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7. NECKLACES I: DISC BEADS AND SPACER PLATE NECKLACES

7.1 DISC BEAD NECKLACES (by Alison Sheridan and the main authors)

A list of items studied and illustrated is shown in Table 7.1.1. Entries are ordered in ID sequence of study: East Yorkshire; the Peak District; Wessex, and other regions. The necklaces vary considerably in size and, although it was desirable to illustrate them at a consistent scale for comparative purposes (Figures 7.1.1–7.1.12), this was not always possible. Nor was it always possible to retain colour accuracy when taking close-up images. Jet and jet-like materials analysis codes: B=Gill Bussell; MD/DH=Mary Davis/Duncan Hook; AS/MD=Alison Sheridan/Mary Davis.

7.1.1 EAST YORKSHIRE

ID 246 Garrowby Wold 64, Painsthorpe (Kirby Underdale), East Yorkshire

References: Mortimer 1905, 137–8, fig. 362; Sheppard 1900, 32; 1929, 49.

COMPOSITION

This single-strand necklace comprises two fusiform beads and, when found, 204 complete disc beads plus ‘a few broken discs’. Mortimer (1905, 138) reported that, in addition, a few smaller disc beads may have escaped detection, despite sieving of the clayey soil matrix in which they were found. The current total of disc beads is 203 (although it is uncertain whether any of the fragments are also still extant). The arrangement of beads is apparently unchanged from that shown in Mortimer’s figure 362, with the missing disc bead presumably having been lost from among the smallest disc beads at the back of the necklace (i.e. towards the top of Figure 7.1.1). No fastener was found, so either an organic fastener, or else some other method of securing the necklace, had been used. (That the necklace had indeed been fastened when the body was interred is suggested by the clustering of the beads in the neck area, indicating that it was worn on the body).

CONTEXT AND ASSOCIATIONS

The necklace was discovered in an oval rock-cut grave under the centre of a round mound. It was found ‘in the clayey soil just above the neck’ of an unburnt, decayed contracted skeleton of an adult, on its right side, with head to east. Mortimer stated that the remains were those of a female, but whether this identification was on the basis of the grave goods, or on osteological examination,

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MORPHOLOGY

The two fusiform beads are slender to medium girth, with the larger (shown on the left in Figure 7.1) being 20.7mm long, 6.7 to 7.3mm in maximum diameter, and with a perforation 3.6mm in diameter. In cross section it is a roughly oval shape. Both ends slope, in opposite directions. Because the necklace could not be removed from its mounted display for examination, it was not possible to examine the shape of the ends in more detail.

The smaller fusiform bead measures 19.2mm long, 6.7 to 7.1mm in maximum diameter and has a relatively wide perforation, 4.9mm wide; it is more of a flattened, flat-sided 'D' in cross-section than the other fusiform bead. Like its partner, it has sloping, divergent ends.

The disc beads are graded in size, with the smallest strung at the back and the largest at the front (which may well correspond to their original overall arrangement). In external diameter, the largest is 7.7mm and the smallest 3.9mm. They range in thickness from 1.1 to 2.85mm. The outer edges are almost all squared off (with just a few having a slightly sloping edge) and most of the beads are partially polished. It was not possible to examine the beads in detail, although it appears that the perforation had been central. Mortimer remarked that the disc beads 'are very circular, evenly cut, and truly bored, obviously by metal tools' (1965, 138). The diameter of the perforation, measured in one of the beads between the two fusiform beads, is 2.7mm, and this seems to be typical (to judge from other beads whose perforations are visible).

The overall length of the necklace, as currently strung, is c. 365mm; the missing disc bead would have added 1-2mm to this length. This would equate to the modern 'chocker' length for a necklace, lying fairly high on the neck but not as tightly as a 'collar'-type necklace.

MATERIAL

Both the fusiform beads are black and brown, the smaller of the two having a larger area of dark brown. The larger bead has incipient hairline crisis-cross-cracking, and both have a fine-grained woody texture. These features are consistent with the material being jet. The disc beads all seem to be of a compact, blackish-grey material; the presence of consolidant makes them appear blander in parts. Their texture appears sandy; this, and the colour, suggests that they are not of jet.

Both the fusiform beads, plus the three disc beads strung between the fusiforms and a small number of the small disc beads at the back of the necklace, were subjected to compositional analysis using X-ray fluorescence spectrometry at the National Museums Scotland Conservation and Analytical Research laboratory in February 2007; the analysis was done by Trude. Calcium, probably deriving from the adjacent bones, was found on all the analysed beads. Both the fusiform beads were found to have the 'relatively' high zincium, low iron content typical of good quality Whitby jet, with one having slightly more titanium than the other. The disc beads had little to minimal zincium and amount of high iron. This, together with the story texture of the disc beads, could indicate the use of a non-jet material, perhaps cannel coal or oil shale. This need not mean that the disc beads had not been made around Whitby, however, since oil shale resembling cannel coal is known to occur on the coast around Whitby (Bussell 1976, 72).

MANUFACTURE

The fact that the beads could not be separated out for detailed examination means that only basic information about their manufacture could be recorded. That said, there are no obvious signs of faceting or of grinding striations on the fusiform beads. Their divergent ends could have been a deliberate design feature. Both had been polished, although the original degree of sheen is hard to determine owing to the presence of a thin coating of consolidant which adds to the sheen. It is assumed that they had been perforated from both ends.

There are no obvious tool marks on the disc beads. While their outer edges had been ground smooth, they do not appear to have been polished; the partial sheen seen on many of the beads is once more due to the presence of consolidant. It was not possible to determine whether they had been individually polished.

COMPLETENESS AND DAMAGE

With the exception of the few broken disc beads referred to by Mortimer (which could have been broken during excavation), the beads appear to be complete and in good condition.

WEAR

While the disc beads show no obvious signs of wear, both of the fusiform beads had clearly shown some wear before deposition (and arguably before being added to the necklace). Thread-smoothing of the perforation was noted in the smaller fusiform bead, and some bead-on-bead wear was noted on both; at one end of the larger bead, this wear seems to have been caused by grinding against another fusiform bead, while the wear at the other end is consistent with grinding from a disc bead. The smaller bead seems to have slight disc bead wear at both ends.

The overall degree of wear is shown on Table 7.1.2. The state of wear of the disc beads is described as indeterminate because in most cases it was not possible to examine the perforation; where it could be seen, however, there were no obvious signs of wear and so these beads could arguably be attributed to the fresh/slight wear category. As noted with other necklaces, disc beads often do not show wear, and so it can be hard to assess the duration of their use.

CONCLUSIONS

The two different bead shapes, materials and degrees of wear suggest that the fusiform beads had previously been seen elsewhere, most probably in a spacer plate necklace, before being added to the disc bead necklace. The apparent wear on the fusiform beads from rubbing against disc beads suggests that the necklace had been worn for some time with the fusiform beads present before its intermittent, although the length of time is hard to determine.

ID 245 and ID 250 Garnton Slack harrow 75, (Garton-on-the-Wolds), East Yorkshire References: Shipppard 1900, 40 and fig. 13; Mortimer 1905, 222-3 and figs 569 (No. 2) and 574a; Shipppard 1929, 80.

COMPOSITION

This is a single-strand disc bead necklace which, when found, comprised 168 disc beads (according to the illustration published in Shipppard 1900 and Mortimer 1905) and a triangular fastener. Today 133 complete and fragmentary beads survive in the Hull and East Riding Museum, with an additional bead having been removed for neutron activation analysis by Giff Bussell in 1975 or 1976; the fastener (and possibly the 34 outstanding disc beads) appears to have gone missing by 1929 when Shipppard published his last Catalogue of the Mortimer Collection. The complete beads have been mounted on pieces of a sheet of cardboard, on which they had previously been stored, and were re-strung by the compiler of this record (AS) (Figure 7.1.2).
and 2.9mm, are central and perpendicular (see below for the direction of drilling). If one multiplies the average thickness of the beads (1.85mm) by the number of beads shown in Mortimer’s illustration (168), the original length of the strand would have been around 311mm: not quite long enough to fit comfortably around an adult female’s neck without some bead-free thread, and probably worn as a choker-style necklace.

Information about the fastener (ID 245) was obtained from examining the illustration published by Sheppard (1900, fig. 13) and Mortimer (1905, fig. 575; see Figure 7.1.2, top). It was fairly thin (c. 3.5mm) and triangular in plan (c. 24mm long and c. 13.5mm wide), with narrow, gently rounded edges and a central perforation.

MATERIAL

The material of the disc beads is black, with a grey tinge, although numerous beads have a pale grey to creamy-coloured sediment adhering. It is also compact; a few beads show fine laminar cracking. Where one bead had broken, its interior is black, with a shiny conchoidal fracture — a characteristic of jet. One bead had been analysed by Bussell in 1975 or 1976, using neutron activation analysis (Bussell 1976, 54, table 11 (where it is described incorrectly as ‘two halves of biconical bead’), 65, table 21, 66, table 22 and 79). She found it to be “extremely similar in all [its] characteristic elements to the petrographically defined [raw jet samples]” (1976, 79). Analysis of a fragment of another bead, by Dr J.M. Jones using oil immersion reflected light microscopy and reflectance measurement, led to the same conclusion, and Dr Jones was able to add that the jet used had not been of very high quality, that it matched the jet used for the other Garston Slack disc beads (from Area VI, grave 1 and Area 29, burial D), and that it may have come from the same source. XRF analysis of the same fragment, by Lore Troalen at NMS, did not pick up the cinnabar that had been found through NAA in the other bead, but did show clear calcium contamination, either from proximity to the skeletons, or from chalk rubble in the grave fill, or both. The absence of the fastener means that its material cannot be identified, but by analogy with most other triangular fasteners from disc bead necklaces, it is highly likely to be jet.

MANUFACTURE

Only two disc beads have striations running across their flat sides, probably resulting from grinding. In 104 cases the perforation is hourglass-shaped, indicating that the beads had been individually perforated; the junction between the two halves of the hourglass is sharp, and its location is sometimes mid-way through the bead, sometimes not. In 13 cases, the perforation is V-shaped, indicating that it had been drilled mostly or entirely from one side. Several beads have broad rilling, indicating that a bow- or pump-drill had been used; in some cases the rilling is crisp, in others, less so. The outer edge of the beads is smooth but matt.

COMPLETENESS AND DAMAGE

The necklace is likely to have been complete, and seems to have been in good condition, when buried. If Mortimer’s illustration of the necklace accurately portrays the original number of beads present (168) and their condition when found, then the fragmentation of some beads will have occurred at some time after the necklace arrived at the Mortimer Museum in Driffield. The loss of 34 beads, and the removal of one other by Bussell for compositional analysis, has already been noted; in addition, part of one of the bead fragments was mounted for reflectance microscopy.

WEAR

Unusually for disc beads, thread-smoothing (and, in a few cases, polishing) was noted in the interior of the perforation in some beads, usually just over a half of the circumference. In addition, some have very slight signs of bead-on-bead wear, in the form of localized areas of polish on their flat surfaces. The degree of wear can be described overall as slight (Table 7.1.2). No obvious wear is shown on the engraving of the triangular fastener but, in its absence, its condition can only be described as indeterminate.

CONCLUSIONS

This necklace belongs to a group of necklaces that feature tiny disc beads that are either fairly uniform in diameter, or minimally graded. It is of ‘choker’ type, and although it had clearly seen some wear, it may not have been very old when buried.

ID 251 Garston Slack, Area VI, grave 1, burial 1, East Yorkshire

References: Brewer 1980, 202-6 and figs. 89-92; Dent 1993, 10; further information from J. Montgomery pers. comm.

COMPOSITION

This single-strand necklace is reported (by Brewer, the excavator) to have consisted of 180 disc beads, 6 tubular sheet copper alloy beads and one boat-shaped fastener. The copper alloy beads were found at what would have been the front of the necklace, separated from each other by two disc beads apiece (Figure 7.1.3). In the museum there are actually 243 disc beads, plus fragments of several more, labelled as coming from this grave and it seems likely that Brewer’s total of ‘180’ had been an estimate (and a considerable underestimate, at that). Forty-three beads were studied in detail for the current project.

CONTEXT AND ASSOCIATIONS

The necklace comes from an oval grave that is assumed to have been covered with a scrape mound, probably with
an inner capping mould of chalk gravel' (Brewster 1980, 203). Inside the grave was the skeleton of an adult, aged 20–22, identified as probably female but with some male features (see below), crouched on the right side, with head to south and resting on a 'pillow of white gravel' (ibid). The necklace was found in front of the chest area, lying in such a way as to suggest that it had been deliberately broken then laid out 'as an extended wavy line as if for display' (Brewster 1980, 205). A set of 13 V-perforated buttons (ID 232–244; Figure 5.3.1) was also found in the same area, lying in an untidy row, with their bases uppermost. Brewster interpreted this as evidence that they had been attached to a garment that had been folded and deposited in the grave in front of the chest. Brewster's account of the relative positions of the necklace and buttons varies: his figure 90 states that the necklace was found below the buttons, but in his description (p. 205) he clearly states that [the necklace] 'must have lain on top of the garment'; it is assumed that the latter is the correct version. A haematite nodule is present among the material from this grave in the museum, but was not mentioned by Brewster and is likely to represent an accidental addition to the assemblage during its life in the museum. Normally such nodules are assumed to be part of fire-making kits, and are associated with males.

The sex of the skeleton was assessed by Jean Dawes for Brewster, and the note of her identification (in Brewster 1980, 703) is as follows:

'This skeleton was probably that of a woman, though the skull was heavy and had certain apparently male features. She had been between 20 and 25 years old and 155cm in height. There was probably some degree of underbite. There was a slight right maxillary torus and a marked bony projection on each humerus above the deltoïd tuberosity at the insertion of the latissimus dorsi. The latter suggests a great deal of habitual heavy muscular effort of the arms. The teeth were all present and healthy though the lower left third molar was much reduced in size. There was a very slight calculus and slight periodontal disease.'

The sex of the individual has been confirmed as female within the last five years through osteological examination carried out for the Beaker People Project (J. Montgomery, pers. comm.). That project also assessed the age as 'middle adult'. The skeleton was radiocarbon-dated (in 2008) to 2299–2057 cal BC (see Chapter 9).

MORPHOLOGY

The overall shape of this single-strand necklace has been described above. The fastener was found immediately adjacent to the disc beads, as if the necklace had been deposited in a fastened state (albeit deliberately broken at the front). It is hard to assess the overall length of the necklace as the beads are stored in an unstrung condition, and some are fragmentary. As drawn in Brewster's slightly schematic figure 92 (Brewster 1980), the overall length is shown as c. 740mm (including gaps between the beads) — making it long enough to extend to mid-chest level on an adult. This tally with the estimated length of c. 750mm, based on an assumed average disc bead thickness of 2.5mm, and average bronze bead length of 25mm.

The disc beads are small and of relatively uniform diameter, ranging in the set examined in detail between 3.5 and 4.6mm in diameter and between 0.9 and 2.8mm in thickness (Figure 7.1.3, inset). They are circular in plan and mostly parallel-sided in profile, with some being slightly wedge-shaped. In most cases the edge is straight and perpendicular to the flat sides, although at least two of the beads (including a relatively thick specimen) have a slightly tapering edge and in at least one, the edge is slightly convex. The perforation is central and perpendicular, ranging in diameter between 1.5 and 2.3mm.

The fastener is boat-shaped. In plan it is a long, narrow oval with round-pointed ends, 19.7mm long, 6.7mm wide and 6.6mm thick. In profile it is roughly triangular (sealean), with a minimally convex base and a rounded apex. It has been perforated through this base. From either side at its widest point, by two perforations forming a very shallow 'V' (Figure 7.1.3, top right). One of these is larger than the other, extending 3.5mm across the base as opposed to just 2.8mm on the other side. The bridge between the perforations is very narrow, at just 1.8mm.

Only three of the six tubular copper alloy beads were examined and the current whereabouts of the others is unclear. These have each been made by bending a thin sheet of copper alloy until the ends overlap slightly: one is 25.3mm long and 4.9 to 5.4mm in diameter and another is 24.5mm long and 5.2 to 5.6mm in diameter. The third bead is in two fragments, the largest of which is c. 15mm long. The metal ranges in thickness between 0.2 and 0.4mm. The shape of the edges varies, with one having jagged ends, probably from corrosion. Two have small holes in their sides; some of these probably relate to corrosion, although at least one seems to have been deliberately made with a diameter of c. 0.4mm. Given the difference in diameter between the metal and the disc beads, the former are likely to have had a wooden core.

MATERIAL

The disc beads are mostly of a black, very slightly laminar material, their black colour intensified by the consolidant with which they have been coated. Three beads stored with the tubular bead found under the pelvis (and possibly found with it) are a dull brown-grey, with a white sediment on their surface. Some beads have transverse cracking. XRF analysis of five of the black and brown-grey beads at NMS by Lore Troulan revealed that they have a relatively high iron content and the ones stored with the bronze bead have a high copper content, from their proximity to the bead. They also have a high calcium content, probably from their proximity to the skeleton. A fragment of a disc bead was also analysed by Dr J.M. Jones using oil immersion reflected light microscopy and reflectance measurement.

Dr Jones concluded that they are of relatively low-quality jet. The high iron content may well relate to the presence of pyrites in the jet, or to the former proximity of pyrites. The fastener is of a compact, black and dark brown material which macroscopically appears to be jet, possibly of soft jet (to judge from the surface cross-criss cracking:}

![Image of necklaces](https://via.placeholder.com/150)

**Figure 7.1.3.** ID 251 Garton Slack VI, burial 1, showing tubular sheet copper alloy beads (top left), jet fastener (top right), drawing of necklace (from Brewster 1980), and inset showing detail of striations on disc beads.

Semi-quantitative XRF analysis of the surface of two of the copper alloy beads confirmed the presence of copper and tin, and also the presence of arsenic. This kind of analysis cannot be used to infer the likely source of the copper alloy.
MANUFACTURE
Some of the disc beads that were examined under a microscope have striations running across their flat sides, presumably from grinding them flat (Figure 7.1.3, inset). The perforations are mostly parallel-sided, although three beads have a Y-shaped perforation, suggesting drilling from one side. On one thin bead the perforation is a rounded Y-shape, and the end of the bead at the top of the Y has rounded ends. These beads with Y-shaped perforations could mark the entry of a drill bit into columnar or cigar-shaped roughouts. One bead has faint diagonal nubbin striations on its outer edge, probably made to effect a slight convexity of the edge. The outer edge is smooth and matt on some beads, while on others it has a low sheen (ignoring any change in finish caused by the application of consolidant).

The basic shape of the fastener had been achieved through grinding, traces of which survive as striations on the underside (i.e. the inner side, when worn), and on one side of the upper surface (see Figure 7.1.3). The diameter of the drill used to perforate the holes may have been around 2.6mm; it has left faint circumferential ridging. The upper surface had been polished to a high sheen, the underside slightly less so.

The method of manufacture of the copper alloy beads has been described above. The original shape of the sheets will have been roughly rectangular in most cases, but one of the beads illustrated by Brewster (1980, fig. 91.18) seems to have had one curved end. The surfaces had been smooth and had probably been polished; when new, the beads would have been a golden colour.

COMPLETENESS AND DAMAGE
The large number of beads present suggests that the necklace had been complete when deposited. Given the discrepancy between Brewster's total of 180 beads and the observed presence of 243 beads plus fragments of others, however, it is impossible to tell whether any beads had been lost since excavation; the fragmentation of some beads may have occurred during and/or after excavation. The fastener is intact and undamaged.

There are a few signs of ancient damage to some of the disc beads, with chipping to the borehole noted in at least one case and chipping to the outer edge noted in two others. The former will have been caused during the drilling of the hole; whether the latter had also resulted from the manufacture process is harder to tell, but is possible.

The copper alloy bead found in two pieces under the pelvis may be around 70% present, the others are likely to be around 95% complete, with corrosion accounting for the loss of the remaining 5%.

WEAR
No obvious traces of wear were noted on the disc beads, and the fact that striations were observed on the flat sides of several beads indicates that there had not been enough bead-on-bead rotational wear to abrade these. They are classified as slightly worn (Table 7.1.2). There is slight thread-wear on the fastener, in the form of smoothing to the inner edge of the bridge, smoothing to the outer edge of the larger perforation (Figure 7.1.3) and along this perforation, and smoothing of the ridging inside the perforation. Against this is the fact that some of the grinding striations on the underside of the fastener and on one side have survived, along with traces of the ridging in the perforations. The fact that the copper alloy beads are corroded makes it hard to assess the kind and degree of wear on them.

CONCLUSIONS
This necklace belongs to a group of single-strand necklaces (of varying lengths) featuring large numbers of tiny disc beads, which are either fairly uniform in diameter – as here – or which are graded slightly. A close parallel, albeit without tubular sheet bronze beads and with many more disc beads, was found elsewhere in the Garton Slack cemetery at 29, burial D (ID 252), while a shorter disc bead necklace featuring beads that are slightly larger was found at Garton Slack 75 (ID 245, 250).

In contrast to the buttons from the Garton Slack VI, burial 1 grave, some of which show signs of very heavy wear, the necklace does not seem to have been very old when buried. The evidence comes mainly from the fastener, since disc beads tend not to show signs of wear in any case, and as noted above the corrosion to the metal beads makes it hard to assess their degree of wear. If it is assumed that the fastener is the original fastener for the necklace, then the degree of wear is slight. The narrowness of the bridge makes the fastener very fragile, and the fact that it has not broken indicates that it had not been stressed. The fastener has been very skillfully made, as it is difficult to make such shallow perforations without breaking the bridge. The shallowness of the perforations, and the fact that they run across the base, is unusual for a fastener; most boat-shaped fasteners have deeper V-perforations, in line with the long axis of the fastener.

As regards the gender associations of this type of necklace, where skeletons have been reliably sexed, they seem predominantly to be female, although the Chalcolithic example from Chilton, Hampshire (Russell 1990) had been found with a male.

ID 252 Garton Slack Area 29, grave 1, burial D, East Yorkshire


COMPOSITION
This is a long, single-strand disc bead necklace with a triangular fastener (Figure 7.1.4a). The number of disc beads was reported by Brewster, the excavator, to be 750 but only 722 complete disc beads (plus fragments of at least nine more) were seen and it is suspected that, as with the necklace from Garton Slack Area 6, grave 1, Brewster's figure had just been an estimate. The beads were examined in batches of 50.

CONTEXT AND ASSOCIATIONS
The necklace was associated with the contracted skeleton of an adult female around 35 years old, buried on her right side with head to the south, in a large, irregularly-shaped grave pit along with four other individuals, spaced apart in the pit. The necklace was found close to the left shoulder and near the back of the head, and so had probably been worn around the neck of the corpse. A bronze awl was found close to the beads and fastener, and Brewster has interpreted its presence here (1980, fig. 415a) as having been used to secure the loop at the end of the thread, preventing beads from slipping past its end. The skeleton was radiocarbon-dated (in 2006) to 2140-1950 cal BC (see Chapter 9).

MORPHOLOGY
The disc beads are tiny, circular (except in one case where the bead is slightly oval) and very subtly graded in size so that the smallest ones are nearest the ends of the strand. The diameters range from 3.0 to 3.6mm, and the thickness from 0.5 to 2.3mm. The sides are mostly parallel, with

![Image](https://via.placeholder.com/150)

Figure 7.1.4. ID 252 Garton Slack 29, burial D showing (a) a selection of the c. 731 disc beads recorded plus the fastener. (b) details of striations and the perforation on the fastener.
occasional examples being slightly wedge-shaped, and the outer edge is straight and perpendicular to the flat sides. The perforation is central, perpendicular and mostly parallel-sided, ranging in diameter from 1.3 to 2.2mm, and is fairly wide in relation to the overall diameter of the beads. The estimated overall length of the necklace (excluding the fastener) is c. 950mm, making it long enough to extend just above the waist of the woman with whom it had been buried, if worn as a simple long strand.

The fastener is a narrow, scale-like triangular plate, with rounded apices and narrow flat sides; in profile it broadens towards the apex between the two longest sides, and its upper edge is slightly convex with a gentle ridge at its mid-point. The length is 28.0mm, the height 7.6mm and the maximum thickness is 5.4mm. It has a single, minimally diagonal transverse perforation at mid-length, just below mid-height. At its narrowest the perforation is 2.3mm across, and at its widest, 2.9mm.

**MATERIAL**

The disc beads are of a black, slightly laminar material with a slight greyish tinge and a ‘stoney’ rather than ‘woody’ texture that does not macroscopically look very much like jet. One has a brownish, probably iron-rich natural inclusion. X-ray fluorescence (XRF) spectrometric analysis of three beads (at NMS, by Lore Trolan) revealed that there was very little zirconium and low iron, and it also revealed the presence of appreciable amounts of calcium (probably from contact with the skeleton) and copper (probably from the beads’ proximity to the bronze awl). Analysis of a small fragment of one bead by Dr J.M. Jones using oil immersion reflected light microscopy and reflectance measurement confirmed that the material is indeed jet, albeit of not very good quality.

The fastener is black, but shows brown patches under strong light, and is compact. XRF analysis by Lore Trolan at NMS confirmed that it is of jet. It may be of hard jet.

**MANUFACTURE**

Many of the disc beads have striations, usually unidirectional, running across their flat sides; these probably relate to their grinding. A minority have ribbed striations running across the outer parts of their outer edge. A smaller minority have striations running right across their edge, and in one case a cross-criss pattern of striations was noted. White edge striations are normally found on beads with slightly convex edges, that is not the case here and it is not clear whether their presence here relates instead to preparing beads for separation from a columnar roughcast. The perforation is, in most cases, parallel-sided but a few have V-shaped perforations (as if they had been at the end of the column) and a very few have hourglass perforations indicating that they had been individually drilled from both sides. Broad rilling was noted in the perforation on a few beads. The outer edge had been smoothed (although not enough to erase the striations where these were noted) but left matt in many cases; with others, the edge had been polished to a low to medium sheen.

