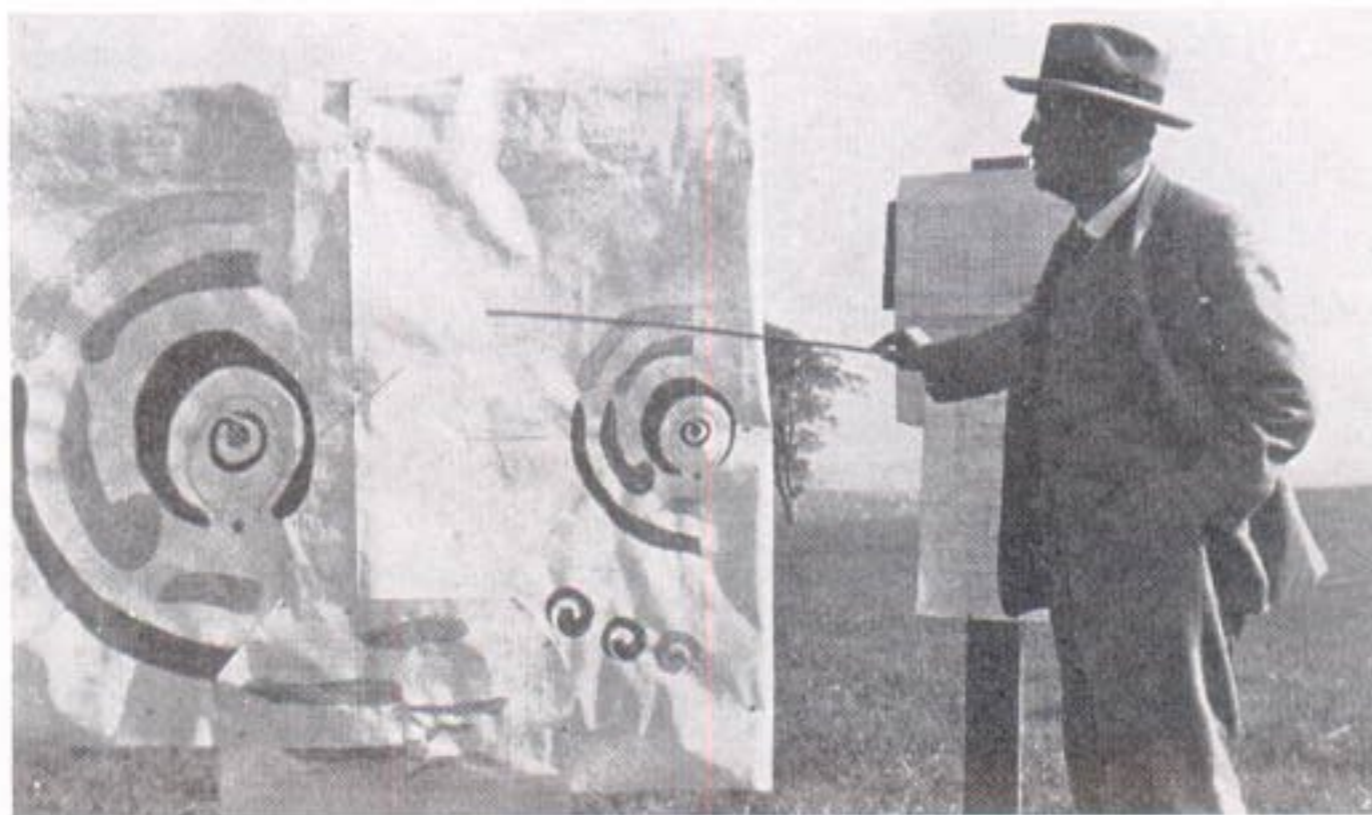
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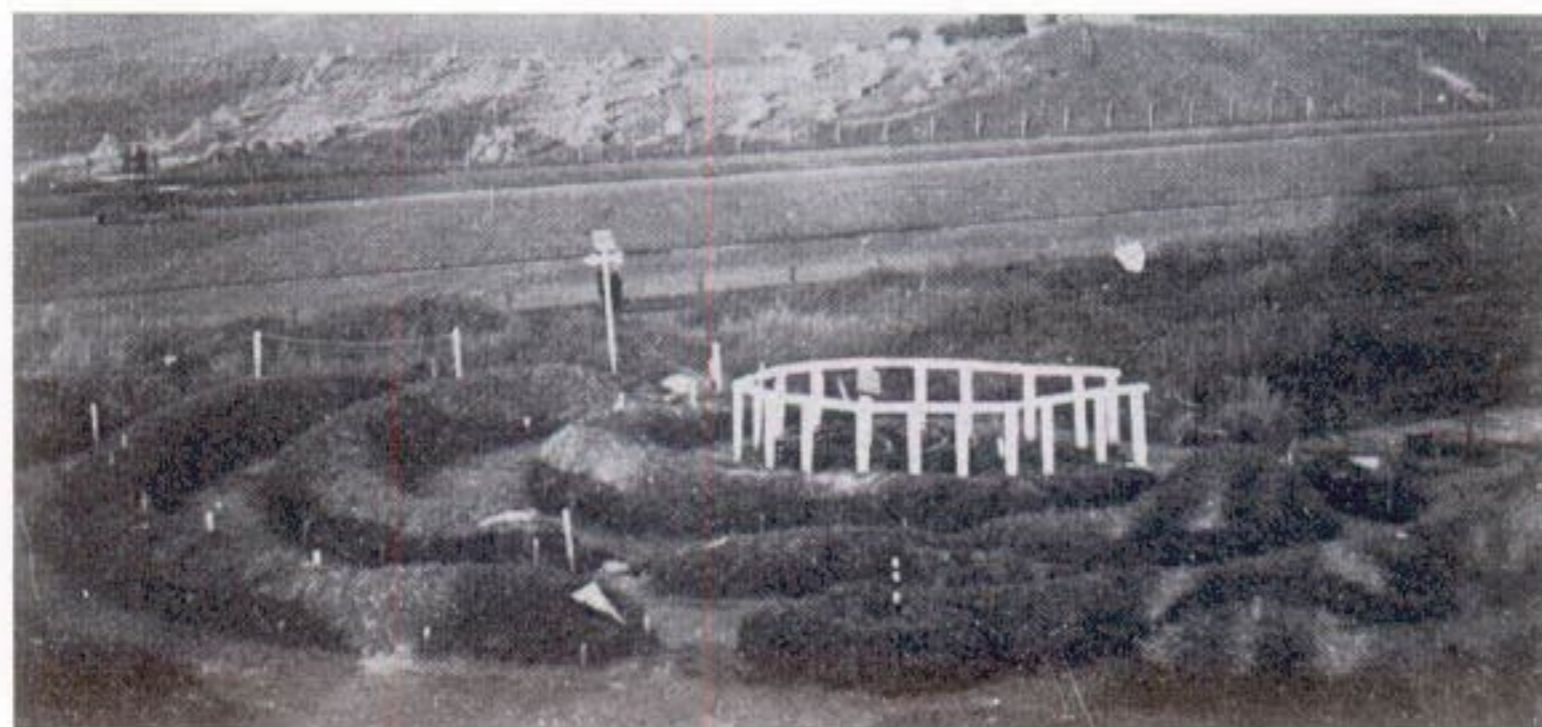
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a Knappers in the course of excavation, 18 September 1937



b Ludovic Mann lecturing at Knappers, 18 September 1937



c Knappers reconstructed, July 1938



a Post socket (1939)



b Decorated slab (SF 58)



c



d

c-e Adze (SF 14): enlargements of side and cutting edge



e