That the fastener had been ground into shape is indicated by unidirectional striations along its narrow underside (i.e. the longest edge) and along one other edge, and also by the presence of the gentle keel at its top (Figure 7.1.4b). This indicates where the direction of grinding had changed. The perforation had been bored from both sides, with a ledge two-thirds of the way through indicating the junction between the boreholes. The drill has left internal circumferential rilling, indicating the use of a bow- (or similar) drill. The surfaces had been smoothed (although not enough to erase the striations on two edges) and polished to a low to medium sheen.

**COMPLETENESS AND DAMAGE**

The large number of beads present suggests that the necklace had been complete when buried. As with the necklace from Garton Slack Area VI, grave 1, the discrepancy between the current total of 722 beads (plus fragments of at least nine more) and Brower’s figure of 750 beads makes it impossible to know whether any beads had been lost since excavation. The fragmentation of a few beads may well have occurred after the necklace had been lifted from the grave. Ancient damage, observed in a few cases, consists of chips around the borehole (resulting from its drilling) and around the outer edge (again, probably relating to the manufacture process). At some point post-excavation the fastener had broken around a third of the way along, and has been well re-jointed. It is complete.

**WEAR**

There is no obvious evidence for wear on the disc beads. The outer edge of the perforation is generally crisp, and there is no sign of rotatory bead-on-head wear. There is minimal wear on the fastener, limited to one area of thread-polish and edge-smoothing to the perforation on one side; otherwise the ends of the perforation are crisp. Overall, the necklace would fall within the category of slightly worn (Table 7.1.2).

**CONCLUSIONS**

This necklace shares several features in common with the example from Garton Slack Area VI, grave 1 (JD 251), including the use of the same grade of jet for the disc beads; it may be that this slightly low quality jet had been chosen because of the ease with which it could be shaped into disc beads. Like other necklaces of this type, it does not appear to have been worn for long before burial.

**COMPOSITION**

The necklace comprises 118 disc beads (of which 114 are currently strong) plus a fastener (Figure 7.1.5). Three of the beads were studied in detail; the rest were examined less closely because all seemed to form a homogenous set in terms of material and manufacture.

**CONTEXT AND ASSOCIATIONS**

The necklace was found at the neck of the contracted skeleton of an adult female, buried in a shallow grave under the centre of a round barrow. She had been laid on her right with her head towards the east. A pot described by the excavator, Canon Greenwell, as a ‘Food Vessel’ lay behind the head; its current whereabouts are not known.

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Figure 7.1.5. ID 308 Weavershorpe showing details of (a) both parallel-sided and wedge-shaped beads, (b) fastener exhibiting grinding striations on its edge, and (c) wedge-shaped bead with hour-glass perforation, rilling and niddle striations.

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ID 308 Weavershorpe barrow 44, burial 2 East Yorkshire
Reference: Kinnes and Longworth 1985, 47, 10.44.
MORPHOLOGY
The beads are circular and mostly parallel-sided (Figure 7.1a), with a few being wedge-shaped (Figure 7.1c). Their outer edge ranges from straight to slightly convex, and in some cases slopes very gently. They are generally small and many have a chunky appearance. Graded in size and range in diameter from 4.9 to 8.6mm and in thickness from 1.4 to 5.3mm. They had almost certainly been arranged with the smallest beads towards the back and the largest at the front, although that arrangement is not followed in the current stringing. The perforation is mostly central and hourglass-shaped (Figure 7.1c), with generally crisp edges; perforation diameter ranges from 2.4 to 3.5mm.

The fastener is sub-triangular, with convex edges; it is roughly rectangular in vertical section, with rounded top and bottom (Figure 7.1b). There is no obvious front or back side. The length is 17.5mm, the width 21.4mm and thickness 6.6mm. Midway along the most convex edge is a single perpendicularly hourglass perforation, 14.2mm wide on one side and 4.8mm on the other.

MATERIAL
The beads all appear to be of the same material: a compact black and morte black-brown material (predominantly brown in two cases), with laminar cracking in some beads (Figure 7.1a) and cross-crack cracking in at least one case. Three beads studied in detail have a fine-grained woody texture. From visual inspection all the beads appear to be probably of jet, albeit not the same jet as that used for the fastener. However, XRF analysis of one bead in 2007 (MD/DH) indicated that it has a high iron content. In texture this bead does not resemble cannel coal, so the possibility that the material is a slightly laminar, high-iron jet cannot be excluded, especially given that similar material had been identified as a poor-quality jet in two necklaces from Gothic Slack (ID 251 and 7X2).

The colour of the fastener is black, but brownish in the perforation and elsewhere where the sub-surface has been exposed. There is irregular cross-crack cracking which is much finer and more than on the other, and with some loss of spalls due to this cracking on that side. A woody texture is visible in spall scars. Visual identification (high confidence; ASMD) suggests it to be of soft jet. No analysis was undertaken.

MANUFACTURE
Many beads have tiny transverse nible striations around their outer edge (Figure 7.1c) and, in contrast to some other necklaces' disc beads, it does not appear that this scoring had been undertaken to make the edge convex.

The hourglass shape of the perforation indicates that the beads had been individually drilled, and there is clear circumferential rilling in all of the closely-examined beads (Figure 7.1c). The beads' outer edge had been polished, in some cases to a medium sheen, in others to a low sheen; the presence of a coating of consolidant obscures the degree of sheen in many of the beads.

Grinding striations are evident on the edges of the fastener; these are mostly uni-directional and some are quite deep (Figure 7.1b). There are almost gouge-like grooves at or close to the sides of the fastener. The perforation shows circumferential rilling. The fastener has been polished to a low to medium sheen, higher on the broad sides than on the edges, which has also been partly obscured by consolidant.

COMPLETENESS AND DAMAGE
Four beads are fragmentary, and all of the complete beads have been coated with a consolidant, with bead edges and details such as traces wear. There are no signs of ancient damage. One small ancient spall is evident at one edge of the perforation in the fastener; otherwise minor loss of spalls from one side is due to cracking. The fastener has been coated with a consolidant.

WEAR
Thread-wear was noted in two of the three beads studied in detail. One has thread-polish to one side of the perforation, together with smoothing of the edges of the perforation at this point. The other has splaying out at one point. No obvious bead-on-bead wear was detected. The overall degree of wear was slight to medium (Table 7.1.2). Thread-smoothing is evident within the perforation towards the edge of the fastener. There is also minor wear and tear to pull wear on both flat surfaces above the perforation. The overall degree of wear is slight to medium.

CONCLUSIONS
The estimated overall length of c. 340mm is sufficient for this to have been worn as a 'choker' type necklace. This necklace falls within the category of small, chunky, size-graded disc bead necklaces. The shape of the fastener is not exactly paralleled elsewhere but variability in fastener shape is a feature of disc bead necklaces, especially in northern England.

The wear traces show that the necklace had been worn before burial, although not for long enough to produce heavy wear. The slight difference in the texture of the material used for the beads and the fastener makes sense in terms of selecting material that can readily be shaped into disc beads; a piece of soft jet has been used for the fastener, in common with those seen on many other disc-bead necklaces.

ID 322 Goodsmunth barrow 121, burial 6, East Yorkshire

COMPOSITION
The necklace comprised 124 small disc beads (of which 153 were seen during this study; the whereabouts of the others are unknown) and one mitriform object, described by Kinnis and Longworth as a pendant but probably a fastener (Figure 7.1.6). The necklace was not de-strung for examination or analysis. While all of the disc beads were inspected under a microscope, only four (namely the largest, smallest, thinnest and thickest) were recorded in detail, but these seemed to be a representative sub-set.

CONTEXT AND ASSOCIATIONS
The necklace was associated with the contracted skeleton of an adult female. All of the bead necklaces with a central fastener of east-north-west, at the base of a central grave (oriented south-south-east/north-north-west) under an oval barrow. Mention of 'cholk fill with head wood firing' (Kinnis and Longworth 1985, 89) suggests the possible former presence of a wooden grave chamber, or at least a wooden lined grave. The necklace was found 'in place' (thus presumably in the neck area). Lumps of 'a yellowish substance', probably ochre, were found near the body.

MANUFACTURE
Two of the disc beads are not truly circular in plan but have traces of the facets that would have been prepared in their initial rough-cut; one of these can be seen just right of the centre in Figure 7.1a. Several beads have nibbling—short transverse striations—on their edge, and this is just visible as faint lines on a few of the beads in Figure 7.1a (around 10 beads to the right of the faceted example). As discussed in Chapter 7.3 and as borne out by the evidence from the beads in York, it may be that these striations related to the creation of a slightly convex edge. The subsequent polishing of the edge (to a low to medium sheen) has failed to remove these marks. Where it has been possible to inspect it it appears that the beads may have been drilled from one side, although with the largest bead there are hints that it might have been perforated from both sides. Rilling, suggesting the use of a bow-drill, was noted in the interior of the perforation on several beads and, as indicated above, the compositional analysis of one bead suggests the probable use of a bronze drill bit.

The outer edge of the fastener has faint facetting from its manufacture; there are a number of small but parallel internal striations that are quite deep and gouge-like. This may indicate the use of a knife to shape the fastener and, in particular, to cut the V-segments. Polishing has smoothed over the cuts around the edge but the ones in the V-cuts have been left clearly visible, with just minimal polishing. There are no manufacturing striations on the flat surfaces, one of which has a low sheen, the other a medium sheen. The perforation has been drilled from both sides and there are traces of circumferential rilling. On one side the drill may have been re-positioned as its hole is less neatly executed than on the other side.

COMPLETENESS AND DAMAGE
The disc beads are intact, except for one ancient spall scar noted on the thinnest bead (probably resulting from the manufacturing process). The loss of tiny chips from the fastener, due to the cracks having sprung, makes it 99% complete but it would have been complete when deposited.
necklace's burial. This indicates that the necklace had been worn, though not necessarily for a long time, prior to burial. The fastener has slight traces of thread-smoothing over one part of its perforation. This has smoothed the rifling on one side and at the narrowest point of the perforation and also indicates that the necklace had seen some use, although it is not heavily worn. Given that the four disc beads that were recorded in detail are representative of all the beads, the overall wear can be summarised as slight (Table 7.1.2).

CONCLUSIONS
This necklace, which was probably not very old when buried, belongs to a group of disc bead necklaces characterised by small, sometimes chunky beads which are either of uniform diameter or which are subtly graded in size. The beads are generally somewhat thicker than those found in necklaces featuring larger disc beads that are more markedly graded in diameter. The necklace has been well made and it is clear that the disc beads had been made as a set. The choice of a low grade jet for their manufacture may well have been deliberate, as its slightly luminescent structure will have facilitated the detachment of individual beads from a cylindrical roughout (if this had indeed been the method used).

ID 366 Follitton barrow 245 ('Bordling Dale'), burial 8, East Yorkshire
References: Excavations Annual Report 1969, Kinnis and Longworth 1985, 116, no. 245, burial 8, 8

COMPOSITION
According to Kinnis and Longworth (1985, 116, no. 245, burial 8, 8), the necklace comprised 160 disc beads, but 163 were counted during this study, 91 of which are strong together and accompanied by a bead that reads 'Bordlingh Barrow 1. TR VI See Q. R. Grave III Jet beads 91' (Figure 7.1.7a). The remaining 72 are strong on a separate string (Figure 7.1.7b). Four beads from each of the two sets of beads were recorded in detail, but all were examined under a microscope.

CONTEXT AND ASSOCIATIONS
The necklace was found in the neck area of a contracted skeleton of an adolescent (also described by Kinnis and Longworth as a 'child'), lying on the right side with head to the west, in an east-west orientated grave, south-west of centre under a round barrow believed to be the same barrow as the one excavated by Canon Greenwell in 1889. It was excavated by T.C.M. Brewster in 1969. Two All-Overs Cord Beakers were found at the shoulder; the skull and fragments of post-cranial bones of an infant were also present. A broken bone belt ring (ID 750, Figure 3.4.1) was found in the lower part of the grave fill, along with a flint scraper and two flint flakes.

WEAR
The edges of the perforations on the disc beads are generally crisp, but slight thread-wear to one area of the perforation (in the form of the smoothing of the edge) was noted on three of the four beads that were subjected to particularly close scrutiny. All four of these beads had slight polish on the high points of their flat surfaces, indicating bead-on-bead wear which is assumed to have taken place before the

MORPHOLOGY
The beads are small and of fairly uniform diameter, ranging between 4.5 and 6.3mm. They are mostly chunky, varying widely in thickness between 1.3 and 6.4mm. Assuming an average thickness of 3mm, when strung as a single strand (extending nearly 500mm) the necklace would have hung down to a few centimetres below the collarbone; in modern necklace terminology, it would count as 'Princess' length, somewhat longer than the 'choker' length represented by several other disc bead necklaces. The perforations are mostly central and perpendicular, ranging in diameter from 1.5 to 2.2mm. The beads are circular in plan, most are parallel-sided, but quite a high proportion are slightly or markedly wedge-shaped (Figure 7.1.7c). The shape of the edge varies from straight and perpendicular to the flat sides, to slightly convex. In a few cases it slopes and in one case, a particularly thick bead, it is even slightly concave.

MATERIAL
Macroscopically the material appears to be jet in every case (ASMD). In colour the beads range from black to blackish-brown. Wood grain was visible in a couple of cases, and where present, the luminescent crackling follows the line of the wood grain. One bead from the 72-bead strand has a shining conchooidal fracture - a classic indicator of jet. Another characteristic of jet, an 'orange peel' like hollow, was noted on one of the beads in the labelled strand. On the 72-bead strand, one bead has a natural inclusion of a quartz grain. Analysis at the British Museum (MID1), using XRF, confirmed the identification as jet. Given the relatively minor amount of cracking, it is likely that hard jet had been used.

MANUFACTURE
A distinctive feature of this necklace is the presence of a significant minority of beads in each strand (nine, in the case of the labelled strand) bearing very clear transverse nibble striations on their edge (Figure 7.1.7d and e). While this nibbling has been noted on disc beads in several other necklaces (e.g. ID 322 Goodmanham), the Follitton necklace offers by far the clearest expression of this feature and indeed it may well be that the beads in question had been added to the necklace, since the quality of their manufacture is lower than that seen on the remainder of the beads. Since all the beads in question have convex outer surfaces, it seems likely that the nibbling had been undertaken to create this convexity. The nibbling traces had not been polished away and these beads have a much less glossy edge than the other beads. Furthermore, their perforation is significantly narrower than that of the other beads, confirming the suspicion that they had been made by a different person.

That the perforation in most of the beads in the necklace had been drilled from both sides is indicated by the (usually asymmetrical) hour-glass shape of some of the perforations. The drill bit had also been re-positioned in several cases.
WEAR

The beads that have the nibble striations do not show obvious signs of wear other than perhaps wear-polish on the highest part of their edge, but on several of the other beads there is clear evidence for thread- and/or bead-on-bead wear. The thread-wear takes the form of smoothing of the edge of the perforation and, in those cases where the perforation narrows, smoothing of the narrowest part of the perforation. The bead-on-bead wear takes the form of slight polish to the flat sides. In terms of overall wear, and bearing in mind the variation between the beads, the necklace can be classed as moderately worn.

CONCLUSIONS

This necklace belongs to a group of necklaces made from small, usually fairly chunky disc beads that vary little in their diameter. The absence of a fastener could mean either that the necklace had been secured by simply tying the thread (a parallel for which is offered by a disc bead necklace from Barns Farm, Ife: Watkins 1982, 67 and pl. 6), or else that an organic fastener had been used and had decayed completely.

As noted above, the fact that a few beads differ from the rest in being less heavily polished, in having nibble striations and comparatively narrow perforations and in appearing less worn than some of the others, suggests that these may have been added to the necklace after the rest of the beads had been made as a single set.

7.1.2 WESSEX

**ID 470.1-37 Winterbourne Stoke G47, Greenlands Farm, Wilts**


**COMPOSITION**

This is a composite necklace, comprising 30 complete or near-complete disc beads of Kimmeridge chert, plus fragments of at least eight further disc beads of the same material, along with two large fusiform beads of amber (confusingly described as 'oblate' in Gingell 1988), and two small oblate (fat annular) beads of amber. The disc beads are illustrated in their storage layout in Figure 7.1.6, the four amber beads are discussed in detail in Chapter 8.2.1, and illustrated in Figure 8.2.1.

**CONTEXT AND ASSOCIATIONS**

The necklace derives from a 'central' (actually slightly eccentric) grave under a large disc barrow, associated with the cremated remains of an adult, at least 25 years old, of indeterminate sex, plus a Series 5 dagger (ID 1183, Figure 3.1.9), bronze awl (ID 1176, Figure 6.4.2) and traces of twined coarse grass or rushes, possibly representing matting. Two microscopic fragments, one of silver, the other gold, were found during sieving of a 'brown substance from the base of the cremation centre', originally thought to be a leather bag but found to consist instead of charcoal, soil particles, chalk and bone.
Figure 7.1.8. ID 470 Winterbourne Stoke G47 showing the shale disc beads in their storage layout together with detail of an individual, parallel-sided bead. Note that its outer edges are actually straighter than they appear in the specific lighting of this image. See Figure 8.3.1 for the amber beads from this necklace.

MORPHOLOGY
The shale disc beads are all circular in profile, thin, and of fairly consistent external diameter (4.7 to 5.5mm), thickness (0.8 to 2.0mm), and perforation diameter (1.4 to 2.0mm) (Figure 7.1.8). Just under half are parallel-sided, the rest being slightly wedge-shaped; the edge is neatly squared off and perpendicular to the flat surfaces in each case. The borehole is perpendicular and central in some beads, slightly eccentric in others; in most cases it is funnel-shaped, but in three cases it is parallel-sided.

MATERIAL
The beads are all of a compact laminar material, of a speckled black and dark brown colour (varying between beads in the dominance of black and brown), with a stony texture. Macroscopically it appears to be of Kimmeridge shale (AS).

MANUFACTURE
There are no striations on the flat sides of the disc beads to indicate the manner of shaping the beads, but the funnel shape of the borehole in most beads indicates that the beads were individually perforated, from one side. The prevalence of chipping around the borehole suggests that the person drilling the hole might not have made a small starter hole at the other side, to prevent chipping as the drill bit penetrated the flat surface. In one bead, an internal ledge indicates where the drill was repositioned. The interior of the borehole is smooth. The outer edge had not been polished.

COMPLETENESS AND DAMAGE
These are fragile and vary in their degree of completeness from 100% to ≈5%. The more complete examples have been treated with a consolidant, possibly carboxax. All, or virtually all the beads have ancient chipping or spalling to one or both sides, usually around the borehole and sometimes extending from there to the edge, this is likely to have occurred during their perforation. The beads are matt all over (except for a very slight sheen on the flat surface of many beads).

WEAR
It is unclear whether the smoothness of the borehole in the disc beads is due to thread-wear, but the edges of the borehole are crisp. The only sign suggesting wear is a slight sheen on the flat surface of many of the beads, possibly caused by bead-on-bead wear.

CONCLUSIONS
Overall, the dominant impression of the disc beads is of little use and slight wear, although wear was recorded in detail for only 20 examples. Little wear was recorded on the associated amber fusiform examples (Chapter 8.2.1).

ID 491 The Manton Barrow, Presteigne Gla, Wiltshire

COMPOSITION
This is a single-strand necklace comprising 50 disc beads, of which 144 are strung in the museum display and are made of 'flintite' (Bussell et al. 1992), plus a stem joint of a fossil encrinite, used as a bead (but not strung on the necklace in the display), and five 'small much decayed amber beads' (Figure 7.1.9). As with the Winterbourne Stoke G47 necklace (ID 470), this is actually a composite necklace, although it differs from most such necklaces in being dominated by one type of bead, of one material. The amber and encrinite beads are considered in Chapter 8.5.1, see also Figure 8.5.1.

CONTEXT AND ASSOCIATIONS
The necklace was found in a primary grave under a bowl barrow, lying 'in a little heap', c. 15-20cm from the bend of the contracted skeleton of an 'aged female', lying on her left side, orientated south-east to north-west. Her head was to the south-east and was bent towards her chest. Elsewhere in the grave were found a halberd pendant of bronze and gold (ID 1422, Figure 5.9.1), found beside a biconical gold-bound bead probably of shale and a gold-bound amber disc pendant (ID 1420, Figure 5.9.1); a fired clay statuette (probably a helmet or an ear statuette); a fired clay statuette (probably a helmet or an ear statuette; ID 1423, Figure 5.6.2); a fluted bead of flintite, found beside a chalk bead and quartz-like ring bead of 'sawnite' ('some pinkish substance resembling soft stone'); two knife-daggers (ID 1430 and lost), one with an amber pommel (ID 1429); fragments of three bronze awls (ID 1426-8); a grape cup and a second accessory vessel; remains and impressions of woven cloth, of more than one type; traces of wood, found around the head; and a deposit of clayey soil containing decayed fragments of bone (see also Chapter 8.5.1 where the non-disc beads are described).

MORPHOLOGY
As the necklace is tightly strung, it was decided to record in detail only the largest, smallest, thinnest and fattest beads.
The photograph (Figure 7.1.9) gives an overall impression of the necklace as currently strong (without its non-flint elements). The disc beads are tiny and graded in diameter between 2.8 and 6.3mm; they range in thickness between 1.0 and 2.9mm, and the borehole diameter is 1.1mm. When laid together they form a strand c. 290mm long, and the necklace would originally have been just over 300mm long, not long enough to encircle an adult female neck (for which a circumference of c. 360mm would be normal) without a stretch of ‘blank’ thread at the back. In theory the beads could have been worn as a bracelet, although they would have had to be wrapped around the wrist; it is assumed that they had been worn instead as a ‘clocher’-type necklace. In plan the beads are circular to sub-circular and mostly parallel-sided, with a slightly convex edge. In a few cases the edge slopes slightly. The borehole is perpendicular, narrow, neatly executed and slightly eccentric, and in the two beads where its shape is clearly visible, it is parallel-sided.

**CONCLUSIONS**

Little can be concluded about the age of this necklace when buried, other than to say that the disc beads had clearly all belonged to a single necklace, rather than being acquired piecemeal.

**ID 317 Wiltsford G39, Wiltsshire**

References: Hoare 1810, 210; Annable and Simpson 1964, no. 480; Bussell et al. 1982, 31, no. 71.

**COMPOSITION**

The necklace consists of 12 disc beads, although 15 were noted by Annable and Simpson (1964, no. 480) and, according to Colt Hoare’s original description, 20–30 were originally found (Hoare 1810, 210) (Figure 7.1.10).

**CONTEXT AND ASSOCIATIONS**

The necklace was found in a grave – possibly in a primary position – under a bowl barrow; it accompanied cremated remains and a bone pin (lost).

**MORPHOLOGY**

The disc beads are small and circular in plan, of fairly uniform external diameter (6.0 to 6.4mm) and thickness (1.4 to 2.3mm), and have a perforation diameter of 2.4 to 3.0mm. Half are parallel-sided, the rest being slightly wedge-shaped. The outer edge is minimally convex in nine beads, and angled in the remaining three. The perforation is central and perpendicular; its shape varies from parallel-sided (six beads) to V-shaped (five beads) and hourglass-shaped (one bead). The outer edge is matte, as are the flat surfaces.

**MATERIAL**

The beads are clearly all of the same material (AS): a compact, black to black-grey, non-metallic material that takes a satiny sheen, which Bussell (Bussell et al. 1982, 189) tentatively identified as ‘flintite’ on the basis of XRF compositional analysis, later confirmed by Pollard et al. (1981). One bead has a hairline lamellar crack. The material is the same as that used for the fluted bead.

**MANUFACTURE**

The fact that this necklace could not be dismantled for examination, and that it was not examined under a microscope, limits the amount that can be said. No obvious striations were noted upon macroscopic inspection. The very slight curvature of the edge of some beads suggests that they were individually shaped after being made into their circular shape. One bead has a markedly rounded side-edge junction. The shape of the perforation makes it hard to determine whether the beads had been individually perforated, or drilled while on a hypothetical roughout block. The outer edge of the beads had been polished to a low to medium satiny sheen; two beads have a slightly higher sheen.

**COMPLETENESS AND DAMAGE**

The condition of the six missing beads could not be determined, but the 144 on the string are all either complete, or nearly so, missing only tiny chips from their outer edge. It was not noted whether they had been treated with consolidant.

**WEAR**

Given that the flat sides and perforations of most of the beads could not be seen, the degree of wear must be recorded as indeterminate.

**ID 317**

As ‘Kimmeridge shale’ (quoted in Woodward 1991, 102–3), then it would arguably be worthwhile re-examining these beads to check whether, too, might be of Kimmeridge shale (despite the cross-criss cracking, and the slightly woody texture of one bead). The Kimmeridge jet deposits should be re-examined as well, to determine whether material resembling this can be found among those deposits. For the moment, then, the material identification should be restricted to ‘jet’ (or ‘jet-like’), with the proviso that future analysis may reveal that it is really Kimmeridge shale, or a mixture of Kimmeridge shale and jet.

**MANUFACTURE**

The minimally convex shape of the edge of most beads suggests that they had been individually shaped, although whether they had originally been detached from a cylindrical roughout block or not is harder to determine. Evidence that might support such an interpretation comes from the fact that one bead has a slightly faceted shape in side view, and another has one deeply-dished side: a feature that might conceivably indicate that these had been the end beads on such a roughout block. According to the borehole shape, however, the beads (or at least some of them) were individually perforated: the V-shaped boreholes indicate that the drilling was done from one side (with perhaps a starter hole on the other side, to prevent chipping around the borehole), while the hourglass-shaped perforation shows that the bead was drilled from both sides. Faint rilling marks, noted in the perforations of four beads, indicate the use of a bow- or pump-action drill. The outer edge was not polished.

**WEAR**

The edges of the perforation are crisp, although there are traces of slight thread-polish on the inside of the perforation, just inside the end, in all but two of the beads. In one case the perforation interior is obscured by consolidant. Slight bead-on-bead wear in the form of slight polish at the highest part of the surface was noted on five beads. Overall the degree of wear can be described as slight (Table 7.1.2).

**CONCLUSIONS**

It appears that the necklace had seen some wear before it was buried. It is hard to assess how long the necklace had been worn since disc beads tend to display wear marks less than fusiform beads.

**7.1.3 OTHER REGIONS**

**ID 334 Eglintonham (Blanevair) barrow 200, burial 3, Northumberland**

The fusiform beads range in length from 17.2 to 24.2mm, and in maximum diameter from 7.2 to 8.2mm; one is relatively slender, the others, of medium-thickness to plump. In mid-point cross section the beads range from squashed circular to a rounded D-shape. Their ends are slightly angled in four cases, are rounded in most cases, and squared off in one. Their colour varies from black to dark brown, with both colours present in most of the beads.

**MATERIAL**

The disc beads are all of the same, compact-laminar non-jet material, identified from macro- and microscopic examination is a coneool or shale (AS/MD). XRF analysis of two disc beads by MDDH at the British Museum confirmed that they are likely to be of shale.

The fusiform beads were identified macro- and microscopically as all being of jet (with one possible exception), on the basis of their colour, texture and pattern of cracking (AS/MD). Wood grain was visible in four beads and cross-crack cracking was observed on all the beads except one which instead showed hairline longitudinal cracking. Some beads also had concentric cracking. The cracking was extensive and deep in three beads, with cupping and/or loss of surface in the case of three others; this suggests that the jet used had been of the soft variety.

One bead was analysed using XRF and its composition is consistent with low-quality jet, with a medium iron content (MDDH).

**MANUFACTURE**

The disc beads appear to have been perforated individually; several have hour-glass perforations, while others had been perforated mostly or wholly from one side. Fault rilling was noted on the interior of the largest bead. It was not possible to inspect every perforation as the necklace remained strong. One bead has striations on one of its flat surfaces, probably resulting from the manufacture process.

The fusiform beads generally do not show any manufacture traces; faint striations are mostly likely to be brush strokes from the application of a consolidant, although on one example some slightly clearer, diagonal striations (and possible gouge-marks) around the middle of the bead may well relate to its manufacture. Where the interior of the perforation was visible, no traces of rilling were observed.

**COMPLETENESS AND DAMAGE**

The beads range in completeness between 95% and 100%, the damaged beads all being fusiform. Ancient damage includes the loss of a large chip from near the end of one fusiform bead. Post-exavation damage consists of the loss of part of one end of two beads, and surface losses through cracking. All the fusiform beads have been coated with a consolidant, and one also has glue in its perforation at one end. Despite he coating, it was possible to tell that most of the beads had been polished to a medium sheen (or, at least, that the sheen had survived to a medium level); one bead showed areas of high sheen. The outer edge of the disc beads had been polished to a low sheen.

**WEAR**

Virtually no wear was noted on the disc beads, other than a circumferential groove worn into one side of one bead that may have been caused by a piece of grit being trapped between two beads. The perforations have crisp edges (Table 7.1.2).

In contrast, the fusiform beads show moderate wear in six cases, and moderate to heavy wear in the remaining two. In every case where the interior of the perforation was visible, thread-wear had removed any traces of rilling that might originally have been present. The interior is smooth. The edges of the perforations had been smoothed, probably through thread-wear in nearly every case, and one bead has a thread-pull groove at one end. Bead-on-bead wear was noted in five beads, taking the form of grinding to the outside of the end. It is possible that the angularity of the ends of one bead and the mid-point concavity of the ends of another is due, at least in part, to bead-on-bead wear.

**CONCLUSIONS**

While disc beads are generally less susceptible to use wear than beads of other shapes, the contrast between the condition of the disc and the fusiform beads, and the difference in the number of each type of bead present, make it most likely that the fusiform beads had been recycled from an old and worn spacer plate necklace, and added to the disc beads to form a disc and fusiform bead necklace. The disc beads may not have been worn for long (if at all) when the fusiform beads were added. The size and thickness of the disc beads link this necklace to others (with or without fusiform beads) that feature thin, graded-size disc (or "washer") beads; such necklaces are mostly (or exclusively) found in northern England and Scotland. Examples include those from Almondbank, Perth and Kiroos (Close-Books and Shepherd 1997).

**COMPOSITION**

The necklace comprises at least five tubular sheet copper beads (in nine fragments), formerly with a wooden backing (of which three fragments survive), plus 14 tiny disc beads of jet, some fragmentary (Figure 7.1.2). The copper beads were not studied in detail.
MANUFACTURE
The slight convexity of the outer edge of several of the beads, together with faint traces of short nibble striations on this surface, noted on two of the beads (including the widest bead, fourth from the left on Figure 7.1.12), suggests that the beads had been individually shaped. The fact that the widest bead has a perforation that had probably been drilled from both sides suggests that the beads may all have been drilled individually, although the parallel-sidedness of the borehole in most beads suggests that any trace of the drill’s point of entry had been ground off, and that they may mostly have been drilled from one side. In terms of surface finish, the outer edges range from matt to having a low to medium sheen: it is unclear whether they had originally been polished to a higher sheen.

COMPLETENESS AND DAMAGE
Ten of the beads are complete; the eleventh bead is complete but in five fragments, having disintegrated during examination (and after photography: it is the second from the left in the photograph (Figure 7.1.12). The twelfth is nearly complete but in four fragments (not shown on Figure 7.1.12) and since used for analysis by Dr J M Jones; the thirteenth is around 66% complete; and the fourteenth in two fragments, is just over 66% complete. The beads’ fragility made it impossible to examine all of the threaded beads closely. Three of the threaded beads have chip scars. On one, this runs from the outer edge of one flat surface and is probably ancient; on the other two, the chips had been lost from the edge, possibly in the relatively recent past.

WEAR
As indicated above, it was not possible to examine the threaded beads in detail, although it was noted that there was no thread-smoothing to the borehole, and no obvious bead-on-bead wear, where this could be observed. The most prudent way to describe the degree of wear is indeterminable; like all disc beads, it may be that these had been worn for some time, but that the wear had not left any obvious signs (Table 7.1.2).

CONCLUSIONS
This necklace constitutes one of the earliest of the Chalcolithic and Early Bronze Age composite necklaces. Confirmation of the disc beads’ material as jet means that this is also one of the earliest, if not the earliest, evidence for the use of jet during the British Chalcolithic.
7.2 SPACER PLATE NECKLACES OF JET AND JET-LIKE MATERIALS (by Alison Sheridan and the main authors)

A list of items studied and illustrated is shown in Table 7.2. The necklaces vary considerably in size and, although it was desirable to have samples at a consistent scale for comparative purposes (Fig. 7.2.1 to Figure 7.2.19), this was not always possible. Nor was it always possible to retain colour accuracy when taking close-up images. Note that the use of the term ‘button’ to describe the conical, V-perforated objects found in several of these necklaces should not be taken to imply that they had necessarily been used as buttons before being incorporated into the necklaces; while this may be the case in some instances, others could have been made as beads. The term ‘button’ is simply used as shorthand. Detailed measurements of certain dimensions relating to these necklaces, including perforation diameters, are tabulated in Appendix VII where some fuller descriptions of spacer plates are also held.

7.2.1 EAST YORKSHIRE

ID 247 Calais (Callis) Wold 13, Bishop Wilton, East Yorkshire.

References: Jewett 1870; Mortimer 1905, 164-6 and pl. LIII, fig. 418a; Sheppard 1929, 58 (no. 418a), 141.

COMPOSITION

The necklace consists of six strands at its front; when found it comprised two terminal plates, two boat-shaped V-perforated buttons, 10 circular to oval V-perforated buttons, 35 fusiform beads, one tubular bead and 573 tiny disc beads, making a total number of 623 components. Figure 7.2.1 shows Mortimer’s original photograph (Mortimer 1905, fig. 418a) together with a photograph of the necklace as currently strung from the rear of the round V-perforated buttons and 18 of the tiny disc beads are missing, so the overall number of surviving components is 603.

This can be regarded as a variant form of spacer plate necklace, lacking spacer plates but having multiple-bored terminal plates, along with other elements that are commonly found in spacer plate necklaces in northern England. Mortimer’s arrangement of the components (which he admitted was conjectural) may well be correct in showing the V-perforated components lying behind the terminal plates. Where the original arrangement may have differed from his, however, is in the positioning of the two boat-shaped ornaments and in the relative positioning of the different kinds of bead (Figure 7.2.1; see also Chapter 5, Figure 5.9.7 for drawings). By analogy with other necklaces, the boat-shaped components may have formed part of a fastening mechanism. Normally they are found singly, and are thought to have articulated with a loop in the thread, but it may be that a more elaborate thread-loop arrangement was used here, so that the two pieces could lie side by side and at right-angles to the rest of the necklace. They will henceforth be referred to as ‘boat-shaped fasteners’. Regarding the relative positions of the beads below the terminal plates it may be that, by analogy with a necklace from M Gretton, Fife (Henshall and Wallace 1964, fig. 2), the fusiform and tubular beads had been clustered towards the front of the necklace, with the disc beads extending between them and the terminal plates. Indeed half of the holes in the central part rather than two, and the TR has a third transverse row towards the apex. However, these plates were clearly designed as a pair.

The boat-shaped fasteners have elliptical bases and fairly steep sides terminating in a rounded ridge. The apex on the example that is currently strung on the necklace is slightly asymmetrical. To distinguish the two, the example that is not on the necklace is denoted ID 247.9 (Figure 7.2.2, see also Figure 5.9.7). It measures 31.4 by 8.9 by 6.1mm (L by W by H) compared to 38.9 by 7.0 by 10.8mm for the strung example. The perforations measure 3.5 by 2.7mm and 3.8 by 2.9mm with a bridge width of 2.8mm. The perforations on the strung example measure 2.5 by 3.2mm and 2.3 by 3.2mm with a bridge width of 3.7mm.

The eight surviving buttons (Figure 7.2.2) are mostly approximately circular in plan, with domes that vary from medium-height to tall and round to pointed; two (ID 247.6 and ID 247.8) have sloping facets between the dome and the base, and the three others (ID 247.1, ID 247.2 and ID 247.4) have partial facets. One (ID 247.7) differs from the rest in having a markedly oval base shape and a low, rounded dome. The principal characteristics of the buttons are summarised in Appendix VII, Table 1.

To judge from Mortimer’s photograph, the two missing buttons fall within the shape range of the others; one (the rear left example on Mortimer’s fig. 418a) had been smaller than the rest.

The fusiform beads vary in length from 11.0 to 24.5mm and in maximum thickness from 5.5 to 8.5mm; in shape they range from long and slender to short and squat, and in cross section from roughly circular, to slightly D-shaped, with five having two flattish sides (Figure 7.2.1). These flattish examples may originally have lain adjacent to a spacer plate on a spacer plate necklace. The diameter of the longitudinal perforation ranges between 2.0 and 4.1mm. The four beads with the widest perforation are also the smallest, all being below 13.5mm in length. The ends are generally gently squared off and in some cases are perpendicular to the edge of the bead; in most cases, however, one or both ends slope, and in the latter cases the ends mostly slope away from each other. Such ends (and indeed bodies) are characteristic of fusiform beads found in spacer plate necklaces.

The tubular bead is 13.9mm long and 4.8mm in thickness and has a narrow perforation, 1.8mm in diameter (Figure 7.2.1, innermost strand, second non-disc bead along). It is cylindrical in profile and circular in cross section, with squared-off, perpendicular ends. The tiny disc beads are circular in plan and mostly parallel-sided with a straight (as opposed to rounded) outer edge (Figure 7.2.1). They are markedly uniform in diameter (4.2 to 4.3mm) but vary in thickness from 0.4 to 3.6mm; the perforation is narrow (c. 2.5mm), central, and perpendicular.

MORPHOLOGY

The terminal plates form a very similar, but not identical pair, each with a rounded apex (Figure 7.2.2). The left-hand terminal (TL) has an indentation caused by wear on its apex; it is the edge of the bead’s long axis; its inner edge is minimally concave. The lower edge is straight and missing its inner corner. Both of the outer edges of the right hand plate (TR) are very slightly convex and rounded; its lower edge is straight and squared-off. The two terminal plates are very similar in size, with TL being 41mm long at its mid-point, 28mm (extrapolated) at its widest point and 5.8mm thick, while the corresponding measurements for TR are 41 by 28 by 6.6mm. In both, the perforations are all elbow-bored, with a single hole at the apex end and six holes at the lower ends; the holes on the back surface are slightly convex (and under edge, it was not possible to measure the holes on the TL due to the tightness of the stringing. However, on the lower edge of TR the holes range from 3.0 by 2.5mm to 2.4 by 2.0mm. Both plates are decorated on their upper (exteriors) surfaces with a pointillist design featuring an increasing number (one to three) of double-line rows extending from the apex to the bottom, framed by a line running around the exterior of the design and separated by transverse lines. There are minor differences: the TL plate has one and a half double rows in the central part rather than two, and the TR has a third transverse row towards the apex. However, these plates were clearly designed as a pair.

The boat-shaped fasteners have elliptical bases and fairly steep sides terminating in a rounded ridge. The apex on the example that is currently strung on the necklace is slightly asymmetrical. To distinguish the two, the example that is not on the necklace is denoted ID 247.9 (Figure 7.2.2, see also Figure 5.9.7). It measures 31.4 by 8.9 by 6.1mm (L by W by H) compared to 38.9 by 7.0 by 10.8mm for the strung example. The perforations measure 3.5 by 2.7mm and 3.8 by 2.9mm with a bridge width of 2.8mm. The perforations on the strung example measure 2.5 by 3.2mm and 2.3 by 3.2mm with a bridge width of 3.7mm.

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The tubular bead is 13.9mm long and 4.8mm in thickness and has a narrow perforation, 1.8mm in diameter (Figure 7.2.1, innermost strand, second non-disc bead along). It is cylindrical in profile and circular in cross section, with squared-off, perpendicular ends. The tiny disc beads are circular in plan and mostly parallel-sided with a straight (as opposed to rounded) outer edge (Figure 7.2.1). They are markedly uniform in diameter (4.2 to 4.3mm) but vary in thickness from c. 0.4 to 3.6mm; the perforation is narrow (c. 2.5mm), central, and perpendicular.

MATERIAL

Macroscopically, all the components, except the tiny disc
beads and the tubular bead, show obvious signs of being made from jet, with both soft and hard varieties present (the former showing extensive and/or deep cracking) (AS). The terminal plates, fasteners and the buttons are a deep brown and black colour, and the fusiform beads range from a rich brown to blackish colour. Where present, the cracking pattern is characteristic of jet (i.e. criss-cross and oval). A fine-woody texture is particularly clearly visible where the surface is brown, and is also clear on the bottom of button ID 247.6 (Figure 7.2.2) and on one of the brown fusiform beads, where part of the surface had spilled off. Other characteristic features are the presence of quartz grains (a commonly-found jet inclusion) in one of the fusiform beads, and of a natural oval hollow on the underside of the unattached fastener (Figure 7.2.2). A similar hollow exists on the dome of button ID 247.5 (Figure 7.2.2).

As for the other components, the tubular bead is blackish grey and the tiny disc beads are mostly black or dark grey, although several include dark brown areas. The material for both the tubular bead and the disc beads is compact and not obviously woody (although this was not checked under a microscope). A couple of beads have incipient laminar cracking, and a laminar structure has been exploited for forming the individual beads.

Both of the fasteners and all of the buttons, together with the left-hand terminal plate, three fusiform beads and two groups of tiny disc beads, were compositionally analysed using X-ray fluorescence spectrometry, by Lore Troalen of National Museums Scotland, with samples of raw Whitby jet and of cameo coal used as comparanda. This confirmed that the elements macroscopically identified as being of jet were indeed of this material. The analysis also revealed some compositional variability in the jet, which probably relates to inclusions and confirms the view that several different pieces of parent material were used to make the various jet components. Thus, buttons ID 247.2 and ID
247.8 and the boat-shaped fastener currently attached to the necklace have a relatively high iron content which may relate to the proximity to pyritic inclusions in the parent material; the fusiform bead closest to the TL on the innermost strand has an appreciable germanium content. Button ID 247.5 has a high zinc content, and variable amounts of yttrium were present in one of the analysed fusiform beads, in the unattached boat-shaped fastener, and in buttons ID 247.2, ID 247.6 and ID 247.8. Extraneous components on some of the components are calcium, which will probably have derived from the bones of the skeleton (thereby confirming Mortimer's suggestion that the necklace had been around the neck of the deceased). Mortimer sought to suggest the former presence of a small object of copper or copper alloy in the vicinity of the necklace.

Analysis of the tiny disc beads showed that they did indeed differ in their composition from the other analysed components, but the presence of zirconium indicates that jet cannot be ruled out as a raw material; this is consistent with the brown colour of some of the beads. As elsewhere (e.g. Garton Slack VI, I, ID 253), a lower grade of jet had probably been used to make the beads. Other characteristics of these disc beads are the presence of yttrium and (in some) appreciable amounts of iron; calcium was also detectable but not in the scale of the body, and with one group of disc beads there was an appreciable level of copper.

**MANUFACTURE**

Very few traces relating to the original shaping of the terminal plates are visible, partly because they had probably been polished away and partly because much of the rear of the plates is obscured by thread. The borehole interiors are similarly obscured. There are a few faint striations running along the perforated lower edge of the TR plate. Three accidental holes on the upper (front) surface of the TR, close to its lower edge, may have resulted from drilling too close to that surface when creating the elbow-boring. At the apex of the TR, a small hollow beside the borehole may mark where drilling had started before a drill bit was changed. On the back of the plate, a flake scar adjacent to the top perforation may relate to damage during drilling, or else it may be spalled through pressure from the necklace thread. The pointilled decoration, with its maximum diameter of just over 1 mm, had been made with a narrow pointed object, possibly an awl, the traces of a creamy material spotted in the base of some of the punctations may be the last of a deliberate infill intended to highlight the design, as has been seen on spacer plate necklaces elsewhere. There are no signs of guiding, or guidance, for the design. The decoration had probably been made after the terminal plates had been polished. In common with the buttons and fasteners, the underside of each of the terminal plates has a higher sheen than the upper surface of the bead in a post-depositional product of post-depositional, partial dulling of the surfaces that had not been in direct contact with the corpse: the whole of the surface (except the perforated lower edge) may originally have been polished to a high sheen.

There are also a few traces relating to the initial shaping of the boat-shaped fasteners; here, it is because they had mostly been polished away, and any original striations are present running along the flat side of the fastener that is currently attached to the necklace. More numerous, and multidirectional faint striations are present on the same surface of the other fastener (ID 247.9, Figure 7.2.2). Regarding the perforations, no rilling is present, the slightly uneven outline of the right hand perforation in 247.9 (Figure 7.2.2) may indicate that the drill was not perfectly true, the others are presented twice, once perpendicular to the long axis and then to drill diagonally. The underside of the fasteners preserves the high sheen that had probably formerly covered the whole of both fasteners.

Various manufacture details are visible on some of the buttons (Figure 7.2.2). The conical examples (ID 247.1, ID 247.2 and ID 247.8) have fairly crisp multi-directional grinding striations on their lower, flat surfaces, and also have crisp diagonal striations on their facets; faint striations on the dome were noted on ID 247.8. Button ID 247.5 also has clear multi-directional striations on its underside, including where the surface slopes up (see Figure 7.2.2a), although it was not possible to establish whether the button had been sandblasted or polished. The domed ID 247.3, ID 247.4 and ID 247.7. The truncated shape of the dome on 247.6 may well relate to the loss of the tip of the cone during manufacture; the spalling and the smooth object, the maker smoothed over the fracture surface. As regards the V-borings, rilling in one or more perforation was noted in every button except ID 247.3 and ID 247.5, and in ID 247.6 and ID 247.7. However, the same does not seem to have been used for these three buttons. The width of the tip, in ID 247.4, is c. 1.7 mm. Chipping during drilling was noted on ID 247.2, ID 247.5 and arguably also ID 247.6, and ID 247.8 not only had there been chipping here it is likely that the bridge between the perforations was broken during manufacture, necessitating the drilling of a third perforation. A curving hollow on the base of ID 247.8 may indicate where an imperfection in the raw material had been removed, the perforations have avoided this area. With ID 247.7 the drilling had gone too close to the top of the button, breaking through the surface.

The degree of sheen on the buttons relates to several factors: the initial degree of polish; the subsequent gain of sheen through wear, and the subsequent partial loss of sheen post-depositionally. Generally the underside has a higher sheen than the upper surface of the bead in a post-depositional product of post-depositional, partial dulling of the surfaces that had not been in direct contact with the corpse: the whole of the surface (except the perforated lower edge) may originally have been polished to a high sheen. Only one bead showed any obvious manufacture traces, exhibiting two unpolished scars on one side, one possibly a gouge-mark relating to the removal of irregularities in the jet. One other fusiform bead has an incompletely polished chip at one end, and another has a worn chip wear at the same position, but it is impossible to tell whether the damage had occurred during manufacture or wear. All the fusiform beads had been polished, but the degree of sheen varies between beads, from very low to high, most having a moderate sheen.

There are no signs of the shaping process visible on the cylindrical bead, and it was not possible to inspect the interior of the perforation. However, it is clear from the bead that there were been twice, once perpendicular to the long axis and then to drill diagonally. The surface is smooth and has a low sheen; given the nature of the raw material, it might never have had a higher sheen.

Evidence suggesting how the disc beads may have been made is provided by a run of beads on the outermost strand, between the fusiform beads at the left end of the necklace. Here, the closely-interlocking individual elements suggest that their original respective positions have been maintained from when they were either detached from a cylindrical parent roughout, or else ground into shape as a set of roughout beads. It was not possible to inspect the interior of the other fusiform beads, or to see whether the boreholes had been drilled from both sides. As for polish, while the edge of the disc beads had been carefully smoothed, it may never have been polished to a high sheen. The range of smoothing ranges from matt (i.e. no sheen) to moderate.

**WEAR**

Assessment of the degree and type of wear was affected by a number of factors, including the size, shape and strength. It is for this reason, together with the fact that disc beads tend not to show wear as much as other components, that the amount of wear on the disc beads is given in Table 7.1. The degree of wear is presented twice, once as an application of wear to the terminal plate, and on a few of the fusiform beads, falls between the 'fresh or slight' and 'worn' categories; and the degree of wear on one of the buttons (ID 247.7) falls between the 'worn' and 'very worn' categories.

Although the interiors of the boreholes of the terminal plates are mostly obscured by thread, it is clear that there had been some slight thread-smoothing to the edges of the boreholes. There is also some thread-wear. On the TR plate this occurs along its lower edge, the outermost hole (i.e. on the longest strand) having traces of thread-wear towards the centre of the plate, and it may be that thread-wear is responsible for the loss of the chip from the corner at this point, on the upper surface (Figure 7.2.2). At the upper end of that plate, on the back, thread-wear had worn a hollow leading down from the borehole, and may also have caused the loss of a flake off the edge of the perforation. (It was at this point that all six threads would have converged). On the TL plate, the ancient loss of the corner at the innermost strand could have been due to thread-wear, and at the top of the plate, lengths of the elbow-boring, again probably due to thread-wear, although rubbing from an adjacent button may have been partly responsible for the U-shaped hollow at the apex of the TR plate (Figure 7.2.2). No obvious traces of bead-on-plate grinding were evident, although close examination was not possible. The decorated surface of each plate showed signs of polishing in an unspecified area. None of the punctations close to the apses; this may be due to rubbing by a garment.

Both boat-shaped fasteners show both thread-wear and some rub-wear. On both the thread has smoothed the edge of the perforations, especially to their outer sides (Figure 7.2.2), and it may that some of the smoothing of the perforated surface, and some of its sheen relates to the thread-wear. The difference in size of the circumference is missing, and one of the fusiform beads, which had been broken and lost much of one side before being repaired using the black material. In addition, two of the fusiform beads (the first on the right side of the third strand, and the third from the right in the sixth strand, counting out from the innermost strand) had lost part of one side due to laminar spalling along natural grain planes in antiquity. Ancient damage in the form of chipping during drilling has been noted above, along with the fracturing of a bridge on button ID 247.8, the loss of the tip of button ID 247.6 and the accidental puncturing of the upper surface of the right terminal plate, and of the apex of button ID 247.7, probably during hole-drilling. Other ancient damage through wear is detailed below.
are relatively crisp (e.g. on ID 247.4: Figure 7.2.2) and there is very little rub-wear. In contrast, the other buttons show thread-smoothing around the perforation edge, and thread-pull towards the outside of the perforations which would accord with their use as necklace beads. These buttons also show varying degrees of rub-wear, mostly on the base where the surface is highest (e.g. ID 247.4 and ID 247.3, Figure 7.2.2). On ID 247.4 the highest point of the dome has a higher shine than the rest of the dome, and this may be due to rub-wear against a garment. Similarly, the smoothing of the edge of the accidental perforation at the top of the dome on ID 247.4 may be due to rub-wear. Overall, this is the most heavily worn button.

When it was difficult to examine the perforation edges of the fusiform beads, it is clear that only a few beads show obvious signs of thread-wear or bead-on-bead wear. The latter include one of the small, spat beads (around the middle of the third strand on Figure 7.2.1). Here, there is clear thread-pull to one end, and bead-on-bead wear at the other end, where the end of an adjacent bead has ground and polished that end, giving the bead an asymmetrical profile. A large hole along one side might also have resulted from wear. Another of the spat beads (in the second strand, third fusiform bead from right) has thread-pull to both ends. As for the other beads, there are two cases where thread-pull had damaged one end: on the third bead from the right in the innermost strand, there is a thread-pull groove (at the opposite end from where a chip has possibly been detached for later use), while the second bead from the right in the second strand has a chip missing from one end, probably due to thread-pull. In two other cases where chips are missing from one end the second bead from the left in the third strand, and the third bead on the right in the fourth strand) it is unclear whether the chipping occurred through wear or, as noted above, during manufacture.

The buttons showed no obvious signs of wear, although it was not possible to inspect the edge of the perforation. As far as the disc beads are concerned, as noted above, it was difficult to check for signs of wear, although slight smoothing of the perforation edge was noted on several examples.

CONCLUSIONS

The only observation that has been made with confidence is that the terminal plates had been manufactured as a pair, and that the necklace had some wear before it was buried. Beyond that it is likely that the various components were obtained from different sources. The fusiform beads show signs of having come from at least one pre-existing spacer necklace, and it may well be that the short, spat examples with wide perforations (and in at least one case marginally more wear than most of the other fusiform beads) had belonged to a different parent necklace from the red ochre or red ochre beads may have been made when the present necklace was assembled, to fill the gaps between the fusiform beads and the terminal plates (as suggested above). The tubular bead, which seems to be of the same material as the disc beads, may have been made when the necklace was complete (without this set of disc beads and beads had been made at the same time) and both known and about which there are few details exist. Mortimer records (1905, 353-4) that 'With the necklace were found seven large flat pieces of jet, evidently part of another object than the necklace, as though it had been made part of the necklace, as given in fig. 107. One of the broad pieces and all the smaller beads shown in the illustration were not found, having probably been overlooked by the workmen'.

MORPHOLOGY

The individual plates are cross-referenced on Mortimer's illustration of the necklace, into the necklace, Heaven's (1984) and TR is aware of the right hand terminal. The other plates are numbered, prefixed by 'Sp' (for 'spacers') and suffixed by L or R (left or right respectively) (Figure 7.2.3a). As noted above, there is no Sp 1 R plate.

TR and L are fairly light with TR being broader and thicker than L. The inner edge of each (i.e. the edge facing the wearer's head) is fairly straight while the outer edge is curling. Both have a transverse perforation close to the apex, plus three elbow-bored holes at their broader end, the perforations exiting at the back of the plates. Neither is decorated. The spacer plates are all trapezoidal, increasing in size towards the front (centre) of the necklace. Their inner and outer (i.e.uperfomed) edges are rounded, while the perforated edges are squared off (but are not all straight: those of Sp 3 L, for example, bow out slightly). Their outer edges are gently curved, their inner edges slightly less so. There is no neat symmetry in the size and shape of the plates between the left and right sides of the necklace: for example, Sp 2 R is broader than Sp 2 L. The dimensions of the individual plates are listed in Appendix VII, Table 2, insofar as it was possible to measure them in situ. All the spacer plates except Sp 3 R (which is elbow bored) are through-perforated, with Sp 1 L (and presumably also the missing Sp 1 R) involving a y-boring in order to increase the number of strands from three to four.

All the spacer plates are decorated with a pointelline design, and there are hints (e.g. in Sp 1 L and Sp 2 L) of the presence of whitish material in the base of the dots. However, without being able to examine this microscopically, it is unclear whether this represents sediment from the grave, or material — perhaps polishing material — that had been deliberately left in to highlight the design. While four of the plates have a design featuring a central lozenge flanked by two inscribed triangles (with the latter being dot-filled in the case of Sp 1 L and Sp 2 L), the narrower Sp 1 L has a different design, featuring two opposing triangles, resembling a bow tie.

MATERIAL

The colour (black and rich dark brown), texture (fine-grained woody, as visible in some cases) and condition of the plates (see below) leave no doubt that the material of all of the plates is jet (AS). The unconditioned material of Sp 1 L suggests that it is likely to be hard jet, and the minimally-cracked condition of Sp 3 R suggests that this, too, may be of hard jet (Proctor 1972). Conversely, the extensive surface cracking of the other plates suggests that they are of soft jet (Figure 7.2.1).

MANUFACTURE

The circumstances under which the necklace was recorded means that it was not possible to check for manufacturing traces microscopically, so some may well have been missed. Shallow striations between perforations (from the grinding of the plate edges) were noted on the left edges of Sp 2 L, Sp 3 R and Sp 2 R. No guide lines for the perforation decoration were visible, while the decoration itself had likely been made using a round-tipped tool, possibly an awl. The plates had been polished; all now have a low to medium sheen, although the degree of sheen may well originally have been higher.

COMPLETENESS AND DAMAGE

The TL plate is in the worst condition, with extensive surface cross-crack cracking and cupping (Figure 7.2.3c), and some consequent loss of spall, on its upper surface; it was not possible to see the underlying texture. One or two of the elongated shank-borings had been broken through, although it was not possible to determine whether this damage had been due to ancient wear. The Sp 3 L plate is in good condition, with only a little hairline cracking to its upper (decorated) and lower surfaces. Sp 2 L and Sp 3 L are in worse condition, with extensive cross-crack cracking and some cupping on their upper surfaces. In the case of Sp 2 R, the damage is slight, although it is noticeable near the surface. The underside of Sp 2 R and Sp 3 R also seems to be uncracked, while the upper surface of Sp 3 R has some cross-crack cracking. This pattern of differential degradation suggests that the underside of the necklace had been protected, probably by being in contact with the deceased's skin or garment. However, the TR plate has extensive cross-crack cracking on both its upper, lower surfaces. Sp 2 R has a long spall missing from its upper surface, close to one perforated edge, and this may represent ancient damage. Sp 2 L also has a long spall scar on its upper surface, plus a rounded spall scar, and these may have resulted from the surface cracking. The only other damage that was noted is the fact that the innermost and outermost xorecles of Sp 3 L had perforated the plate's upper surface (Figure 7.2.3b). The position of the holes corresponds to where the boreroles from each end of the plate are likely to have met, and suggests that the perforations had been drilled too close to the surface. The drill may have broken through the surface during manufacture. The overall degree of completeness of the necklace depends on whether Mortimer's suggestion that there had been an additional spacer plate and 26 fusiform beads was correct. If so then the surviving portion represents around 50-70% of the necklace. Given that this necklace is of a
7. Necklaces 1: Disc Beads and Spacer Plate Necklaces

**WEAR**

Some clear signs of wear were noted on some, but not all, of the plates. The breaking-through of one of the elbow-bore holes on TL has been noted, along with the uncertainty as to whether this had resulted from wear. The transverse hole near the upper end of TL does, however, show signs of ancient thread-pull wear, to its upper edge on the underside of the plate, where the thread would have pulled towards the back of the neck. Some thread-pull wear was also noted on the corresponding hole of TR, and all three of its perforations along its bottom edge also show thread-wear, especially the outermost hole. The aforementioned holes on the upper surface of Sp 3 L have slightly smooth edges, as though they had undergone some wear.

One of the holes on Sp 1 L, the outermost hole on the edge closest to the adjacent terminal plate, has thread-wear and this was also noted to the ends of the holes of Sp 2 L, particularly on the innermost and outermost holes. On the innermost hole the thread has pulled towards the underside of the plate. Such wear may relate to the plate having rested on the collarbone. Finally, one of the elbow-bore holes on the underside of Sp 3 R (either the innermost hole or the outermost) has a thread-groove worn into its inner edge.

The overall degree of wear can be said to be variable, from slight to worn (perhaps heavier in the case of the terminal plates) and is recorded in Table 7.2.2.

**CONCLUSIONS**

If, as argued above, Mortimer was indeed correct in postulating that there had been only a single row of fusiform beads between the plates, then the estimated maximum circumference of the necklace (estimating an average length of 15mm for each of the outermost beads, and extrapolating the width of the missing plate) amounts to nearly 400mm, not leaving any space between the apices of the terminal plates. This would encircle an adult's neck as a fairly tight, choker-length necklace, and this is consistent with the observed pattern of wear, even if the apices of the terminal plates had not actually abutted each other when in use. Regarding its overall design, this necklace is comparable to others that deviate from the 'lamula-like' format in having more or fewer than the normal set of six plates, and in which the number of strands increases slightly, or not at all (e.g. Cow Low ID 266 and Blindmill, Aberdeenshire: Stuart 1866).

That this necklace was not new when buried is clear from the degree of wear seen on some of the plates. That it may have acquired pieces during its life is suggested by the fact that the two terminal plates are not only the largest (on the other plates) but also that they differ from each other in size and shape. However, neither the thickness nor the difference in decoration between Sp 1 L and the other extant decorated plates is sufficient to prove that the components had not been made as a set.

**7.2.2 PEAK DISTRICT**

ID 266 Cow Low, Green Fairfield, Derbyshire
References: Bateman 1848, 91–5; Howarth 1899, 57; Vine 1982, 62.

**COMPOSITION**

This two-strand spacer plate necklace comprises two terminal plates, two spacer plates and 42 fusiform beads (Figure 7.2.4). There is some confusion as to whether or not a globular bead may also have belonged to this necklace (below), since the Bateman Collection Catalogue entry (Howarth 1899, 57) is ambiguous and there is a good chance that it had not been associated. The bead will therefore be described separately.

**CONTEXT AND ASSOCIATIONS**

The necklace is from a cist in a secondary position in a round barrow. It is one of two necklaces to have been found in the cist (the other being ID 657) and, since the two necklaces have separate museum registration numbers, it is assumed that they had been spatially distinct from each other within the cist. The two necklaces are described and discussed separately here. Inside the cist was found the contracted skeleton of an adult, whose sex Bateman reported to be female, along with "a fine instrument of calcined flint, of the circular-ended form" (Howarth 1899, 57). The relationship of the two necklaces to this individual is described, somewhat vaguely, by Bateman as "...the bones of a female in the usual contracted position, with which were two sets of Kimmeridge coal beads (one hundred and seventeen in number)..." (ibid). Bateman noted that a few fusiform beads 'lay on the outside of the cist, where was part of the skeleton of a child, to whom possibly one set of beads might belong, or, what is more probable, that they were disturbed at the time of the construction of [another cist] (ibid). It is therefore unclear whether one of the two Cow Low necklaces had originally accompanied a child, whose remains were disturbed by the insertion of the later cist. It remains a possibility, and of the two necklaces, ID 266, the smaller example, seems most likely to have been associated with the child.

A globular bead which shares the same museum registration number as this necklace is the subject of some confusion (Figure 7.2.4b). It is mentioned in Howarth's catalogue heading: "1 Necklace of Kimmeridge coal [sic] - comprising 42 cylindrical beads, one globular bead, [inlays added] and four flat ornaments rather triangular in shape. Found with a secondary interment in Cowlow barrow, near Buxton" (ibid), although Bateman's account, published below this heading, is different. Bateman states that the overall number of "beads" in the two necklaces...
is 117 – a total that corresponds to the number of extant components without counting the globular head. That this bead had not been part of either necklace is suggested by (x)tern’s letter statement (appearing in Howarth 1899, 58-9) that “in various parts of the tumulus, but not in situations where they could be allotted with certainty to any of the interments, were Sp a scattered deposit of burnt bones, a bead of kimme of good yellow, of more globular form than the others, much worn (types added)...” Such a description fits the bead in question.

MORPHOLOGY

All four plates are trapezoid and flat, with the terminal plates narrowing considerably to their apices; in each case the perforated edges are straight and fairly crisply squared off, and the other edges are rounded. The outer edges of the terminal plates are very slightly convex, as are the edges of the spacer plates. The right hand terminal plate is markedly narrower than its counterpart on the left, and it seems to have been narrowed (see below, manufacture).

Each terminal plate has a single elongate-holed hole towards its upper, narrow end and two elongate-holed holes close to its lower end (with traces of a further, broken hole on the right terminal: see below and Figure 7.2.4a). The holes begin to open on the undersides of the plates. The spacer plates each have two through-perforations. The perforations at the broad end of each terminal plate, and in the spacer plates, are all very close to the plates’ rounded edges. Dimensions of the plates are shown in Appendix VIII, Table 3. All the plates are decorated on their upper faces, with a subtle geometric design featuring triangles and diamond shapes; see below for details.

The fusiform beads (Figure 7.2.4) are fairly plump to plump, with many being slightly angular, and many are slightly flattened on part of their circumference. They range in length from 18.0 to 32.6mm and in width from 6.6 by 6.9mm to 10.1 by 10.1mm; their perforation diameters range between 2.0 and 2.8mm. Their ends are mostly gently squared off and perpendicular to the long axis or minimally angled (with one end of the shortest bead more markedly angled, possibly through wear). Like the plates, the beads give the impression of belonging to a consistent set, rather than comprising a mixture of components from more than one parent necklace.

The overall length of the necklace from left terminal tip to right terminal tip is 610mm which would equate to a ‘mature’ length (c. 24 inches) in terms of modern necklace categories. In other words, it would extend slightly below the collarbone, whether it be worn by a child or an adult.

MATERIAL

Macroscopically, all the plates are clearly of jet (AS). This is indicated by their colour (a rich dark brown to blackish-brown, made darker by the presence of a coating of consolidant or lacquer), by a deliberate two-tone blackish and brown variegation on their upper surfaces, and by the cross-crack cracking seen on all the plates except the left terminal (Figure 7.2.4c). It is also clear from the fine- textured woody texture seen in the exposed surface of the right terminal plate, and by the presence of an oval dimple (a natural irregularity seen in jet) on the outer edge of spacer plate Sp 1 L and the inner edge of Sp 1 R. (This is not to be confused with deliberately- and accidently- created dimples that are sometimes seen in jet fusiform beads.) The cracking is more marked on the underside of the plates, and the underside of the right terminal is darker than the decorated upper surface. The presence of the cracking on all but one of the plates suggests the use of soft jet (albeit less prone to cracking than a lot of soft jet, including that used for the plates in the other Cow Low necklace, ID 267). The consistency in colour, condition and texture among these three plates suggests that they may well have been made from the same parent piece of raw material. The exception, the left terminal, is not cracked and had probably been made of hard jet.

The fusiform beads are all black and macroscopically look to be of hard jet. Cracking, where present, is minimal and hairline, in cross-criss and oval shapes. Chip scars tend to be shiny and conical and where the sub-surface has been revealed, it is fine-grained and woody in appearance. Six beads have the oval ‘dimple’ feature as noted above (Figure 7.2.4d) and, with one possible exception, these probably relate to natural irregularities or to accidental spalling rather than to deliberate shaping. All these features are characteristic of jet.

Two sets of analyses have been applied to components of this necklace. During the 1970s, Bussell analysed the composition of fragments from two of the fusiform beads using neutron activation analysis (NAA; Bussell 1976), and for the present study a tiny detached chip from a fusiform bead was mounted, polished and examined by Dr. J.M. Jones by oil immersion reflected light microscopy and reflectance measurement. As the chip had been lying loose, it was impossible to determine from which bead it had originated. While the latter was shown to be of good quality jet, the beads analysed by Bussell did not have the classic jet compositional signatures. She commented that their low lanthanum and scandium and high iron content were features shared by the specimens of coal from north-east Yorkshire which were included in her programme of analysis, although they differed from these coal in having exceptionally high levels of cobalt and lower lanthanum levels (Bussell 1976, 79). Note that Bussell later qualified her use of the term ‘coal’ by saying that the material could actually be Jet Rock oil-shales, or else soft jet, unless it was genuinely carbuncle coal that had been missed by the Geological Survey (ibid. 91). Elsewhere (ibid. 71) she noted that the level of various elements could be very variable. Since work by Jones has shown that some jet can be high in iron (and since Bussell did not analyse a wide range of jet samples), the likelihood that all the beads are indeed of jet must be considered.
MANUFACTURE
Manufacturing traces in the form of shallow grinding striations were noted on all the plates, even though the previous stages of buffing or polishing of the core or outer edge on the right terminal plate has obscured some of these. Most of the striations are on the perforated edges of the left terminal plate and of both the spacer plates; some are unidirectional, others multiaxial. Further striations were noted on the upper and lower surfaces, and unperforated sides, of the left terminal plate.

The location of the perforations in the plates had been carried out neatly, but the positioning of the lower holes close to the long edges had created problems for the perforation of the terminal plates, since in both cases the holes on the outer side (Figure 7.2d) with the right hand terminal plate, the remains of a broken outer perforation are clearly visible and it appears that the plate had been narrowed along much of its length, and re-drilled. This would explain why this plate is c.4mm narrower than its counterpart on the left.

The decoration on the upper surfaces of the plates is subtle and hard to see, as the colour distinction between the brown areas and the black areas is less marked than it would originally have been. There are very shallow and slightly rough-looking scratchings, forming a geometric design on each of the plates. Both the terminal plates the design consists of two triangles extending from the lower, broader edge and two long diamond shapes extending towards the upper, narrow edge (Figure 7.2e, 4c); on the spacer plates it consists of two opposed triangles extending from the inner and outer edges, their apices facing each other but not touching. The area inside the triangles and diamonds is blackish, while the rest of the upper surface is a deep brown. This is most clearly seen on spacer Sp 1 L (Figure 7.2f, 4e). The effect would have been achieved by first polishing the surface to a high shine to bring out the black in the jet, then carefully dulling selected areas to bring out the dark brown colour of the jet's sub-surface (Redvers-Jones pers. comm.). Whether the scratch marks had been made beforehand to act as guidelines, or added afterwards, to highlight the boundary between the arcs of different colour, is uncertain although the latter is indeed a plausible explanation. It is clear, in any case, that the selective dulling had been most skilfully executed.

The fusiform beads show manufacturing traces in the form of frequent remains of faceting towards the ends (Figure 7.2g,d), diagonal faint grinding striations towards each end, and other grinding striations elsewhere. Some beads also have traces of filing in their borehole. They show that a consistent method of manufacture had been used. The beads had been polished to a high sheen, although its appearance has been enhanced by the application of consolidant or lacquer.

COMPLETENESS AND DAMAGE
The ancient damage and repair to the right terminal plate has already been noted. Other ancient damage to the plates comprises the loss of a large chip on the underside of the left terminal plate, leading from the perforation near the outer edge (Figure 7.2b, 4f). This was caused by thread-pull to a vulnerable area. Similar damage exists at the borehole on the upper, narrow edge of both terminal plates (Figure 7.2a, 4a), and a large slippage had become detached next to the borehole on the underside of the right terminal plate, close to its outer edge. Spacer Sp 1 R has a large chip missing at the upper borehole on the right edge and a smaller slippage missing from the underside at the opposite edge. In all cases this damage will have been caused by thread-pull, but the last chip could have resulted from the drilling process. Damage to the upper surface of the right hand terminal plate that may be recent is the loss of a large chip, its long edge corresponding to a crack-line.

Several of the beads appear to have been damaged since their discovery, with some having been broken, or having lost chips, and then having been glued back together. A few beads had been chipped in antiquity. Damage is otherwise in the form of thread- or bead-on-head wear (see below). Traces of probable 'Blu-Tack' were noted on a couple of the beads.

WEAR
The loss of parts of each terminal plate due to thread-pull to vulnerable areas is clear. In addition, there is a shallow thread-pull groove on the underside of the left hand terminal plate extending from the upper (narrow) end towards the outer edge, terminating at the upper borehole with a distinct rounded apart from the deep cracking. There had been thread-pull wear to both edges of the perforation at the upper (narrow) end, with loss of a chip on the edge, and polish to the perforation on the underside. The loss of a slippage beside the borehole towards the outer edge may well also have resulted from thread pressure. There was no other obvious wear to the boreholes near the bottom (broad) edge, so it may be that the repair was not worn for very long after the plate had been re-shaped.

The spacer plates show a lesser degree of wear, although the chipping and spalling around the boreholes on Sp 1 R may well be due to thread-pull, and some thread-pull to the interior of one of the perforations was noted. The left hand borehole near the outer edge of this plate also has some shallow bead-on-plate grinding wear. Similar bead-on-plate wear was noted at three of the four hole ends on spacer Sp 1 L (including both ends towards the outer edge), and there was also thread-smoothing and polishing to both hole ends on the right side and to the outermost hole end on the left side.

7. Necklaces & Disc Beads and Spacer Plate Necklaces
The beads also showed thread-wear in the form of smoothing to the interior of the borehole, smoothing of the outer edge (Figure 7.2c, 4f) - or in a few cases, more marked angling - to one or both ends, from bead-on-bead wear. The overall degree of wear is shown in Table 7.2.2.

CONCLUSIONS
This necklace may well have been complete and have contained all its original components when buried. It falls within the category of spacer plate necklaces that decorate from the lunula-like format since it has only two spacer plates and only two strips. Like the other necklace in the cit (ID 267), it had been skillfully made, using very good quality material. It had clearly been worn for long enough for the terminal plates and a few of the beads to show signs of heavy wear, and for the right hand plate to have required re-shaping and re-boring.

Despite being a smaller necklace than ID 267 and lacking a jet fastener, ID 266 shares much similar characteristics with it in terms of raw material, style of manufacture, bead shape and plate decoration that it could well have been made by the same person or group of people. The presence of these two necklaces in the cit raises the question of whether they had both belonged to the woman buried in the cit, or whether they may have been worn by related females of high status, perhaps a mother and daughter, with the smaller necklace being deposited as a grave good associated with the older woman that symbolised the close bond between the two. The fact that its plates are relatively small and slender in comparison with those from many other spacer plate necklaces might lend support to the latter hypothesis.

The significance of this necklace, in terms of the rarity of its decorative technique, the possibility that it had been made by the same hands as ID 267 and the possibility that it had been made for a young person, is discussed further in Chapter 7.3.

The globular bead from Cow Low
This is globular in plan and roughly teardrop-shaped in profile, with a large, oval, eccentric hourglass perforation. The length is 15.00mm, the width 14.77mm and the thickness 7.7 to 12.4mm. The perforation measures 7.45 by 4.00mm. There is no obvious front or back surface to this bead; Macroscopically, the material is soft jet: the bead is black, with deep and extensive cross-section cracking. The bead had been carefully smoothed so that any traces of manufacture had been removed, although there are rough-like markings running part of the way along the edge of the perforation on one or two areas. It has a high sheen, and although to some extent this is due to the presence of consolidant or lacquer, it is likely that it had originally been polished to a high sheen. The bead is complete and sound apart from the deep cracking. There is thread-pull around the inside of the perforation and probable thread-smoothing to the edge of the perforation; overall, the degree of wear could be described as moderate.

ID 267 Cow Low; Green Fairfield, Derbyshire
References: Bateman 1848, 91–5, Howarth 1899, 57; Vine 1962, 62.

COMPOSITION
This spacer plate necklace, possibly complete, comprises one triangular fastener, two terminal plates, two pairs of spacer plates and 64 fusiform beads (rather than 40, as Bateman had erroneously counted) - the latter counted only the beads lying behind the terminal plates in the reconstruction shown in Figure 7.2.5 even though he correctly gave the overall number of components in ID 266 and 267 as 117). The current arrangement of the components is almost certain to be Bateman's and is incorrect, for three reasons. First, the two largest spacer plates have been strung with their outermost edges facing inwards (so that what currently appears as the right hand plate should have been on the left hand side), and the terminal plates also need to be switched around, for the same reason. Second, the two other spacer plates are strung with their decorated surfaces on the underside of the necklace, suggesting that Bateman had not spotted the subtle decoration on all the plates. Finally, if the necklace had been strung in the conventional Early Bronze Age manner, the fusiform beads currently lying between the fastener and the terminal plates would instead have lain between the innermost pair of spacer plates.

CONTEXT AND ASSOCIATIONS
This is the larger of two jet spacer plate necklaces found in 1846 in a cist in a secondary position in a round barrow, the other being ID 266. Details of the cit's contents have already been presented in the entry for ID 266; as noted there, it may be that ID 267 had belonged with the adult female while the smaller necklace ID 266 had belonged with a child.

MORPHOLOGY
The fastener is flat, triangular with rounded corners, and has a narrow transverse perforation close to its longest edge; it is 29.3mm long, 12.7mm wide and 6.4mm in maximum thickness. The perforation diameter is 2.5mm. The characteristics of the terminal and spacer plates are summarised in Appendix VII, Table 4. (See also Figure 7.2.6–d). Sp 1 refers to the bead that would have been uppermost on the necklace (i.e. lying on or above the collars), and Sp 2 refers to the larger pair that would have lain lower down at the front of the necklace. L and R refer to the left and right sides of the necklace. All the plates have squared-off perforated edges and rounded unperforated edges, and all are flat (or flattish) and slightly
asymmetrical. As is the case with the other Cow Low necklace (ID 266), all the plates are relatively thin. The terminal plates (TL and TR) are isosceles triangles with squared-off apices (slanting on TR) and fairly straight sides; each has a single transverse hole near its apex and four elbow-bored holes along its wider edge. Both Sp 1 plates have four through-bored holes and both Sp 2 plates have Y-borings that increase the number of holes from four to eight. All the plates are decorated with a faint geometric design on their upper surface; as noted above, two of the spacer plates have been strung into the necklace with these decorated faces pointing downwards.

The evidence indicating the original ‘sidedness’ of the terminal and Sp 2 plates is based on the direction of the thread-wear on the uppermost holes of the terminal plates, and on the fact that one unperforated edge of each of the Sp 2 plates is longer than the other. (The longer edge would originally have lain on the lower edge of the necklace.)
The spacer plates are all trapezoidal with straight perforated edges and extending from minimally convex perforated edges. Five perforated holes (Figure 7.2.6a-a, b) in those like in the other Cow Low necklace, are medium to pubi larg in many. There are many slender angular in appearance, and many are flat edges are sometimes thin, forming one or two flat sides. Some or all of the 13 beads with two flat sides have probably been designed to lie next to the Sp 2 plates, where eight beads would have had to be at the upper end of the plates. They range in length from 13.2 to 27.8 mm and in maximum girth from 5.6 to 7.0 mm to 9.3 by 9.85 mm. Their ends are mostly squared off and roughly perpendicular. Apart from damaged examples, a few have one slightly sloping end and one has two sloping ends (Figure 7.2.6e). A few have a cupped end, although it is unclear whether this relates to their drilling. Sixteen of the beads have one or more dimple features, at various positions (Figure 7.2.6c). In one such case (labelled bead 32 in the original notes) the multiple small hollows are clearly a natural, 'orange peel' surface irregularity, as seen in many jet objects, whereas on other beads some of the larger dimples had probably been a deliberate design feature to allow beads in adjacent strands to nestle tightly, while others may relate to accidental flaking during manufacturing. Similar dimples had been noted on the untreated beads from the other Cow Low necklace (ID 266).

**MATERIAL**

Macroscopically, all the components appear to be of jet, mostly hard jet, although the extensive cracking seen on the large part of spacer plates suggests that soft jet had been used for these (Figure 7.2.6d, AS). All but one of the fusiform beads are black (with the exception being a black-brown, with a compact, very fine-grained woody texture. The blackness may have been enhanced slightly by the presence of a thin coating of consolidant/lacquer on some of the necklace components.

The fastener is blackish-brown on one side and a rich dark brown, or black, and has cross-criss-crossing (Figure 7.2.6g). The plates range in colours from black (in the case of Sp 1 L) to a rich dark brown mottled with black-brown (in the case of Sp 2 R). A fine-grained woody texture was noted in the fusiform beads and in TR, Sp 1 R and Sp 2 L, and an area of matt, matte sub-surface has been exposed on the back of Sp 2 R where a spall had come off. These features include the characteristic of jet. The fusiform beads are fine-grained and have a characteristic of jet include the aforementioned 'orange peel' surface irregularities seen on one bead (plus similar but larger hollows seen on the TL) and shiny conchoidal flake scars, seen on several beads. The surface of the jet was observed to have components of this one.

During the 1970s, Busell analysed fragments of a spacer plate and of a fusiform bead using neutron activation analysis (NAA), plus a further fusiform being 'presumably a remnant of a term of plate, although neither these nor the fastener is V-shaped' using X-ray fluorescence spectrometry (XRF: Busell 1976, 53, 63, 64, 79, 85, 92). She concluded that all of the items except one (the beads were of jet); the other had a high iron content that was interpreted to indicate coal or bituminous shale. (See above regarding Bussell's discussion of north-east Yorkshire coal content.) In 2007, Dr T.M. Jones and M. Jones also investigated many of the beads. They range in length from 13.2 to 27.8 mm and in maximum girth from 5.6 to 7.0 mm to 9.3 by 9.85 mm. Their ends are mostly squared off and roughly perpendicular. Apart from damaged examples, a few have one slightly sloping end and one has two sloping ends (Figure 7.2.6e). A few have a cupped end, although it is unclear whether this relates to their drilling. Sixteen of the beads have one or more dimple features, at various positions (Figure 7.2.6c). In one such case (labelled bead 32 in the original notes) the multiple small hollows are clearly a natural, 'orange peel' surface irregularity, as seen in many jet objects, whereas on other beads some of the larger dimples had probably been a deliberate design feature to allow beads in adjacent strands to nestle tightly, while others may relate to accidental flaking during manufacturing. Similar dimples had been noted on the untreated beads from the other Cow Low necklace (ID 266).

**MANUFACTURE**

Grinding striations were noted on all components except for the fastener and one of the fusiform beads. On the plates these are most commonly faint lines on the perforated edges, running either along or across them and clearly having been produced prior to perforation drilling, but the underside of Sp 2 R has numerous, multidirectional, fairly crisp striations, and there are also multidirectional striations (plus some gentle faceting) on the underside of TR, along with faint striations on one or two edges. All but one of the fusiform beads and of two spalls on the right terminal the corresponding Vs are part of a design featuring rows of triangles (Figure 7.2.6e). All that can be seen of the decoration on the left terminal is three triangles opening towards the lower perforated edge (Figure 7.2.6a), whereas extending from one of the boreholes, and of two spalls on the right terminal the corresponding Vs are part of a design featuring rows of triangles (Figure 7.2.6e). The design on the spacer plates features rows of lozenges, terminating in triangles (Figure 7.2.6d); it is nearly imperceptible on the largest pair of plates, due to surface cracking. The narrowness (<0.2 mm) and shallowness of the scratched lines indicates that a very narrow point or blade had been used to create them, and such is the similarity of the markings between ID 267 and ID 266 that it may be that the same tool had been used to create the designs. These lines (Figure 7.2.6a, b) and about the guide lines made in preparation for the creation of the plate with faint striations on one edge may have been noted on some other decorated jet spacer plates. However, the evidence from the smaller Cow Low necklace suggests that we may not be dealing with guide lines for a design that was unfinished. On that necklace there are signs that selected areas within the design had their polish deliberately deleted, to create a colour difference between the browner sub-surface, generally a cast or polished, surfaced finish (see also Figure 7.2.4e), the lines may have been added after the drilling process, to accentuate the design. It may be that such a different technical technique had been used for the plates on ID 267, but here any two-tone effect is much harder to spot, not least because of the extensive surface cracking and cupping on the Sp 2 plates.

**COMPLETENESS AND DAMAGE**

While the individual components are all complete or nearly so, with the least complete being a fusiform bead where 20% had been lost from chipping, there is evidence for post-extraction damage to the ends of many of the beads, probably due to over-tight stringing for museum display. (This was also noted on the smaller Cow Low necklace.) There have been broken beads, in particular, and it appears that the loss of one corner of Sp 2 L could have been caused through over-tight stringing in the museum.

Surface degradation in the form of extensive cross-criss-cross cracking and some corrosion with some 10% of the beads criss-cross cracking, mostly superficial, was noted on the fastener, on the underside of Sp 1 R and Sp 1 L, and on virtually all of the beads. The TL has had straight and curving hairline cracks. Ancient damage was noted, both from the manufacture process and from wear. The former includes a deep chip missing from the underside of TR, plus a chip scar adjacent to the transverse hole on the back of the same terminal plate. The latter chipping may have occurred during the drilling process. A small spall had become detached from the decorated face of Sp 2 R during manufacture as had various small chips and spalls from several fusiform beads (although some of this loss may have occurred during subsequent wear, due to thread pull). The narrowness of the jet used for the plates had clearly made the areas around the boreholes susceptible to surface loss, especially from thread pull. This had probably caused the loss of a spall from the decorated surface of Sp 1 R (Figure 7.2.6h), extending from one of the boreholes, and of two spalls from the underside of Sp 2 R, extending from two holes. (The holes along the narrow edge of that plate had been drilled close to the underside of the plate). A similar loss, of one corner of the back of the TL (Figure 7.2.6b), could have resulted from either ancient or modern thread-pull. The loss of a spall from the adjacent elbow-boring on the back of the same plate will have occurred either during drilling, or else during wear, through pressure from the thread.

**WEAR**

The degree of wear is summarised in Table 7.2.2 and the distribution of the type of wear (i.e. thread-wear and bead-on-plate wear) among the components is summarised in Appendix VII, Table 5; essentially 23 out of the 71 components, or just under a third, show signs of moderate or heavy wear while the remainder show no or only slight wear. The bead polish and/or grinding noted around many of the holes is consistent with wear from the end of fusiform beads.

**CONCLUSIONS**

Despite the use of both soft and hard jet, the consistency of the design and manufacture of the components (and indeed of the ancient wear traces) strongly suggests that they had been made and used as a single artefact. From one of the fusiform beads (No. 47 in the record notes) differs from the rest in being a rich dark brown colour rather than black,
context and associations

The components were found scattered over 'an area of many feet' under a previously-opened and densely wooded round barrow, 'around twelve yards' across (Bateman 1861, 66-7). The necklace will have been associated with the male and female burials, and 17th-century remains had been disturbed by the earlier exploration.

MORPHOLOGY

The left terminal plate (TL) is of a roughly trapezoidal D shape, of length 40.0mm, width 24.1mm and thickness 7.4mm (Figure 7.2.8a and b). Its outer edge curves out more markedly than its inner and it has squared-off perforated ends, gently rounded sides, a flatish inner surface and a slightly convex outer surface. It has one elongate-bore hole at its upper end (for the thread loop that either held, or was inserted around, the fastener) and three elongate-bore holes at its lower end. The other plates are all trapezoidal, with similar shaped ends and sides, and flatish surfaces (e.g. Figure 7.2.8c and d). With the exception of Sp 1 R, all are through-bored, with the increase in the perforations from the plates' shorter to longer edges being achieved by adding elongate-bore holes through the through-borings (e.g. Sp 2 R, Sp 3 R). A neutron activation analysis to examine two spacer plates, one fastenup and one disc bead, and X-ray fluorescence spectrometry (XRF) to analyse a spacer plate and two fastenup beads. Additional XRF analysis was undertaken in 2007 by Lore Troalen, National Museums Scotland, and this covered all the plates (including the Victorian terminal), four fastenup beads and two buttons. The X-ray analysis was undertaken by Lore Troalen. The analytical results agreed with Bussell's earlier findings and confirmed the macro/ microscopic identifications. Regarding the non-jet material, Bussell had observed that it has compositional features in common with the Whitby Jet necklace, and Kinnemuiride shale, and suggested that it was probably a bituminous shale from the Jet Rock of north-east Yorkshire. One of the disc beads (not analysed) is light grey in its outer part but dark grey elsewhere, prompting speculations that it might have been made of a light-coloured material, coated in antiquity to make it resemble jet or shale.

MANUFACTURE (X-ray Figure 7.2.7)

Fine grinding striations are visible at each end of the terminal plate (with those at the top end slightly deeper than those on the bottom) and also on each of the perforated edges of Sp 1 R, on the elongated edges of Sp 1 R, on both perforated edges of Sp 2 L, on the shorter of the perforated edges and on the underside of Sp 2 R, on seven of the fastenup beads, and on the base of nine of the buttons (Figure 7.2.8g). A tenth button has crispier striations. Both were also noted on four of the button facets.

Faint chipping marks were noted in the perforations of five of the buttons and a change of slope, indicating a change in positioning of the drill, was noted in four, possibly five cases. The fastenup beads had been drilled from either end, and this was also the case with the through-perforations on the plates. The elongate-borings had been divided from the upper surface, where the disc bead on the fastenup, and from the two sides of the bead upon towards the perforation.

One of the fastenup beads has two shallow gouge marks where an inclusion in the jet had been gouged out; further gouge marks were noted on three of the buttons, and in one case the mark is adjacent to a crystalline inclusion which had been left as is. Two of the fastenup bead have traces of the faceting left from their initial shaping.

completeness and damage

Overall, the necklace lacks its original right terminal plate and perhaps its fastener (and probably many of its fastenup and disc beads) and there is damage to the corners of Sp 2 L (Figure 7.2.6f). Sp 2 R, Sp 3 R, Sp 4 R, Sp 5 R and Sp 6 R. Also on a quarter of Sp 1 R had chipped off in antiquity (Figure 7.2.8e). The upper surface of Sp 1 L has extensive laminar spalling, and the terminal plate had split along a laminar plane. There is also a deep laminar crack on the back of Sp 2 L (Figure 7.2.8d).

Damage resulting from manufacture is clear on the underside of Sp 1 L, where the drilling of the elongate-bore hole had created a large shallow chip. This, together with thread-pull from one end of one of the through-perforations, led to the spalling-off of much of the underside. It may well be that the elongate-boring of Sp 1 R had led to the loss of much of this plate, weakening an already-poor-quality piece of laminar shale. Manufacture damage is also visible on some of the buttons: in one case the drill had broken through the upper surface, and with the others, there is minor chipping to the edge of the perforations.

Damage resulting from wear was noted on the plates and on several of the fastenup beads. Recent damage was noted on Sp 1 R where fragments had become detached and been badly glued back (Figure 7.2.8e). Fourteen of the fastenup beads also have recent damage: in most cases the beads had been broken and the pieces badly glued together, but there are two cases of edge damage that could have resulted from the way that the necklace had been re-strung for display. The loss of a large chip from one of the buttons may also have occurred since the excavation. On another button there has been some spalling and chipping as a result of the cracking of the jet.
WEAR

The various necklace components exhibit differential wear, as detailed in Table 7.2.2; the nature of wear to the plates and spacers is shown in Appendix VII, Table 7. The wear to the fusiform beads consists of thread-smoothing, polishing and chipping due to thread-pull and bead-on-bead wear, leading to shallow to deep grooving where the end of one bead has ground into the end of the adjacent bead at an angle.

In general, the buttons are noticeably less worn than the fusiform beads and plates. The wear consists mostly of thread-smoothing and polish to the perforations, with the smoothing most marked on the outer edges in all but one case – the exception having most wear to the inner edge of the perforations. Some probable ‘garment or skin rub’ wear to the base of the buttons was noted in six cases. As for the disc beads, it is always hard to detect signs of wear, and no obvious signs were noted in this case.

CONCLUSIONS

This necklace was old when buried, and apparently lacking its right terminal plate (although it could have had an organic plate that decomposed completely, or else the plate had been removed or destroyed during the initial exploration of the barrow). The variation in raw material, shape and degree of wear of its various components indicates that they are an amalgam of parts from different necklaces, with the shale components (or at least the old, mostly heavily worn shale plates) coming from one necklace, the compact dark jet fusiform beads coming from another, the buttons and 15 of the fusiform beads of good quality jet coming from a third, and two further fusiform beads of the same kind of jet probably coming from a fourth.

References: Jewitt 1850; Bateman 1861, 24–6; Davis and Thurman 1865; Howarth 1899, 61–2; Bussell 1976, chapters 11 and 12; Vine 1982, 404, no. 937; Shepherd 2009, 357, no. 13, a–j.
COMPOSITION

This collection of beads, pendants and buttons may well have been buried as a necklace but cannot be arranged into a conventional spacer plate necklace design (Figures 7.2.9–11; Figure 7.2.10 is a watercolour by Jewitt, in Museums Sheffield, showing the various components). There are currently 407 components (including a Victorian narrow spacer plate) but Bateman’s account mentions 420, so 14 tiny disc beads are now missing. It has varying numbers of strands (up to seven) according to the variously-bored spacer and terminal plates and is currently strung according to the arrangement shown in Bateman’s publication (1861, 24–6). This arrangement is undoubtedly wrong, not least because Bateman failed to recognise the presence of a triangular fastener. While the original arrangement of the components cannot be ascertained, if there had been the intention to make the assemblage appear like a furuba-like spacer plate necklace then the fastener should have been at the back, next to two of the terminal plates, and more of the fishtail forms should have lain between the spacer plates than are shown in its current arrangement.

The currently extant components are as follows (excluding the Victorian spacer plate no. 66; numbers as per Figure 7.2.9):

• No. 69. One flat triangular fastener (Figure 7.2.11a). Nos. 65, 72 and 73. Three terminal plates, with differing numbers of boreholes along their lower edge (Figure 7.2.11b–d).
• Nos. 67 and 68. Two narrow spacer plates of black material (no. 67; Figure 7.2.11a).
• No. 71. One bone spacer plate (Figure 7.2.11c).
• No. 70. One fragment of a spacer plate, reused as a bead (Figure 7.2.11a).
• Nos. 1–10 and nos. 31. Ten complete (or near-complete) V-perforated buttons, plus one fragmentary example, used as beads (front views Figure 7.2.11f–g; back views Figure 7.2.11h–l).
• 53 fishtail beads (Nos. 11–30, 32–64; Figure 7.2.9).
• Nos. 74–406. 334 tiny disc beads (out of the original total of 348) (Figure 7.2.9 and Figure 7.2.11c, e and j).

CONTEXT AND ASSOCIATIONS

The necklace was recovered from a ‘trude cist or enclosure’, comprising several slabs and boulders set on edge, under a very small, low barrow near Arbor Low henge near the boundary of Middleton Moor in the direction of Parcey Hay (Bateman 1861, 24). The ‘cist’ contained the remains of an adult female lying on her left side, legs flexed, plus a child of around four years above her, behind her shoulders. The necklace is reported to have been found around the woman’s neck, but while it may well have been on her neck when she was buried, it will have disaggregated when the thread decayed. The adult skeleton has recently been studied and radiocarbon dated for the Basket People Project (2010–1772 cal BC; see Chapter 9). While the most recent osteological identification as to sex has concluded that the individual might have been male, both Bateman and Davis and Thurnam were adamant that the sex had been female. The individual’s age (stated by Bateman to be ‘about 40’ 1861, 264) has been confirmed as ‘middle adult’.

MORPHOLOGY

The reference numbers correspond with those shown on the illustration (Figure 7.2.9). The Victorian piece (spacer plate no. 66) is not included in the following discussion.

The fastener (no. 69; Figure 7.2.11a) is 30.5mm long, 16.5mm wide and 4.7mm in maximum thickness. It is flatfish with a slender D-rounded-triangular shape, with one long straight edge and one continuously curving edge, both rounded. Two spalls had broken off from the junction between the straight and the curving edge in prehistory, and wear to the straight edge has left it a little uneven. The perforation is roughly central and transverse, running through the flatfish sides.

Details of the terminal and spacer plates (nos. 65, 67, 68, 70–73, of which no. 70 is a fragmentary spacer plate reused as a bead) are summarised in Appendix VII, Table 8, with perforation numbering corresponding to the sketches in the original record sheets. See also Figure 7.2.11a–e.

Eight of the ten complete or near-complete buttons (nos. 1–10, Figure 7.2.11f–j) have a roundish base; nos. 2 and 3 have (or had been) oval-based, and the base of no. 2 is slightly convex. One (no. 7) is low-domed (height 2.4mm). Three, plus the fragment (no. 31), had been high-domed (maximum height 10.1mm), and the rest, medium-domed. No. 1 has an upright facet at the wall-base junction. The smallest button (excluding the fragment), no. 6, measures 13.2 to 16.1mm at its base; the largest, no. 3, 18.5 to 22.9mm. Even though Shepherd had clasped all the buttons as his Type 2, there is clearly some variability.

The fishtail forms (nos. 11–30, 32–64; Figure 7.2.9) range from slender (e.g. no. 23) to plump (e.g. no. 64), with ends that are perpendicular to the long axis in some cases (e.g. no. 39), slanted (in the same or different directions, e.g. nos. 13 and 51 respectively), or perpendicular at one end and slanted at the other (e.g. no. 24). At least two (nos. 53 and 56) have two flat sides and could originally have been designed to sit below a lower spacer plate. Many have had their original shape considerably modified through bead-on-bead wear. The beads range in length from 9.3 to 24.7mm (although in several cases the length has been shortened through wear); the diameter/thickness range is 5.2 to 9.4mm, and the projection diameter range is 1.7 to 3.2mm.

The tiny disc beads (nos. 74–406; Figure 7.2.9) are circular in plan and straight-edged, with a central perforation. They range in outer diameter from 3.4 to 5.1mm, and in thickness from 0.6 to 3.2mm. (It was not possible to measure the diameter of the perforation.) Some 45 are wedge-shaped in profile, while the others have parallel flat sides. The outer edge of many of the beads has been polished to a medium sheen.

MATERIAL

Identification of the material has been by macro- and microscopic examination, by neutron activation analysis of five components (by Russell), and by X-ray fluorescence spectrometry (XRF) of one of the decorated terminal plates (Russell 1976, 53, 78, 80, 85, 92). Reflectance microscopy was also undertaken by Dr J. M. Jones on a tiny detached speck (unlocated as to component) and on a detached chip from one of the narrow spacer plates (no. 68). The latter had been accidentally glued in the past to an adjacent fishtail form (no. 66).

Four, possibly five materials appear to be present, including the mammal bone from which the largest of the spacer plates had been made. (The species of this bone was not determined during the project.) From macro- and microscopic examination it appears that all ten of the
complete/substantially complete buttons are of jet, as are all three of the terminal plates, the fragment of a spacer plate reused as a bead, plus seven out of the 53 faistform beads (AS/AW). Its colour ranges from a rich chocolate brown (as seen in the terminal plate, no. 65 (Figure 7.2.11b) to blackish, with some pieces being a variegated dark brown/black-brown colouration Figure 7.2.11f–i). Both hard and soft jet are present, the latter showing extensive criss-cross cracking (plus some concentric cracking, on some buttons).

The eleventh button, the fastener, the narrow spacer plates (excluding the Victorian piece), the remaining faistform beads and the tiny disc beads are of cannel coal or shale, of a blackish-grey or black colour. Some of the components of this material show laminar cracking.

The various analyses confirm these observations. The tiny speck of material identified by Dr J. M. Jones (which is likely to have been detached from one of the cracked, fragile components) was confirmed as being of good quality Whitby jet. The chip from the narrow spacer plate was confirmed as being of cannel coal, with a vitrinite reflectance value of 0.6; it might derive from any of the northern British coalfields (pers. comm. Dr J. M. Jones).

As for the components analysed by Nussell, two were tiny disc beads, and the material of one (her sample 456.7)
was identified as 'resembling Kimmidge shale in all characteristic elements', while the other was identified as being from Bussell (Bussell 1976, 76-8). Material resembling Kimmidge shale may well be bituminous oil shale from the Jet Rock of north-east Yorkshire (ibid, 92). A third sample was a fragment of one of the narrow spacer plates and was burnt when buried; some loose bits of the particles were used to polish the plates and to highlight the design. Other features relating to the manufacture of the spacer plates consist of two oval grooves marks on the curving side of no. 70, the spacer plate that had been converted into a bead. The reshaping, using this grove, had carefully avoided all but the endmost perforation.

With the buttons, faint, multi-directional grooving striations were noted on the sides of nos. 1, 2, 8 and 10, and very faint, vertical striations were noted on the dome of nos. 1 and 2. The perforations had probably been drilled in two stages; any original mark by the drill had been totally or largely worn away. In two cases (nos. 3 and 7), one of the perforations had broken through the dome. The bridge between the perforations is mostly of medium width to wide. Time constraints meant that the fastener beads could not be individually examined under a microscope, but none showed obvious faceting or manufacturing striations.

As far as could be discerned from the tiny disc beads whose interior surfaces could not be seen, there is a broad thread-wear groove on the straight edge of the fastener which corresponds to the position of an old, worn spall scar (also likely to relate to thread-wear, from the pressure of the tight thread causing a spall to pop off). Old spall scars at the corners on one side are not due to thread-wear, but probably due to general wear. A detailed analysis of wear on the spacer plates is shown in Appendix II, Table 9.

All thread buttons have thread-smoothing, especially to the outer edge of the perforations, plus thread-polish that runs at least half way down the perforations. (The innermost area is worn out from thread.) This lateral wear is characteristic of the type of wear seen on necklace buttons. At least some of the polish on the flat side of the buttons is likely to have resulted from wear, with the buttons rubbing against a garment or against skin.

All kinds of thread-wear and bead-on-head wear were noted in the fastener beads, with the degree of wear being heavy in c. 30% of cases. The difficulty of ascertaining the degree (and kind) of wear to the tiny disc beads has been noted above.

CONCLUSIONS

This necklace had clearly been an heirloom item when buried as it constitutes the gathered-up remains of at least six necklaces – to judge from the variability in borehole numbers, the decoration on the terminal and spacer plates, and the shape of the terminal and spacer plates. It also includes a significant proportion of heavily worn components, as well as a variety of materials. As noted above, the beads and plates may have been strung as a conventional spacer plate necklace and it is unclear exactly how (or indeed whether) they had been strung, although some suggestions are offered above. No matches between any of the plates in this necklace and those seen in other spacer plate necklaces have been found.

The radiocarbon date for the associated skeleton is in line with the conclusion that many of the necklace components were manufactured in a similar time period. Five dated Scottish examples) that some spacer plate necklaces had been made during the last two centuries of the third millennium BC, parts of the Middleton Moor necklace could theoretically have been centuries old when buried.

ID 270 (including ID 256 and ID 257) Grindlow, Over Hadmon, Derbyshire

References: Bateman 1861, 46-8; Howarth 1899, 62-4; Bussell 1976, 53, 63, 64, 79, 80, 85, 91-2; Vine 1982, 404 (nos. 939-40); Shepherd 2009, 356 (no. 13).

COMPOSITION

This is a three-strand spacer plate necklace (Figure 7.12). When found it was described by Bateman as comprising seven spacer plates of jet and one of bone, together with 26 fusiform ("cylindrical") beads and 39 buttons (conical shafts), making a total of 73 components (Bateman 1861, 46-8; see also Howarth 1899, 62-4 and Vine 1982, 404, nos. 939-40). In his published illustration of the strung necklace, a woodcut by Jewitt (in Bateman 1861, Figure 7.12, top), the bone plate is not shown, and only 36 buttons are shown. Today there are 36 buttons, although two (ID 256 and ID 257) are stored separately from the necklace. Unless three buttons were missing at an early stage or were deliberately omitted from Jewitt's engraving, the possibility that Bateman mistakenly wrote '39 for '36' must be borne in mind. As currently strung, the necklace follows Bateman's arrangement (Figure 7.12).

CONTEXT AND ASSOCIATIONS

The necklace was found in a primary grave, possibly rock-cut ('on the rock a little below the natural surface'): Bateman 1861, 47 and under a round barrow five feet (c. 1.5m) high at its summit. It was associated with one of three contracted skeletons and accompanied by 'one or two rude instruments of flint' (ibid). According to Bateman, two of the three skeletons were female, and the necklace was associated with one of these. The account refers to the bodies being covered with stone and, above that, with earth. No formal cist structure is mentioned.

MORPHOLOGY

The spacer plates comprise six decorated jet plates, one undecorated jet plate and a decorated bone plate (Figure 7.12 and Figure 7.13a-f). The six decorated jet plates are all flat and slightly trapezoidal, with a gently squared-off outer and inner edges and more sharply squared-off...
perforated edges (Figure 7.2.12, with examples in Figure 7.2.13a–c). They each have three sets of elbow-borings and are of roughly similar size to each other. Their dimensions, along with those of the other spacer plates, are summarised in Appendix VII, Table 10. They are decorated on their outer surface with a saltire design, created by filling triangular areas with punctuations and leaving a blank cross-shaped area between them. The maximum diameter of the punctuations is c. 1.4mm. Creamy-white material in some of the punctuations may be a deliberate inlay, used to pick out the design.

The undecorated spacer plate (Figure 7.2.13d) is smaller than the decorated plates, and more markedly trapezoidal. It has three through-bored perforations. It is flat, with gently squared off outer and inner edges and more markedly squared-off perforated edges.

The bone spacer plate (not illustrated) is narrow, minimally trapezoidal, and significantly wider than all of the jet plates. It had been through-perforated using Y-perforations to increase the number of holes from three on the narrower edge to nine on the broader edge, suggesting that it had originally been one of a pair of lower plates at the front of a spacer plate necklace (i.e. a Sp 2 plate), and a very slight asymmetry in plan suggests that this had probably been a right hand spacer plate. One corner of the longer side has been worn away through bend-wear. The underside has a slight concavity relating to the natural shape of the bone. The upper, decorated side is
flattish, the unperforated edges have been gently squared off, and the perforated edges are more sharply squared off. The upper surface is decorated with three rows of punctations; the widest punctation is c. 1.1 mm across.

The fusiform beads (Figure 7.2.12) range in profile from near-cylindrical to plump, and only one is slightly asymmetrical. The tubular section is decorated in a circular, or rounded-triangular, D-shaped and oval. Five have two flat sides, as if made to lie immediately beside a Sp 2 plate with multiple, close-set borings, a feature that would not be necessary for use with the three-hole plates in the Gridiron necklace. Some beads have ends that are perpendiculor to the long axis; with others, one or both ends is/are angled (Figure 7.2.14). It may be difficult to distinguish in opposite directions but in one case, both slanting in the same direction. The ends are generally gently squared off or gently pointed. One bead has one cupped end. The length range from 13.5 to 22.3 mm, and the maximum widths from 5.8 by 5.0 mm to 8.2 by 7.9 mm; the longest bead is also the broadest. The perforation diameter ranges from 2.1 to 5.9 mm, with most beads having holes in the range of 2.5 to 3.5 mm.

The 36 extant buttons vary in size and in the height and angularity of their dome (Figure 7.2.13b-i). Sixteen are circular in plan, 15 range from sub-circular to roughly oval, and five are sub-rectangular. Fourteen have a facet (either rounded or angular) between the dome and the base, in most cases angled towards the base. The maximum width of the base ranges from 14.1 to 23.7 mm, and the height ranges from 4.5 to 9.0 mm. The maximum size of the boreholes ranges from 2.2 to 2.5 mm, and the width of the bridge between them ranges from c. 1.8 to 5.3 mm. Details of the button dimensions are given in Appendix VII, Table 11.

Shepherd classified all of the buttons as his Type 2 (Humfrey types), these are small and sharply conical, with a flat, round base (Shepherd 2009, 356 no. 13) — and indeed this fits the description of some, however, the more dentate examples fit better within his Type 4.

**MATERIAL**

Macroscopically, the six decorated spacer plates show every appearance of being made of jet, nosily hard jet, to judge from the relatively slight degree of cracking on plates 1, 3, 4 and 6 (AS; see Figure 7.2.12 for the numbering of the plates). On their front (decorated) surface they range from a mid-brown to a variegated blackish-brown colour, while on their back they are a darker blackish-brown. A fine woody texture is visible, especially where a small part of the surface had splashed off in antiquity on plate 4, the rear of this plate also has a natural depression, showing the lighter brown, matt, wood sub-surface. Plates 3 and 5 each have a small oval hollow on their back (Figure 7.2.4). These features sometimes found as natural irregularities in jet. The front surface of plate 2 has fairly extensive fine-criss-cross cracking, suggesting that the plate may have been made from soft jet (Figure 7.2.13b). Plate 5 also has some similar cracking. Hairline criss-cross cracking was noted on plates 1, 3, 4 and 6; as noted above, these are likely to have been made from hard jet. It may be that more than one of the plates had been made from the same parent piece of jet and subjected to the same treatment. All the plates show faint longitudinal gridding striations along both of their perforated ends and multidirectional striations on their undecorated rear surfaces (Figure 7.2.12e). In some cases these are very fine and faint, but these plates all had back and blackish-brown. The fine-woody texture is visible in a small scar on the back of the plate, and there is a conchoidal chip scar. The decorated bone spacer plate is assumed to be of terrestrial mammal bone, possibly a rib or scapula; the undulation of its underside may provide a clue. Unfortunately, it was not possible to include this artefact as part of the bone study undertaken with other material in the project.

Macroscopically, 20 of the fusiform beads appear to be jet, mostly probably hard jet, while six seem to be of carnel coal (AS). The former are various shades of colour from a rich dark brown to black-brown and have a fine-woody texture. Where there is cracking, it is criss-cross or concentric. The woody texture is particularly clear where spalls had fallen off along the grain of the jet (Figure 7.2.13g). By contrast, the suspected canal coal beads are all black and have a stony texture. Compositional analysis of a longitudinal section of one of the fusiform beads (probably a partial split off, or was removed along a grain plane) using neutron activation analysis (NAA) confirmed that this bead was indeed of jet (Bussell 1976, 53, 63, 64 and 79; her sample no 456.8). Macroscopic examination of thin sections of the specimens was made under both jet, some of hard jet, some of soft jet; nine have features more characteristic of canal coal (AS). The distinguishing features are the same as those shown by the fusiform beads, and a good example is shown in Figure 7.2.13b, and had been polished to at least a medium sheen. It is assumed that the through-perforations had been drilled from both ends of the plate. No signs of any rifling were noted.

**MANUFACTURE**

The six decorated jet plate shows a marked consistency (in the parent piece of jet and subjected to the same treatment. All the plates show faint longitudinal gridding striations along both of their perforated ends and multidirectional striations on their undecorated rear surfaces (Figure 7.2.12e). In some cases these are very fine and faint, but these plates all had back and blackish-brown. The fine-woody texture is visible in a small scar on the back of the plate, and there is a conchoidal chip scar. The decorated bone spacer plate is assumed to be of terrestrial mammal bone, possibly a rib or scapula; the undulation of its underside may provide a clue. Unfortunately, it was not possible to include this artefact as part of the bone study undertaken with other material in the project.

Macroscopically, 20 of the fusiform beads appear to be jet, mostly probably hard jet, while six seem to be of carnel coal (AS). The former are various shades of colour from a rich dark brown to black-brown and have a fine-woody texture. Where there is cracking, it is criss-cross or concentric. The woody texture is particularly clear where spalls had fallen off along the grain of the jet (Figure 7.2.13g). By contrast, the suspected canal coal beads are all black and have a stony texture. Compositional analysis of a longitudinal section of one of the fusiform beads (probably a partial split off, or was removed along a grain plane) using neutron activation analysis (NAA) confirmed that this bead was indeed of jet (Bussell 1976, 53, 63, 64 and 79; her sample no 456.8).

Macroscopic examination of thin sections of the specimens was made under both jet, some of hard jet, some of soft jet; nine have features more characteristic of canal coal (AS). The distinguishing features are the same as those shown by the fusiform beads, and a good example is shown in Figure 7.2.13b, and had been polished to at least a medium sheen. It is assumed that the through-perforations had been drilled from both ends of the plate. No signs of any rifling were noted.

**COMPLETENESS AND DAMAGE**

One characteristic common to many of the jet components is that the back (i.e. the side which would have been closest to the skin) has a higher sheen, and darker colour, than the front. This was noted on three of the plates and buttons as on many of the plates and buttons. It suggests that, in common with many other jet objects in this study, natural, post-depositional dulling (and some surface colour change) had occurred within the micro-environment of the grave. Except for signs of wear and of some cracking (with minor surface spalling to plate 5), the decorated jet spacer plates are in relatively good condition and are complete, or virtually so. There is anecdotally spalling, probably caused during manufacture, to the back and to one perforated edge of plate 1, and on plate 2 the punctuation process may have detached a small flake from the jet. In one case there is minor chipping to some of the perforations on the back of plate 2, probably caused during manufacture. Two scratches on the back may represent either ancient or more recent damage. On plate 4 the edge boring has broken through the front surface close to one corner, and there is ancient chipping to the adjacent lateral perforation,
along with other minor chipping, probably caused through wear of the bone being chipped to one perforation, plus a slighter larger loss of the upper surface through wear to one of the lateral perforations. On plate 6, one of the perforations on the back is larger than it should be, due to a break. The bone spacer plate shows no obvious sign of damage; the apparent loss of one corner may simply reflect the original outer edge shape of the bone.

Ancient damage to the fusiform beads consists mostly of use-wear damage, including the loss of one end of four beads and the hole in another caused by the aforementioned mis-bore during manufacture. There are also signs of more recent, post-depositional damage to five or six beads, in the form of minor chipping to the end, and the loss of chips and spalls through cracking of the jet. Two of the beads have traces of glue, which may have been applied as a consolidant.

While most of the buttons are complete or virtually so, there is evidence for both ancient damage (during manufacture and wear) and more recent damage. Ancient damage to jet beads during their drilling and the loss of spalls and chips from the outer surface, most notably on one example where there are several chip scars around the edge of the base. Some of the more recent (post-destruction) damage is due to the process of cracking, but some relates to the necklace display history. ID 257 has glue and backing material on its underside and lacks the bridge between the perforations; this suggests that the bone was removed and replaced by a blob of the same wax-like consolidant. The addition of a strip of white fabric to the underside of ID 256 had also probably been an attempt to repair damage; there are also recent chips around its outer surface. Scratches running down one of the perforations in three other examples also look to be post-depositional damage. On a further button, an attempt had been made to consolidate the fracture surfaces after the loss of part of one side, probably along crack-lines; there are also traces of glue in the perforations of another.

**WEAR**

Levels of wear in the different components are summarised in Table 7.2.2, from which it is clear that 47 of the 70 components on all of the spacer plates, have moderate or heavy wear, in particular, the decorated jet spacer plate all shows signs of heavy wear. All have marked thread-pull wear on their back, where the thread has worn down into the grooves between the bores, has been thinned, or is very thin-walled, in outer strands. There is also a thread-wear groove, pulling towards the front of plate 2, and the thread had also worn away wherever fitting may originally have existed in all of the two drillings that constitute the hole and the boreholes. The grooves between the bores, again probably due (at least in part) to thread-wear; on another there is a hollow running across the bridge. This may be a thread-wear hollow, and could perhaps indicate the former presence of a knot at this point (which, in turn, might suggest that this button had been used as a fastener). Rub-wear, caused by rubbing against a garment or skin was probably partly or mainly responsible for the polished seen on the outer surface of the jet, and on the high points of the bases of some of the cane ball components.

**CONCLUSIONS**

This assemblage of components, which varies in design, material and degree of wear, clearly comprises material that had not originally belonged together, and raises the question of whether the items had indeed all been strung together as a necklace in the grave. If they had been, and if the arrangement had been as in Bateman's reconstruction, then this necklace would have lain significantly lower on the chest than other spacer plate necklaces. That the buttons had indeed been used as necklace components is suggested by their thread-wear pattern. If they had been threaded in a double strand, rather than singly as is currently the case, the necklace would not have been much longer than a more conventional spacer plate necklace, such as the larger of the examples from Cow Low, Derbyshire (ID 267). The Cane ball necklace contains the largest number of buttons of any Early Bronze Age necklace of jet and similar materials.

It is unclear as to whether the bone spacer plate had been attached to the cane ball component in its arrangement of bored holes does not match that of the jet. Alternative possibilities are that it had been placed separately in the grave, as an isolated offering, or had been used as a somewhat ungainly fastener, or else had formed part of a second necklace, all of organic material, and all decayed. That said, there are parallels for the (presumed) stringing together of diverse components (e.g. at Middleton Moor, Derbyshire ID 269). Of one or both components of that can be discerned are as follows:

- The six decorated spacer plates, consistent in their design and manufacture and all showing signs of fairly heavy wear.
- The undecorated, and heavily worn, spacer plate.
- The bone spacer plate (whose 3 to 9 boring does not correspond to the number of bored holes in the other spacer plates).
- The fusiform beads (which could mostly have originated in a single necklace set, despite variation in the degree of wear; the presence of some beads of cane ball might indicate that these had been added to the set of bone beads),
- The jet buttons (which might be subdivided between those with minimal wear and those with more marked wear; other subdivisions, by shape, can be suggested).
- The cane ball buttons.

One possible scenario (but not the only one) for the evolution of this assemblage prior to its deposition in the grave is as follows:

- The decorated spacer plates will have constituted the main portion of a three-strand necklace, perhaps together with some of the buttons and along with fusiform beads (but not necessarily the fusiform beads that are currently present). By analogy with other spacer plate necklaces, this example also had probably included a pair of terminal plates.
- The fusiform beads are likely to have started out in a larger spacer plate necklace, given the presence of several flat-sided beads (whose shape would not have been necessary for the current, three-strand necklace).
- The cane ball beads may have been added to that set as individual jet beads broke. At some point, the fusiform beads were united with the decorated spacer plates. (There are enough present to have accommodated an additional spacer plate, as well as two terminal plates).
- Having lost its terminal plates (and possibly a spacer plate and a few fusiform beads), the remains of the necklace were supplemented by an undecorated spacer plate from a different necklace, by the bone spacer plate from another necklace, and by some or all of the buttons. There had probably been more than one episode of button acquisition, given the variability in their size, design and material.

**Comparanda for the Gridlow necklace, including for the use of bone for making spacer plates, are discussed in Chapter 7. The fact that the material used for at least one other cane ball component in an arrangement of bored holes does not match that of the jet. Alternative possibilities are that it had been placed separately in the grave, as an isolated offering, or had been used as a somewhat ungainly fastener, or else had formed part of a second necklace, all of organic material, and all decayed. That said, there are parallels for the (presumed) stringing together of diverse components (e.g. at Middleton Moor, Derbyshire ID 269). Of one or both components of that can be discerned are as follows:

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is unclear whether the original plate survives. The correct stringing, however, in the 1899 version, is certainly not true to its original Early Bronze Age arrangement, whereby the fusiform beads will probably all have lain between the terminal and spacer plates, with the eight strands at the front of the surviving seven beads, and in some cases eight.

The wear pattern on the fusiform beads is consistent with such an arrangement. It is unclear whether the two buttons will have fulfilled the role of fasteners at the back of the necklace (since usually only one fastener was used) but this is not impossible.

CONTEXT AND ASSOCIATIONS

The necklace was found on 12th August 1846, when opening a low round barrow. Bateman’s account (as reported in Howarth 1899, 59-60) is not entirely clear, but it implies that the necklace had been associated with the contracted skeleton of what he concluded to be a woman, found a few inches above the floor of a large cist measuring nearly 1.8 by 1.2m. According to Bateman, the deposition of this individual had disturbed the previously deposited remains of two adults, two children, cremated bones, animal bones, potsherds and flints; subsequently, the cist’s contents had been disturbed by treasure hunters.

MORPHOLOGY

In the following descriptions, some details are missing or imprecise because the necklace has been tightly strung and fixed firmly to a backbone; most of the plates have been fixed to metal supports (Figure 7.2.15a), hindering observation.

The terminal and spacer plates (Figures 7.2.15a and d) are all slender, flat-sided and fairly thin, with squared-off unperforated edges and more crisply squared-off perforated edges. All are decorated on their upper surface with a zigzag motif defined by punctations, each up to c. 1mm in diameter. The terminal plates (Figures 7.2.14 and Figure 7.2.15d-e) approximate to torsed triangles in shape, with three ellipsoidal holes at their broader end (i.e. towards the front of the necklace) and a double transverse perforation at the upper end of the TL plate (Figure 7.2.15b). The TR plate had probably also had a double transverse perforation, but only one hole survives as the end of the plate had broken off (Figure 7.2.15c). The long sides of the TL plate are fairly straight, with the inner side being minimally convex; both long sides of the TR plate are slightly concave. The spacer plates are trapezoidal, with fairly straight outer edges. The number of perforations increases from three to four is to the smaller Sp plate (2 holes). One to eight in the larger Sp 2 plate(s).

The perforations may have been elbow-bored, but without X-raying the necklace it is hard to be certain of this. The dimensions of the plates, excluding the Victorian replica Sp plates, are given in Table 12.

The button on the left side of the necklace in Figure 7.2.14 is irregular and almost sub-rectangular in plan, with a rounded, low to medium-height dome and a base that is mostly flatish, with parts of the inner surface of the junction with the dome (Figure 7.2.15b). The perforations are not clearly visible as the object is firmly fixed to the backboard. The base measures 13.6 by c. 16.0mm and the maximum height is c. 5.1mm. The right-hand side in Figure 7.2.14 and Figure 7.2.15e is circular in plan, with a low but slightly more peaked dome and a flat-sided base. Once more, the perforations are not clearly visible. The base diameter is c. 16.5mm and the height c. 5.5mm. In Shepherd’s classification, both are Tyre 2 buttons.

The fusiform beads (Figure 7.2.14 and Figure 7.2.15) vary in length, width and profile that is characteristically elongated. They are not all from the same necklaces, some have a particularly angular shape and, in profile, most fall within the ‘sleender’ to ‘medium’ categories. The ends of the beads are perpendicular to the long axis in some cases, but more frequently one, or both, slope to a greater or lesser degree. One bead has two oval dimples around its mid-point. The shortest bead is 5.5mm long (Figure 7.2.14 and Figure 7.2.15c, located in the upper row, second bead from left), and the longest is 26.5mm long (Figure 7.2.14 and Figure 7.2.15b, located next to the button above the left terminal plate). Most range between 18 and 21mm in length. The maximum width ranges from 5.2 to 8.7mm, and the perforation diameter ranges between c. 1.9mm and 3.4mm. In cross section most of the beads are circular and a few are slightly D-shaped, but they have two flat sides.

Beads of this flat-sided shape are typical of surviving spacer plates to be found in other necklaces and are designed to lie immediately adjacent to the longest edge of the Sp 2 plates. Sixteen of these beads may well have occupied that position in the original stringing of this necklace.

MATERIAL

Macroscopically, it appears that the material used for the terminal and spacer plates is terrestrial mammal bone (rather than whalebone, antler or marine ivory). It is compact and very slightly laminar, and the thickness of the plates probably reflects the thickness of such bone before the spongy inner part of the bone was reached. It was unfortunately not possible to include these plates in the animal bone analysis, but it is clear that the shape of the plates and the presence of a slight ‘grain’ in the bone offer clues as to which bone, from mammal, had been used.

The left-hand button (Figure 7.2.15b) is of a black, compact material that has taken a high surface polish and is significantly glossier than the other button; the sub-surface texture, exposed in small spall scars, appears slightly more criss-cross than the other. The button has not been polished prior to decoration (as reported in the Sp plates), the outer edge of the base is slightly blunted, and some of the sheen currently visible may be due to wear, possibly from rubbing against a garment.

When examined under the eyepiece, while the perforations could not be examined, it is clear that a small hole close to the top of the dome on the right-hand example (Figure 7.2.15c) relates to the accidental perforation of the surface during the drilling of the V perforation. While both of these buttons have lost their domes, the degree of sheen on the left hand example is significantly higher than on its partner and the former’s sheen may well have become dulled over time. The former’s sheen may well have become dulled over time. The fusiform beads show no trace of the faceting that had been involved in their initial shaping; this had been smoothed away. Regarding the perforations, it is assumed that they had been drilled through in a single action with their counterparts from other necklaces. The angling of one or both ends, seen on many of the beads, may well have a deliberate design feature to allow the beads to sit snugly in an arc. In some cases the neck has been accentuated through bead-on-bead grding or chipping.

The beads had all been polished, and the degree of sheen varies from low to high, with most lying in the ‘medium’ category. Variation in the degree of sheen within a single bead was noted in a few cases, including one of the beads between Sp 1 R and Sp 2 K (Figure 7.2.15d), where one side (of a rich dark brown colour) has low to no sheen, while the other side (a darker, blackish-brown) has a high sheen. This feature, noted in many other examples of jet jewellery, may relate to differential post-depositional dulling, with the side nearest the skin retaining the higher sheen.

COMPLETENESS AND DAMAGE

In general, the plates are in a relatively poor condition, while the buttons and most of the beads are in a better, more complete state. Parts of all the spacer plates are missing, with Sp 1 P being only c. 60% to 70% present; there has also been some loss of surface from around the perforations on the terminal and spacer plates, and the tip of TR is missing. All this damage had occurred in antiquity. Ancient damage to the buttons occurred during manufacture and consists of the accidental perforation of the dome of the right-hand button, plus the loss of a large chip from the side of the left-hand button, along with the loss of two tiny spalls from its dome. The cracking and resultant loss of tiny chips from the right-hand button has been noted, and this could have occurred post-depositionally. There is also a curving hairline crack across the dome on the left-hand button.

There are signs of both ancient and more recent damage to the fusiform beads. The former relates to thread- and bead-on-bead wear. The latter consists mainly of dulling to the ends of the beads that are closest to the spacer plates (and, more particularly, the slots for the spacer plates). In addition, dulling around the mid-point of at least two of the beads that are currently snug between the largest spacer plates (Figure 7.2.14) may well have resulted from post-depositional action. The loss of a large part of one side of three beads (e.g. button left bead on Figure 7.2.15b) has also probably occurred since excavation and follows planes of weakness in the jet. One of the fusiform beads has a small patch of blue material, resembling ‘Blu-Tack’, near one end.
WEAR

The overall degree of wear is shown in Table 7.2.2. The terminal and spacer plates all show a considerable amount of wear, mostly resulting from thread-pull, with some bead-on-plate wear as well. This has led to the enlargement of the upper edge of the holes (e.g. Figure 7.2.15a), and on the left terminal plate an entire corner had broken off, necessitating the re-boring of the plate transversely (Figure 7.2.14). As noted above, the adjacent Sp 1 L may also have had one of its holes re-bored transversely. The loss of the tip of the right terminal plate, of the two outer corners of Sp 1 R (Figure 7.2.14), of two corners of Sp 2 R (Figure 7.2.15d) and of much of Sp 1 L (Figure 7.2.15a), had all probably been the result of thread-pull and bead-on-plate pressure. Where the interior of the boreholes is visible, it is clear that these had been worn smooth by the thread. There is also rub-wear to the decoration on all of the plates (Figure 7.2.15) although on Sp 1 R it is limited to just a few punctuations close to the damaged corner. It is assumed that the rub-wear had resulted from the friction of a garment against the decorated surface.

Since the underside of the buttons could not be seen, it was impossible to assess the degree and kind of wear, but the fact that the edge of the hole on the dome of the right-hand button had been worn smooth suggests that this item was not new when buried.

While it was not possible to inspect the interior of the perforations in the fusiform beads for thread-wear, it is clear that many beads show bead-on-bead wear, to a greater or lesser degree. Examples include a smoothing of the junction between the end and the side of the bead seen on the second bead from the button on the left hand strand (Figure 7.2.15e), and the uneven profile of the end, where an adjacent bead had worn a hollow as it ground against the bead at an angle on the outermost bead between the terminal and Sp 1 L (Figure 7.2.15a). Bead-on-bead wear may also have contributed to the degree to which one or both ends slope, and, together with thread-pull pressure, it was probably responsible for chipping to the ends of at least seven beads (e.g. on the bead next to the button on the upper strand, Figure 7.2.15b). One bead with a particularly asymmetrical profile may well have lost one end and had the fracture surface ground smooth through wear, and three others, all of which taper less than the other beads, might...
CONCLUSIONS

This appears to be a complete necklace, albeit one with fewer fusiform beads than are known from many spacer plate necklaces found further to the north. Its current stringing implies that it had lain low on the chest, but as explained above it is much more likely that all the fusiform beads had been strung together, so that the necklace would have lain closer to the neck. In the shape and size of the plates, the maximum number of strands (eight) and the number of fusiform beads (76, compared with 64), it bears a striking resemblance to the larger of the two jet spacer plate necklaces from Cow Low (ID 266 and 267), just over 6km away as the crow flies. Indeed, it could have been designed to emulate that necklace. Another similar necklace in the area, although with longer spacer plates, is known from Hill Head (ID 268), again a few kilometres from Windle Nook.

The bone plates had clearly been made as a set. The fusiform beads show a consistency in design, material and style of manufacture that suggests that they, too, had been made as a set, although whether they had been made to accompany the bone plates or had had a previous life in another spacer plate necklace is unknown. The buttons, which differ from each other in shape and possibly also in material, need not have belonged to either set of components originally. The heavy wear to the plates shows that the necklace had been worn for some time before it was buried. How long that had been is hard to tell, however, since it may be that bone is more susceptible to wear than jet. The condition of the fusiform beads indicates that they, too, had been worn for some time, and this might also be true of the buttons. The use of bone for the plates suggests that the owner had not been able to obtain plates of jet, a more precious material. The use of bone for spacer plates is discussed further in Chapter 7.3.

7.2.3 OTHER REGIONS

ID 264 burrow 'in the neighbourhood of Pickering', and ID 265, one of a pair of burrows 6 miles NW of Pickering (probably the same barrow), North Yorkshire

References: Bateman 1861, 228, 239; Howarth 1899, 188.

COMPOSITION

These pieces belong to a two-strand jet spacer plate necklace, comprising three complete and fragmentary spacer plates (two in ID 264, one in ID 265), 15 complete and fragmentary fusiform beads (two in ID 264, 13 in ID 265) and 12 complete and fragmentary V-perforated buttons (one in ID 264, 11 in ID 265) (Figure 7.12.16). The close similarity between the material in ID 264 (Museums Sheffield, part of registration number J39-582) and ID 265 (J39-583) leaves little doubt that the components had originally belonged together in a single necklace, and for that reason the objects are described together here. The beads and buttons from ID 265 that are currently strung together are shown in Figure 7.12.16a with details in Figure 7.12.16c and Figure 7.12.16d, the spacer plates are illustrated in Figure 7.12.16b.

CONTACT AND CONTEXT

It seems likely that all the components had come from the same barrow. Bateman describes the discovery of ID 265 on 28th May 1851 by Mr Ruddock, who investigated a pair of twin barrows six miles NW of Pickering 'on account of a [previous] casual discovery of jet ornaments within them' (Bateman 1861, 228). On opening the first barrow, measuring 46 yards (c. 42m) in circumference and four feet (c. 1.2m) high and constructed of sand, 'the trench, begun at the north side, had only advanced about two feet from the surface when a variety of jet beads was found, sufficient to compose a very pretty necklace, comprising a rectangular centre piece, ornamented with a satire made by small holes drilled a little way in; thirteen long beads, and nine [sic] cone-shaped studs' (ibid). A few pages later, Bateman explains that Mr Ruddock's sudden death prevented him from preparing notes of his later discoveries, but Bateman lists, under finds 'From barrows in the neighbourhood of Pickering, opened in 1854 and 1855', 'part of a fine jet necklace, consisting of a conical studd, two cylindrical beads, and two flat dividing plates, each ornamented with a satirine in punctures...' (ibid, 239). The entry for J39-582 in Howarth's Catalogue of the Bateman Collection lists 'Two cylindrical [i.e. fusiform] beads and 6 other jet ornaments - From tumuli [sic], near Pickering, 1855', implying that material from more than one barrow is included in J39-582 (Howarth 1899, 188). Three of these 'ornaments' (or four, if one counts the two fragments of one spacer plate as two separate objects) are listed above along with the fusiform beads. Two other objects were noted by the present project team among the J39-582 material: one appears to be a roughout (imperf) for a spacer plate or trapezoidal fastener, while the other is a small perforated block of jet, possibly a pendant. If the Catalogue is correct in stating that the J39-582 material came from more than one barrow, then the presence of these objects along with the pieces from the necklace need not imply that they had been found with them; they will not be described further here.

The necklace components found in May 1851 were not associated with human remains or other material, although when the trench was diverted towards the west part of the barrow, a child's skull and other disturbed human bones were found. It is not known what became of the jet objects that had been found prior to Ruddock's excavation. One cannot rule out the possibility that he acquired them and that they became part of J39-582, rather than being found during excavation in 1855, although this cannot be proven.

MORPHOLOGY

The three spacer plates are very similar in shape and size,
although they differ in their condition (see below). They are rectangular, with a flat underside; slightly domed top, straight perforated edges and gently convex unperforated edges, with crisp junctions between all the surfaces. Each has two through-drilled perforations running along its long axis. The upper surface of each is decorated with a pointed saltire design, featuring a relatively large central punctuation and limbs comprising two smaller punctuations. The dimensions are shown in Appendix VII, Table 1; see also Figure 7.2.16b.

All but one of the fusiform beads are fat, the exception (represented by two fragments) being slender. The fat beads range in length from c. 16.6 to c. 28.5mm and in width from 8.7 to 12.2mm. Not enough of the slender bead survives to assess its maximum width. In cross section the fat beads are round, and in profile they taper fairly evenly to straight or slightly angled ends. The longitudinal borehole varies from being central to noticeably eccentric (Figure 7.2.16c).

The buttons are high-domed, with a pointed apex, gently convex dome and flat circular base; five have a narrow or minimal facet (bevel) between the dome and the base (Figure 7.2.16c). The perforations are obscured by glue in several cases, but where visible they appear to be mostly symmetrically-positioned, oval, and with a bridge ranging up to 4.8mm in width. The diameters range from c. 13.2 to c. 20.0mm, and the heights (where surviving intact), from 6.1 to 8.8mm. According to Shepherd's typology (2009), they fall within his Type 2, the commonest type of button to have been found with spacer plate necklaces, and are listed as entries 101 and 102 in his Catalogue (although the museum Registration Numbers are transposed and the presence of beads in five examples is not noted there; Shepherd 2009, 363).

MATERIAL

Macroscopically, in all cases the material appears to be jet, as revealed by one or more of the following characteristics in each case: woody texture, colour (notwithstanding the darkening caused by the presence of lacquer in many cases), cross-cross cracking enough to show a shiny choreoidal fracture (AS). The complete spacer plate in ID 265 has a particularly distinctive woody texture, shown as wavy ripples on the top and underside (Figure 7.2.16b); the same feature is also present, but less noticeable, on the most incomplete spacer plate in ID 264. All the spacer plates are a rich, variegated black and dark brown colour, characteristic of jet, and despite the damage to the most incomplete example, their general condition suggests that they had been made using hard jet, in contrast to the beads and many of the buttons, which appear (from their degree of cracking) to have been made from soft jet. Four of the buttons differ from the other components in being a dull, greyish-black colour; some of these have a distinctive finely-crazed surface on their dome. It may well be that slightly lower-quality jet was used for these buttons than the jet used for the beads and plates; and it may be that a particular block of jet was used to make at least two of the spacer plates, if not all three.

One fragment from a fat fusiform bead was analysed using oil immersion reflected light microscopy and reflectance measurement by Dr J. M. Jones, who concluded that the material was jet, not of the best quality, but probably from Whitby. White material was noted as a deliberate infill in the punctuations of the most complete spacer plate (ID 265).

MANUFACTURE

The presence of lacquer on most pieces, and of glue on some, makes it hard to assess the original degree of polish and has obscured details such as boreholes on some of the buttons. Nevertheless, faint manufacturing striations were noted near the ends of several beads, and traces of lacquer remained on four fusiform beads. The perforations in the beads and spacer plates are very likely to have been drilled from both ends; ancient clipping to one or both ends of the borehole was noted in three fusiform beads, and to one end of one borehole in the ID 265 spacer plate. The difference in size of the punctulated decoration on the spacer plates seems to have been achieved by enlarging the central hole, which had probably initially been drilled using the same tool as that used for the other punctulations. The process of enlargement can be seen clearly in the more complete of the ID 264 spacer plates. According to the buttons, faint multi-directional striations were noted on the bases of five examples, and marked striations on the base of one. Most of the button boreholes showed no signs of filling; one perforation has a shouldered profile, showing that the drill had been re-positioned.

Despite the fact that lacquer has obscured the original degree of polish, it seems likely that the spacer plates, fusiform beads and many of the buttons had originally been polished to a high or medium sheen. The four greyish-black buttons had probably had a low to medium sheen, and one seems to have been matt or polished to a low sheen.

COMPLETENESS AND DAMAGE

Many of the components show evidence for post-extraction damage in the form of missing fragments, and many have glue on one side and/or where attempts to re-fit detached fragments had been made in the past. (The glue has become discoulorised to a brown colour). Most, if not all, of this damage is likely to be due to the fact that the necklace had been strung during the 19th century with copper or bronze wire (a fragment of which survives in one perforation of the most incomplete spacer plate), and subsequently re-strung with linen thread; it may well have been glued to a back-board when re-strung. Furthermore, the application of lacquer to most of the components has obscured the original degree of polish, has made them appear blacker that they may originally have been, and has obscured some details of wear. The most incomplete spacer plate is the most extensively damaged; it had broken twice along one of the perforations, and has one detached but conjoining fragment.

That said, most of the components are missing less than Figure 7.2.16. ID 264/265. In the neighbourhood of Pickering, showing: (a) the string components as currently displayed; (b) spacer plates; (c) details of button; and (d) details of fusiform beads.
10% of their body. Ancient damage is limited to minor chipping, flaking and spalling of several beads and to two of the spacer plates (the third being in such poor condition, due to post-deposition damage, that it is impossible to assess ancient damage). Cross-criss and/or laminar cracking is present on most of the beads and buttons, and the complete and near-complete spacer plates have barium cracking.

WEAR
The presence of glue and/or lacquer has, in many cases, obscured the areas where evidence for wear would be discerned. However, where it could be investigated, the evidence indicates that both spacer plates and necklace beads have no obvious thread-wear and no bead-on-plate wear. Similarly, the fusciform beads have no obvious signs of thread-wear (other than damage caused by the use of metal wire in the museum) and no bead-on-bead wear. Where the ends of some beads are angled, this does not appear to be the result of wear (with one possible exception). Wear to the buttons is slight and mostly consists of thread-polish to the perforations; in most cases, however, the edges of the perforations have remained crisp. Only on one button was there smoothing of the edge of the perforations through wear, and this was to the outside of one perforation (which is consistent with necklace wear, where the thread pulls to the outer edge of the perforation). There is no evidence to suggest that any of the buttons had previously been used as buttons (i.e. fasteners) before their use as beads. Overall it appears that this necklace had not been worn long enough for noticeable wear to develop; nor is there significant difference between the degree of wear seen in the different components. The wear (including recent wear) is summarised in Table 7.2.2.

CONCLUSIONS
The circumstances of discovery of ID 265, and the uncertainty concerning the discovery of ID 264, make it difficult to judge whether we are dealing with a necklace that had been buried with an individual and subsequently dislodged, or that had been deposited on its own in the upper part of the barrow. Similarly, it is impossible to tell whether or not it had been complete when deposited, and whether the different components (i.e. plates, beads and buttons) had been brought together at different times to form the necklace, or else made as a single set. Several conclusions can be drawn: that it had been a two-strand necklace, not worn for long before deposition; that two, if not all of the spacer plates had been made from a piece of good quality hard jet with distinctive annual growth rings that appear as projecting wavy lines; that the beads and some of the buttons had been made of soft jet, and that a few of the buttons appear to have been made using a lost-wax technique.

The presence of white infill in the decoration of one of the spacer plates is a feature noted in several other jet spacer plates; analysis by Mary Davis has concluded that, in some cases, its main constituent had been barium sulphate, and in others, burnt bone (of indeterminate species: Sheridan & Davis 2002).

For a discussion of the comarapando for this necklace, see Chapter 7.3.

ID 281 Snawdall, barrow C, Cambridgeshire
Reference: Lethbridge 1949, 35, fig. 4 and pl. VIII.

COMPOSITION
This consists of a fragment of a spacer plate necklace, comprising two decorated terminal plates (with the decoration being scarcely visible in one case), four fusciform beads, and 24 out of the 29 disc beads that were found when the site was excavated in 1940 (Figure 7.2.17b). The disc beads are currently separated from the fusciform beads. More components may originally have been present; the interment had been disturbed.

CONTEXT AND ASSOCIATIONS
The necklace was associated with the contracted skeleton of a child, lying on its right side under a round barrow. There were no other grave goods. According to Lethbridge's very brief description, the body 'had probably lain on the old turf line' within the north-west quadrant of the barrow's footprint 'inside a rough post-circle' (Lethbridge 1949, 35). His plan, however, implies that the body had lain in a grave (ibid., fig. 4, NH1 1). The remains had been disturbed, by unrecorded rabbits and/or people, and the components of the necklace were found scattered around.

MORPHOLOGY
The terminal plates had originally been of similar shape and size (and quite possibly similarly decorated), although the loss of two large fragments from one of the plates in antiquity, along with surface degradation of that plate through cracking and cupping, has obscured the similarities. To distinguish between the two, the terms 'intact' and 'damaged' will be used.

The plates are small and slightly asymmetrical in plan, with straight sides; the perforated edges had been gently squared off, while the sides had been rounded. On the intact plate, the fact that one side is longer and more spalying than the other suggests that this had probably been the right hand terminal plate. The dimensions are shown in Appendix VII, Table 14.

This intact plate has three boreholes at its squared-off, narrow upper end (Figure 7.2.17c) and four holes (plus an abortive fifth) at its broader end (Figure 7.2.17d). The increase from three to four perforations had been achieved through drilling a Y perforation. The abortive hole is on the outer end of the row of holes, corresponding to an intended outermost (i.e. longest) strand on the necklace. On the upper surface there is a design, executed in a 'rocker' technique, featuring triangular shaped lines, extending from the upper end of the plate and diverging towards its lower end. This design echoes, but does not precisely match, the pattern of boreholes.

The condition of the damaged plate makes it hard to make out the decoration and to assess the original number of boreholes. Regarding the decoration, Lethbridge had mentioned that both plates had 'dotted ornament' (ibid., 35), but since he excavated the necklace the cracking of the surface, which is visible on his published photograph (ibid., fig. 4), has become worse, with some cupping of the surface, and the application of lacquer/consolidant to counteract this has obscured fine detail. Consequently, only a short stretch of very faint decoration can be made out, although it appears to have been executed in the same 'rocker' style as seen on the other plate, and the design may also have been similar. As regards the number of perforations, the terminal plates of the site were excavated in 1940 and only had a single hole, but the loss of a large fragment from the bottom right hand corner makes it impossible to tell whether there had originally been three or four holes (plus an abrictive hole). However, the fact that the shape of the hole in the fracture surface is oval suggests that there may indeed have been four functioning holes along the bottom, with the boring at this side of the plate being a long V-boring. It may be significant that the abrictive borehole at one end of the bottom edge corresponds (in a snug position) to that seen on the intact plate; this supports the idea that the two plates had been made as a matching pair, albeit using different pieces of parent jet (as described below).

The fusciform beads range in length from 12.5 to 20.0 mm and in maximum girth from 5.0 to 7.5 mm, with their longitudinal perforation ranging in diameter from 1.8 to 2.5 mm. Figure 7.2.17b shows the range according to the descriptive scheme used for all of the fusciform beads in this project. Two of the beads have one angled end (probably caused through wear, as noted below) and the next to longest bead had lost two chips from its ends, making them angled (Figure 7.2.17a and c).

The disc beads (Figure 7.2.17b) are slightly graded in size, ranging in diameter from 5.3 to 7.5 mm and in thickness from 2.3 to 3.5 mm. They are a fairly narrow-shouldered, central perforation. Determining the perforation diameter was hindered by the presence of thread and the fact that they are relatively small; the beads at either end of the thread have perforations of 1.4 and 1.9 mm. Some beads are paralleloid-sided, others slightly wedge-shaped.

MATERIAL
The terminal plates and fusciform beads appear macroscopically to be of jet, with the heavily cracked damaged terminal plate being of soft jet (SJS 174). All four intact plates are in black and black-brown colour and have a fine woody texture, with superficial crack-cross cracking. The damaged plate is black, with deep crack-cross cracking and some cupping within the network of cracks. The fusciform beads are black and have curving laminar cracks that follow the original wood grain of the jet.

The disc beads range in colour from black to black-brown and dark greyish; fine laminar cracking, parallel to the beeds' flat surfaces, was noted in at least two cases. The question of whether these beads are of jet or of cannel coal or shale can only be addressed through compositional analysis. Given the limited scope for examining their flat surfaces, it was not possible to make a confident guess based on macroscopic inspection.

MANUFACTURE
Identification of manufacture traces was hampered by the fact that all the pieces had been coated with a lacquer/consolidant and that the disc beads are tightly strung. Nevertheless, the absence of obvious grinding striations indicates that the fusciform beads are not the result of some possible exception of very tiny striations along the bottom end of the intact plate. Figure 7.2.17d attests to the worn state of these components. No striations were noted on the flat sides of the disc beads at each end of the string. Similarly, with the fusciform beads, no traces remained of the facets that had formed part of their shaping process.

Where the interior of the perforations is visible, there is no sign of rifling. The perforations on both plates and the fusciform beads will have been drilled from both ends. One of the fusciform beads has a small hole on its side near one end, and this may have resulted from the drill proceeding too close to the surface of the bead. The presence of an aborted drill hole on each of the terminal plates has already been noted and suggests a change of plan during the manufacture of the necklace. The regular spacing of the boreholes leaves it clear that the original intention had indeed have to have been five strands issuing from the terminal plates - a relatively large number of strands by comparison with other space plate necklaces. (The number of boreholes issuing from the top end of each plate is also unusually large).

As regards the degree of polish on each of the components, the presence of lacquer/consolidant will have made it impossible to determine whether there is a difference between the degree of sheen on the front and back of the intact terminal plate, with the back having the higher sheen. It may be that the whole of the plate had originally been polished to a high sheen and that it was exposed side had lost some of this over time. The damaged plate has a uniform medium sheen, and the fusciform beads have a medium to high sheen. The disc beads have a low sheen on their edge. Where their flat surfaces are visible, these are either matt or have a low to medium sheen.

The technique used to create the 'rocker' decoration on the terminals is very unusual, and while White Beck, discussed in an identical decoration on the Burwell Fen terminal plate (ID 282), had speculated that it had been made using a cupping punch (Beck 1928, 57), in the opinion of contemporary Whitley jetworker Hal Redvers-Jones (who has completed this style of decoration) it had actually been executed by hand-scribing, by a very steady and skilled individual. The ends of each curve had been accentuated and deepened by a twist of the scribing tool.
that the necklace had been substantially incomplete when deposited irrespective of whether or not it had started out as a 'classic example'.

Regarding its individual components, only 70% of the damaged terminal plate is present, two large fragments having been lost from its corners in antiquity. The other terminal has chips missing as a result of ancient thread-wear (and possibly bead-wear in the case of damage to its lower holes). Two of the fusiform beads had lost chips in antiquity, again through wear. The disc beads all appear to be complete but close inspection for signs of damage was hindered by the fact that they are all coated with lacquer/ consolidant and are strong tightly.

WEAR

The intact terminal plate has thread-smoothing to all its perforations, plus thread-pull that has resulted in the chipping away of the surface at both ends of the plate (Figure 7.2.17a and Figure 7.2.17c). Along the bottom, one thread has pulled towards the back of the plate, detaching a chip from the corner of the plate, while three have pulled towards the front, in one case detaching a small chip. These three perforations had been drilled very close to the front of the plate. Furthermore, there are hints of possible bead-wear, from the end of fusiform beads, around two of the perforations on this bottom edge: this appears as faint 'haloes' on Figure 7.2.1d. Along the top edge, the thread has worn a shallow groove between the centre hole and the chipped hole (Figure 7.2.10c). This indicates that the necklace had been re-strung at this point, to compensate for the damage to the end hole. The decoration on the intact plate is fairly faint and has been worn towards the upper and lower ends of the plate; that on the damaged plate is near-invisible, partly due to wear.

With the damaged terminal plate, it is unclear whether the loss of two large fragments had been related to thread-pull, but the degree of wear seems excessive for this to have been the cause. However, there is evidence for thread-pull having caused the erosion at the upper edge, with the pull towards the back of the plate. Along the bottom edge, one of the holes shows slight thread-pull towards the centre. No obvious bead-on-plate grinding wear was noted. The fracture surfaces where the two large fragments had been broken off are worn, demonstrating that the plate had been used in its damaged state.

With the fusiform beads, there has been thread-smoothing to the ends of the perforations. The angling of one end on two of the beads, and the chipping of both ends of a third, had probably been caused by bead-on-bead wear. As for the disc beads, the only visible sign of wear was possible thread-pull on one bead; otherwise, the presence of lacquer/consolidant, and the tightness of their threading, made it hard to inspect the beads for signs of wear. The overall degree of wear on all items is summarised in Table 7.2.2.

CONCLUSIONS

This necklace is substantially incomplete, even allowing for some loss of components due to disturbance, and its terminal plates and fusiform beads were clearly old and worn when deposited. Whether the disc beads were also old is harder to determine, since such beads tend not to show wear as much as fusiform beads and plates. As for whether the components derive from more than one parent necklace, the similarities between the terminal plates, despite the difference in the physical state of the damaged piece, suggest that these had been made as a set. The fusiform beads had clearly been used in a spacer plate necklace, but whether they had originally belonged to the same necklace as the terminal plates is unclear. Similarly, it is unclear whether the disc beads had been added from a different necklace, or had formed part of the original design. While disc beads had not formed part of the design of the earliest jet spacer plate necklaces, by the time the Snaithwell plates were made it may be that they formed part of the original design, alongside fusiform beads. This point is discussed more fully in Chapter 7.3, along with the regionally-specific comparanda for this necklace, including for its distinctive decoration.

ID 282 Burwell Fen, Cambridgeshire

References: Anon. 1854; Fox 1923, 55; Beck 1928, 57 and fig. 44; Craw 1929, 186; Fowler 1932, 362 and note 3; Salzman 1938, 271 and fig. 15; Lethbridge 1949, 35, note 1.

COMPOSITION

The necklace survives as a single terminal plate (possibly right hand) from a spacer plate necklace.

CONTEXT AND ASSOCIATIONS

The item was found in peat prior to 1854. Accounts differ, but according to the 3854 Cambridge Antiquarian Society Report XIV (Anon. 1854), which records the acquisition of this object from the collection of the late Isaiah Dick, a complete necklace is believed to have been found: 'A piece of ornamented jet from Burwell Fen. It is believed that Mr Litchfield has the remaining part of a necklace to which this belonged' (E. Litchfield was a collector). Fox (1923, 55) and Craw (1929, 186) refer back to the Report, but later publications refer to the spacer plate as having been an isolated find in the peat. Fowler (1932, 362) speculated that it may have been associated with a body like several other bodies that had been found in the Fens (cf. Roberts 1998).

MORPHOLOGY

The piece is unpolished and virtually symmetrical with very slightly convex, rounded sides and fairly crisply squared-off perforated ends (Figure 7.2.17, bottom). It is impossible to tell whether this had been a right hand or left hand terminal plate. Its length is 31.7mm, maximum

Figure 7.2.17. ID 281 Snaithwell (top) and ID 282 Burwell Fen (bottom). Top: details showing: (a) front view of two terminal plates and four fusiform beads (note faint decoration on both plates); (b) disc beads; (c) back view of terminal plates and beads; (d) detail showing faint lines along the bottom end of the intact plate as well as evidence of thread-smoothing, thread-pull damage and 'haloes' from bead-on-plate wear. Also shows the obverse drill hole at the right end, and (e) detail showing thread-pull damage to hole on the left and shallow groove from thread-wear between that hole and the central perforation. Bottom: ID 282 Burwell Fen, showing decoration and fracture line across plate and (a) perforations at top and (b) perforations at bottom. The obverse perforation is on the far left; see also where the drill has perforated the upper surface, a little way in from this.

COMPLETENESS AND DAMAGE

Overall, the necklace is very far from complete. Compared with a complete classic lunula-like jet spacer plate necklace, it is lacking two pairs of spacer plates, a fastener, and around a hundred fusiform beads. Notwithstanding the fact that the interment had been disturbed, the balance of probability is...
width 24.3mm and maximum thickness c. 4.5mm. The perforations are relatively small with diameters ranging between 1.3 and 2.0mm. These had been through-bored and must have involved one Y-boring. There are three perforations along the top edge (Figure 7.2.17, bottom, a) and four functioning holes along the bottom edge, plus a fifth one, at the hole closest to one end, and forming a twin with its near neighbour – which is suspected to have been abortive. This last hole which, like its closely-set neighbour, is narrower than the others (Figure 7.2.17, bottom, b) well be related to an accidental hole on the front surface just under half way up the body where the drill had broken through the surface of the plate. This pattern of boreholes matches that seen on the Snawil terminal plates.

The front surface is decorated with a linear design executed by the ‘rocker’ technique featuring two long Y-shaped lines extending from the upper (narrow) edge of the plate to the bottom edge. Flanking these, and very faint, are two further, straight lines. The latter are shown more clearly than they actually appear in Salzman 1938 (fig. 16); a less accurate rendition, and one showing just one of the straight lines, is offered by Beck (1928, fig. 44).

MATERIAL

Macroscopically, the material appears to be jet. It is a variegated black and black-brown on its front surface, and on the back there is a shallow conchoidal flake scar. The absence of cracking suggests that hard, rather than soft jet had been used (AS).

MANUFACTURE

The fact that the plate had been girded to a sheet of clear perspex means that it was not possible to examine the back in much detail. Nevertheless, it was possible to observe grinding striations, of varying degrees of fineness, running across the top and bottom edges of the plate. It is also clear that the grinding preceded the hole-drilling. The latter must have proceeded from both ends of the plate and had broken through the surface at one point. No rilling was noted inside the holes.

The ‘rocker’ decorative technique has been discussed in the entry for the Snawilb Nasiliface (ID 281) in this section and will have been achieved by controlled, highly skilled scribing. As for the degree of polish, the front and sides have a uniform, very high sheen, while the perforated edges are unpolished. The degree of polish on the back of the plate could not be ascertained.

COMPLETENESS AND DAMAGE

The plate is complete but for a small chip where the drill had penetrated through the front surface, and a shallow spall at the back, extending to the top. Both losses had happened in antiquity, and probably both during manufacture. More recently, the plate had snapped in two just below its half-way point at some point after its discovery and the two parts had been glued back together (Figure 7.2.17 bottom, a and b). There are also some shallow superficial scratches on the front surface.

WEAR

Overall, the plate shows a moderate degree of wear. Threadwear is minor with the edges of the perforations remaining fairly crisp, but there is clear bead-on-plate wear in the form of shallow, ground by the ends of fusiform beads, around the holes on the lower edge (Figure 7.2.17 bottom, b). The bead-wear around the double perforation on the left hand side encompasses both of the holes, confirming that there had been four strands of fusiform beads issuing from the bottom of the plate). Furthermore, parts of the decoration had been abraded to varying degrees with the outermost straight lines rendered nearly imperceptible through wear. Faint traces of the upper ends of these lines are visible on Figure 7.2.17 bottom, a. The bottom ends of the Y-shaped lines have also been heavily worn. This wear had also softened the edges of the hole on the front surface.

CONCLUSIONS

This terminal plate had clearly seen some use before its deposition in the peat. The most remarkable aspect of this object is the fact that its unusual and distinctive style of decoration is matched on a pair of terminal plates found at Snawilb, Cambridgeshire (ID 281): c. 8 km away, on a pair of spacer plates found at Soham Fen, Cambridgeshire (ID 391) c. 9 km away, and on a lozenge-shaped ornament (a probable skulkmorph of the large gold lozenge from Bush Barrow, Wiltshire) found at Carlton Colville, Suffolk (ID 379) (Pitts 2007). All these items of jet, as discussed in Chapter 7.3, this remarkable similarity (which also extends to the matched borehole pattern between the Snawilb and Barwell Fen terminal plates) suggests that they may well be the work of a single individual probably based in East Anglia.

ID 379-390 Pockley (Oxholme Farn), barrow 2, North Yorkshire

References: Pacitto unpublished TS (1970); Smith 1994, 111, NYM 89; Shepherd 2009, 363; (additional information from Ian Kinnes pers. comm.).

COMPOSITION

The composition of the necklace is unclear since accounts vary and since virtually all of the pieces were scattered over the old ground surface. The items of jet or jet-like material from this barrow contained:

- 298 small disc beads plus 27 fragments of same; 297 beads are threaded on two strands (ID 384), with 65 on one and 232 on the other. There is also a single disc bead (ID 387). The strand of 65 beads is associated with 6 of the fragments and the 232 beads with the remaining 21 fragments. According to Kinnes (pers. comm.) the threading of these beads onto two strands is likely to have been done by ior for Pacitto and may relate to spatial groupings; there is otherwise no difference between the beads in each strand. The smaller size illustrated here (Figure 7.2.18a).
- one spacer plate, undecorated (ID 386, Figure 7.2.18b).
- one fusiform bead (ID 381, Figure 7.2.18c).
- two V-perforated fasteners or pendants (ID 389, Figure 7.2.18d, and ID 388).
- one through-perforated pendant or fastener (ID 390), one probable roughout for a pendant (not numbered).
- five V-perforated buttons (ID 379 ID 382-3, ID 385, Figure 7.2.18e, and ID 388).

Of these, it is unclear whether the beads and fasteners/pendants had belonged to the necklace; the probable pendant roughout cannot have been ong and is not discussed in any detail here.

CONTEXT AND ASSOCIATIONS

All the material comes from a severely plough-damaged barrow. Most of the items were found scattered over an area under 1m in diameter on the level of the old ground surface below in the barrow's in south-west quadrant, to the north of burial 2. According to the Pacitto typology the barrow contained just terminals and no grave goods. Two items are reported to have come from the filling of burial 2 (shard, and are also reported by Smith as being in the 'fill of a pit in the SW quadrant') (1994, 111, NYM 89). The labelling in the British Museum has one of the V-perforated fasteners and one of the buttons as coming from burial 4, although the Pacitto typscript states that there were no grave goods from burial 4. A further source of confusion arises from the fact that the Pacitto typscript refers to the discovery of 'some 20' tiny drum shaped beads with single perforations [there being in fact over 300 present], several spacer plates [there being only one present], and [there being five present] - in the opinion of Ian Kinnes (pers. comm.). Pacitto had accidentally mis-reported these finds. As a final source of confusion, Shepherd's reference to the buttons incorrectly states that they were associated with the small cist, in the north-west quadrant that was only large enough for an infant and which contained a Food Vessel (Shepherd 2009, 363).

MORPHOLOGY

The disc beads are all small, neatly circular, and relatively uniform in their diameter (3.9 to 5.1mm) and thickness (1.1 to 2.4mm). The vast majority are parallel-sided, with only a very few that are slightly wedge-shaped in profile. The outer edge is straight and perpendicular to the flat sides. The perforation is central and perpendicular, and ranges from 1.5 to 2.5mm in diameter. They are all black; some have dark brown sediment from their burial context adhering to their surface (and indeed sealed in by the consolidant used to coat them). If all the complete and fragmentary disc beads were laid in a line, it would be around 644mm long but, as seen likely plate-like items, they had been deployed as five strands, the length of each strand would have been a fraction of this. The fusiform bead is fairly short (3.1mm in length) and plump (8.3mm in maximum breadth), with a central longitudinal perforation: 2.3mm in diameter (Figure 7.2.18c). This had been drilled from both ends, meeting at a slight off-set. The ends are rounded and angled, each sloping in the same direction, and one section the bead is oval: an ID 383 runs around the bead's fattest point, giving it a slightly biconical appearance. It is black, with hints of blackish-brown.

The spacer plate is a fairly narrow rectangle in plan, with rounded top and bottom edges, flattish front and back surfaces and squared-off perforated edges (Figure 7.2.18b). Its length is 28.0mm, width 11.75mm, and maximum thickness 0.6mm. It has five through-perforated borocholes, neatly drilled from both ends, with the perforation diameters (at their narrowest point) ranging from 2.2 to 2.6mm. It is black-brown in colour. Both V-perforated fasteners are roughly oval in plan and very slightly wedge-shaped in profile. The smaller one (ID 380) has a diameter ranging between 10.8 and 12.3mm and is 8mm thick at its thickest point. ID 389 is 19.5 by 15.8 by 11.23mm in its respective dimensions (Figure 7.2.18d). The V-perforation on ID 380 features narrow holes 5.5mm in their maximum width, with a narrow bridge just under 2mm wide between them. On ID 389 the perforations have been drilled at a broader angle and (up to 7.5mm wide in one case) with a bridge 8.1mm wide between them. ID 380 is black but has brown sediment in its many surface irregularities; ID 389 is black-brown, but lighter on one side than the other. The through-perforated fastener is irregular in shape, roughly pear-shaped in plan and unevenly rectangular in profile, and looks to be a perforated pebble. It is 17.2mm long, 10.5mm wide and 8.2mm thick with a perforation 2.3mm wide at its narrowest point and 5.0mm wide at its widest (on one side of the pendant). It is light grey to black. All the V-perforated buttons are fairly consistent in shape, being circular in plan, medium-domed, medium-thick, and with a more or less clearly defined bevel immediately above their base. According to Shepherd's classification (2009), they count as Type 2(B) (although in Shepherd 2009, only one is listed as bar-type). An ID 380 and ID 385 runs and ID 388 have (or had) a pointed apex. Their dimensions and colours are shown in Appendix VII, Table 15.

MATERIAL

It is clear, macroscopically, that there is variability in the material. Analysis has confirmed that it is jet (albeit, in the through-perforated pendant (ID 390 was not analysed and there is a question mark over whether it is of jet). The unnumbered 'pendant roughout was not recorded in detail or analysed, although the initial rapid macroscopic inspection it appeared to be of jet, possibly of high quality. The best-quality jet is represented in spacer plate ID
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Figure 7.12.18. ID 379-90 Fockley. (a) ID 384, the smaller of the two strings of disc beads, containing 65 beads; (b) details (not to scale) of spacer plate ID 386 showing outer surface and perforations; (e) detail of fusiform bead ID 381; (d) detail of fastener ID 389; and (e) detail of V-perforated button ID 385.

7. Necklaces I: Disc Beads and Spacer Plate Necklaces

The presence of cross-cracking (more marked in the fastener than in the spacer plate, including some incipient cupping indicating the use of soft jet) and had been polished to a high sheen. ID 386 has a thin vein of whitish spar, a natural inclusion seen in some jet. Both may well have been beach pebbles. On ID 386 the presence of 'orange peel' natural hollows may represent traces of the pebble's original outer surface, while the slight irregularity in ID 389's shape may echo the pebble's original shape.

At the other end of the spectrum, several objects, including the button ID 379, have a more fibrous (woody) or even slightly grainy texture and many surface irregularities, and have not been polished to any more than a low sheen (probably because the raw material had not been capable of taking a high polish). Where the surface had cracked, the cracks are cross-crack (in the case of ID 379); concentric (ID 382) or 'wandering' (ID 383 and ID 388); the fusiform bead (ID 381) has laminae cracking. Compositional analysis of three such items (ID 379, ID 380 and ID 382) at the British Museum by X-ray fluorescence spectrometry (MD/DH) revealed that they have a high to very high iron content and are low in zirconium. Analysis of a tiny detached fragment from ID 379 by Dr J.M. Jones using oil immersion reflected light microscopy and reflectance measurement led to the conclusion that this had been pyrite-rich jet from which much of the pyrite had oxidised away. The items that fall within this low-quality jet category are ID 379-83 and ID 388.

In between these lie the disc beads (ID 384 and ID 387) and the button ID 385 (Figure 7.12.18e); they are of a compact, blackish brown jet, with hairline cross-crack and concentric cracking on the button and with some hairline lamina cracking on the beads. Analysis of a fragment of one of the beads by Mr J.J. Jones revealed that it was jet of average quality (pers. comm.). The presence of two small 'orange peel' hollows on the bevel of button ID 385 suggests that here was the outer edge of the parent pebble of jet.

MANUFACTURE

Where visible, the flat surfaces of most of the disc beads have fairly crisp striations running across them. These are likely to relate to the grinding flat of these surfaces and indicate their individual shaping, at least as far as achieving a parallel-sided shape is concerned. The perforations are almost all parallel-sided (rather than hourglass- or V-shaped) and suggest drilling from one direction. However, two beads have a slightly V-shaped perforation and a rounded junction between the perforation and the flat surface, suggesting that here are traces of where the drill had entered the bead (or a columnar roughout for several beads). It is unclear whether the beads had all been shaped and drilled individually, or made by detaching them from a columnar roughout. If the former, then this implies that the drill's entry traces have been ground away and that their relatively uniform diameter had been achieved by roll-grinding the beads. The outer edge of the beads had been smoothed, but not polished.

The presence of an irregular ridge running around the broadest part of the single fusiform bead relates to its shaping by the grinding of a faceted roughout, smoothing one half and then the other. Faint circumferential rifling inside the perforation suggests the use of a bow- (or similar) drill. The surface had been polished to a low sheen.

On the spacer plate gouge marks, made by a toothed tool, on the front surface and on one of the rounded edges probably relate to the removal of natural inclusions in the jet (Figure 7.2.18b). There are faint and irregular striations, from the grinding of the plate, on the front and back of the plate, but not on its perforated edges. The perforations had been drilled neatly from each end of the plate and are parallel-sided. No rifling is visible. The front and back surfaces and the rounded edges had a high sheen, and while this is partly due to the consolidant used to coat the plate, nevertheless there seems to have been a differential degree of polish on these surfaces and on the perforated edges, the latter having a low to medium sheen only.

As far as the V-perforated fasteners are concerned, ID 380 has a slightly faceted edge, reflecting the way it had been shaped, and there are patches of faint circumferential striations that relate to the grinding of the edge. The back of the fastener has one patch of faint diagonal striations from grinding. The V-perforation had been made by a single episode of drilling from each end, using a drill with a round-tipped bit. Circumferential rifling is present in the right-hand perforation. The surface is uneven (due to the loss of pyrite inclusions) and matt. In contrast, ID 389 had been polished to at least a medium sheen. There are faint diagonal striations on the edge, especially in the area around the bridge, and there is circumferential rifling in the interior of both perforations. The drill bit used to make the V-perforations had been relatively broad and round-tipped; there is no sign that the drill had been repositioned during the creation of the V-perforation.

The only manufacturing traces visible on the through-perforated fastener or pendant are from the perforation which had been drilled from either side (and which may have caused a large flake to become detached). Otherwise, the object appears to be an unmodified, irregularly-shaped pebble. No note was taken of the manufacturing traces on the ?pennant roughout.

Faint diagonal or multidirectional striations were noted on the bevel facet of all five V-perforated buttons, and uni- or multidirectional grinding striations were noted on the base of ID 382, ID 383, ID 385 and ID 388. They are particularly crisp on ID 385 (Figure 7.2.18c). The perforations were made using a round-ended drill, and in ID 382, where the apex had been lost, a central hole shows that the V-perforation had been at a steep angle. Evidence for both single-stage drilling, and drilling featuring a change of direction, was noted, and chipping around the perforations (as in ID 385) suggests damage during drilling. The presence of consolidant has obscured traces of rifling, although faint traces were noted in ID 385.

COMPLETENESS AND DAMAGE

Most of the items appear to have been coated with a consolidant. The presence of 27 fragments of disc beads indicates that not all the beads are complete or indeed present. The excavation took place during challenging conditions, and although the soil was sieved, it is possible that some further fragments or beads had formerly been present. Similarly, the fusiform bead is only 55% complete, having broken longitudinally along a lamina plane in antiquity; one end had become detached during or after excavation.

The spacer plate is 95% complete. A long chip is missing from two perforations on the right-hand edge. On the right-hand edge, extending to the front surface, sizeable chips are missing from either end. This is ancient damage and may not be due to some recent damage...
relate to the plate's use. There has also been loss of a tiny flake from a deep corner between two of the perforations at an indeterminate date (Figure 7.2.1b).

The V-perforated fastener ID 389 has no missing parts, while fasterer ID 380 has slight spalling of its surface (of an indeterminate date). A flake missing from one side which appears to be an absent overall. Loss 98% of the original object is present. Similarly the through-perforated fasterer or pendant is nearly complete (c. 97%), lacking only a large flake that may have become detached during manufacture. The roughness is more fragmentary, but no details of the degree of incompleteness were recorded.

The V-perforated buttons range in completeness between 55% and 99% and 99% ranging from the loss of part of the apex in ID 385 (Figure 7.2.1e), to less of just under half of the button upon (or since) excavation. The loss of part of all of the apex (in the case of ID 385 and 386) may have occurred in antiquity.

WEAR

The degree of wear of all the objects is summarised in Table 7.2.2. Essentially, the only item to show more than the slightest degree of wear is the spacer plate. The wear on the beads (including the fusiform bead) falls into the category of ‘fresh’ or ‘slight’. If the interpretation of the two disc beads with slightly V-shaped perforations is correct (see above), and this feature relates to their manufacture (as seemly likely) and not to heavy thread-wear, then the disc beads show no obvious signs of wear at all. This is borne out by the fairly crisp striations seen on the flat surfaces of many beads. It is unclear whether the angled shape of the ends of the fusiform bead was an original design feature or was partly or wholly due to wear. Signs of wear consist of a slight smoothing to the outer edges of the perforation and a thread-pull groove on one end. There is a moderate degree of wear on the spacer plate. There is a bead-ground hollow, 4.5mm across, on one perforation on the right hand perforated edge, and there is a surface polish all along the perforations. While there is only a minor amount of thread-smoothing of perforation ends, thread-pull hollowing was noted in four holes. In three cases, the pull was to the back of the plate; with the fourth, it is to the front. As noted above, it is possible that shipping along the perforated edges relates to use.

Of the V-perforated fasterers, ID 380 shows virtually no traces of wear, the only signs being the minimal smoothing to the inner edge of one of the perforations. Its condition is therefore fresh. ID 389 has thread-smoothing to the inner edge of both perforations, and comes under the category ‘slightly worn’. There were no obvious signs of damage to the thong-through perforated fasterer or pendant (ID 390). Similarly, although the presence of consolidant has obscured details on the V-perforated buttons, it appears that they fall within the categories ‘fresh’ and ‘slightly worn’, together with the slight smoothing to the outer edge of one or both perforations. The manufacturing striations on ID 385 are particularly crisp (Figure 7.2.1e).

CONCLUSIONS

The fact that the beads had been scattered, and that confusion surrounds the account of their discovery, makes it hard to assess how the objects had originally been configured and thus how many discrete items of jewellery are represented. It is difficult to determine whether they had originally been in a grave or (as Facius’s report implies) had not been interfered with human remains, but simply deposited under the barrow. With regard to the necklace, the presence of a spacer plate raises the possibility that the disc beads had been strong in five strands. The spacing of the perforations in the spacer plate are such that five strands of disc beads could indeed have been accommodated (Figure 7.2.1b). The bead-on-plate wear is not inconsistent with a bead on plan and a space between one of the larger disc beads, although it could equally have been caused by a fusiform bead. However, if arranged in this way, with equal numbers of disc beads on either side of the plate, each of the ten lengths of beads would only amount to c. 32mm. An alternative interpretation is that the spacer plate and fusiform bead had been collected from a spacer plate necklace and kept as a separate entity, with the disc beads being strung in a single, long (c. 640mm long) strand which would have extended to mid-calf level on an adult. Moreover, the presence of two V-perforated objects, assumed to be fasteners, is unusual. Normally with disc-bead necklaces there is only one fastener. In addition, it is unclear whether the somewhat crude through-perforated pendant, and the V-perforated buttons, would have formed part of the necklace. Although there is slight wear to the outer edge of the disc in plan and perpendicularly (although this does not prove that they had been used as necklace beads. The use-wear evidence suggests that none of these artefacts had been worn for very long before burial. Comparatively speaking, the spacer plate object. The variability in the quality of the jet used confirms that several different pieces of jet had been used to make the items. ID 391 Soham Fen, Cambridgeshire

References: Fox 1923, 55; Crow 1929, 186; Salzman 1938, 271; Lethbridge 1932, 362; Roberts 1988, 191–2.

COMPOSITION

This is an incomplete spacer plate necklace (Figure 7.2.19a) comprising an unusually-shaped, squa brittle iconical object interpreted as a fastener, a pair of decorated spacer plates, 19 disc beads, one fusiform bead, five biconical beads and a squa oblate bead.

CONTEXT AND ASOCIATIONS

The necklace was found before 1850 in peat at the south-eastern edge of the Fens near Soham Fen (Roberts 1988, 191). It was associated with the skeleton of an adult male as well as cremated remains. An alleged, and chronologically implausible association with a ‘socketed chisel-like axe of late type’ (Fox 1923, 55) can be discounted. The discovery constitutes one of a number of finds of human remains in the Fens, including several from Soham Fen (Robert 1988). While Fox had argued that these were victims of accidental deaths by drowning (1923, 55; followed by Lethbridge 1932), it is more likely that some, including the present example, represent the deliberate funerary deposition of bodies.

MORPHOLOGY

The numbering used to identify the individual components corresponds to that shown in Figure 7.2.19a. The object that is most likely to have been a fastener (no. 1, Figure 7.2.19a) is the only example that is biconical in profile with a rounded junction between the two cones and a narrow V-perforation drilled below the apex on one side. It measures c. 24mm in diameter and 14.1mm in height. The perforations measure 1.7 by 2.1mm and 1.9 by 2.1mm in diameter respectively.

The spacer plates (nos. 2–3, Figure 7.2.19c–d) are very similar to each other, each being rectangular with straight, crisply squared-off perforated edges and gently convex, rounded unperforated edges. Plate no. 2 measures 26.7 by 17.7 by 4.4mm; plate no. 3 measures 27.8 by 19.4 by 4.0mm. Each has four through-bored perforations varying in diameter at mid-point, and there is a smaller, flatter oval facet at the corresponding point on the other side of the bead. The ends of the bead are roughly perpendicular, with one being squared off and the other more rounded. The bead is 21.0mm long (making it the longest bead in the necklace), 6.2mm in greatest width, and the perforation is 1.7mm in diameter.

The five biconical beads (nos. 5–9, Figure 7.2.19a, h and i) range from medium to large in profile, and in cross-section from roughly circular (no. 9) to rounded-triangular (no. 7), with squared-off ends that are perpendicular in some cases and very slightly sloping in others. Bead no. 7 could be described as a biconical bead or as a plump fusiform bead. The broadest part of the beads is well defined but rounded, and falls in most cases, midway along the bead, in nos. 6 and 9 the ‘waisters’ around the mid-point. The bead no. 7 is usually more centrally placed but is slightly eccentric at one end of no. 6. In length the beads range from 14.1mm (no. 7) to 15.8mm (no. 9), and in maximum width from 7.2mm (nos. 5 and 7) to 9.3mm (no. 9). The perforation diameter ranges from 1.4mm (no. 5) to 1.5mm (all the other beads). The oblate bead (no. 4, Figure 7.2.19g) is roughly circular in plan and squa, slightly wedge-shaped in profile, with a convex edge extending towards the rounded apex. It is circular, near-perpendicularly perforated. Its maximum diameter is 10.2mm and maximum thickness is 6.5mm. The perforation diameter ranges between 5.0 and 5.8mm.

MATERIAL

Uncrossopically, in every case except possibly the oblate bead (no. 10), the material appears to be jet and the fact that cracking is absent in most cases, and present only as incipient hairline cross-cracking in others (including on spacer plate no. 2), suggests that hard jet has been used (AS). All pieces are black, although there are also hints of dark brown on many of the components, especially where the subsurface has been exposed (through bead-wear, in the case of the spacer plates). On spacer plate no. 2 the undecorated side is a darker black than the decorated side. A fine, woody texture was noted in the fasterer, spacer plates, disc beads and two of the biconical beads. A few small surface irregularities (c. 1.5mm deep) are impossible to tell if the object had originally been intended to lie on the left hand side, and which on the right.

The 19 disc beads (nos. 11–29, Figure 7.2.19a and Figure 7.2.19f) are 1.3mm to 1.7mm thick, with one very slightly wedge-shaped), with central narrow perforations that are perpendicular in all but one case and a slightly bevelled, minimally convex edge. They are all slightly graded in size, their external diameter ranging from 5.1 to 8.2mm. In maximum thickness they range between 1.2 and 2.0mm.

The fusiform bead (no. 10, Figure 7.2.19f) is slender, fairly symmetrical in profile and a slightly squashed circle in section, with two flatish sides and a central longitudinal perforation. One of the flatish sides has a concave oval depression at mid-point, and there is a smaller, flatter oval facet at the corresponding point on the other side of the bead. The ends of the bead are roughly perpendicular, with one being squared off and the other more rounded. The bead is 21.0mm long (making it the longest bead in the necklace), 6.2mm in greatest width, and the perforation is 1.7mm in diameter.

On the fastener, no striations or faceting from the initial shaping were noted, although there is a very faint, shallow gouge-like mark close to the perforations and beside the painted registration number (Figure 7.2.19g). Whether this had related to the removal of a surface irregularity is unknown. The slight flattening of the edge of the fasterer, where surface irregularities exist may relate to attempts to grind them flat. The V-perforation had been neatly executed with a narrow drill, but the change of slope of both perforations shown is usually centrally placed but is slightly eccentric at one end of no. 6. In length
hand perforation (Figure 7.2.19). The fastener had been polished all over. The perforated side has a high sheen, and the other side has a medium to high sheen.

There are very faint striations on the back of spacer plate no. 2, and these run across a very shallow hollow which is a natural surface irregularity in the jet. Similar striations were noted running across the back of spacer plate no. 3. There are also a few very faint striations running along part of one of the perforated edges on plate no. 2, and similar striations along both perforated edges of no. 3 (Figure 7.2.19d and i). The two plates are so similar in thickness and texture as to suggest that they may have originated in the same parent piece of jet. The perforations through both the plates had been very neatly drilled from both ends; they are straight-sided, with no splaying at the ends. Faint rilling was noted inside all the perforations on no. 2 (except for one which was clogged with sediment) and also inside one of the perforations on no. 3. Both plates had been polished, but the degree of sheen varies due to differential polish, possibly to wear, and to probable post-depositional dulling. The perforated edges range from matt (no. 2) to a low to medium sheen (no. 3), and the fact that the backs of the plates have a higher sheen than the front may be due to a combination of wear (leading to a natural polishing of the side nearest the skin/garment) and post-depositional dulling of the outermost surface. Both plates are decorated on their front surface with a design, executed by the 'rocker' technique (Figure 7.2.19i), featuring a continuous line running across the plate close to each end and zigzagging its way along the length of the plate.

All the disc beads have faint striations either from sawing or, more probably, grinding, on one or both flat surfaces (Figure 7.2.19e), and in all but two cases there are nibble marks (faint transverse striations) on one or both sides of the outer, bevelled edge. These marks relate to the creation of the beads' slightly convex outer edge. In some cases the perforation is parallel-sided, in others slightly V-shaped, and in 12 cases fine rilling (in various degrees of faintness) is visible inside the perforation. A universal feature is a slight step near one end of the perforation accompanied by chipping to the surface adjacent to that end. This suggests that the drilling had mostly been effected from one side with a starter hole having been made on the other side. The outer edge had been polished to a medium to high sheen, and the flat surfaces had also been polished to a low sheen. These beads had been skilfully made.

The fusiform beads exhibit clear faceting, and faint unidirectional striations towards each end, representing traces left by its initial shaping (Figure 7.2.19f). The oval hollow on one of the flat sides, and of an oval facet on another side, seem to be deliberate design features undertaken so that the bead would sit in a dense formation alongside other fusiform beads. It may be that this had originally been one of the beads immediately adjacent to a spacer plate. The perforation had almost certainly been drilled from both ends, and rilling is visible in the perforation. Excepting the facets, the exterior has a high sheen.

Four of the biconical beads have faint facetting, and all have faint unilinear striations towards one or both ends (Figure 7.2.19b and 1). The narrow perforations have almost certainly been drilled from both ends, and rilling is visible in the perforation in four cases with the fifth having consolidated/lacquer obscuring the perforation's interior. The same drill seems to have been used to perforate all five beads and possibly also to the disc beads where the perforations are of a comparable diameter and quality. All the beads have a medium sheen; on no. 6, the sheen is lower where the woody texture of the jet is clearest.

There are no facets, striations or rilling on the oblate bead and it is hard to tell whether the perforation had been drilled from both sides. Its sides are straight. The surface has a high sheen, higher than that seen on the other components.

**COMPLETENESS AND DAMAGE**

All the components are complete or virtually complete. There is minor modern damage, in the form of small scratches on three of the biconical beads. Ancient damage is in the form of spalls or chips, most of which will have been detached during manufacture (as in the case of the spalls around disc bead perforations). Smoothening of the edge of some of the scars (as in biconical bead no. 7 and no. 9, the oblate bead and both spacer plates) suggests that the maker had tried to smooth these over, or else they have been worn smooth.

**WEAR**

The degree of wear on the individual components is summarised in Table 7.2.2 where it can be seen that wear to the oblate bead and the spacer plates is greater than on the other components. The nature of the wear is described in detail in Appendix VII, Table 16. Regarding the bead-on-plate wear, the diameter of the hollows suggests that the wear is from the fusiform beads, rather than from the biconical, oblate or disc beads, all of which have ends that are broader than the hollows.

**CONCLUSIONS**

With the exception of the oblate bead, all the components are likely to have been made as parts of the same necklace, such is the consistency and quality of the raw material and the style of, and skillfulness shown in, their manufacture. The disc beads, unusually for such beads, have been made from jet and are exceptionally fine examples of this bead type. That the necklace had formally comprised at least 15 more fusiform beads is indicated by the bead-wear on the spacer plates, and the presence of the oval (low and facet on fusiform bead no. 10 is consistent with that bead having been designed to nestle closely against other strands of fusiform beads. It is also clear that the necklace had seen some wear on the basis of the bead-wear to the spacer plates, but it need not have been very old when buried.
The fact that this necklace bears the same style of manufacture and the same distinctive decoration as the finds from Snailwell (ID 281) and Burwell Fen (ID 282), and indeed that the components from two of these findspots could have originated as the same necklace, is discussed in Chapter 7.3. As regards the oblate bead, which stands out as being different in several respects from the rest of the Soham Fen necklace, two possible explanations offer themselves. The first is that this was a bead from a different necklace, incorporated in the Soham Fen necklace in prehistory. The second is that it may have become associated accidentally with the Soham Fen necklace in the British Museum during the 19th century, having been found in the same fen; its registration date, 1859, is different from that of the other components (whose registration dates range from 1865 to 1891). Unless there is documentation in the British Museum that could shed further light on the matter, this possibility cannot be ruled out.