A Newly Discovered Later Bronze-Age Shield from Woodstock

In June and July 2018 Cotswold Archaeology carried out excavations ahead of housing development on *c.*1 ha of land south-east of Woodstock (Fig. 1).[1] This resulted in the rare and unexpected discovery of a later Bronze-Age bronze shield in an isolated shallow pit. The pit was somewhat irregular in shape and just 0.15 metres deep. It was 20 metres and more from the edge of the site and no related features were identified despite a thorough search of the stripped area. The pit was without any other archaeological material and was unrelated to the archaeological features (Iron-Age roundhouse gullies) which formed the main focus of the excavation. This note draws attention to the character and significance of the find.

THE SHIELD

The shield when found was in an extremely corroded condition and the photographs taken during the excavation are the best record of its surviving state (Fig. 2). After conservation only a few fragments of the thin sheet of the shield body survived and these cannot be connected or enable a comprehensive reconstruction. These fragments show the design of the shield body with alternating concentric rows of small bosses and narrow ribs, though it is difficult to estimate how many rows exactly. Surprisingly, some pieces of the rim and adjoining areas are in quite a solid condition. The ends of the handle survive in near-perfect condition and were still attached to the sheet of shield body (Fig. 3). The detail shows that the shield had been placed face up, the ends of the handle made visible having pierced the highly corroded body of the shield (Fig. 2). Interestingly, these usually hidden sides of the handle ends show clear punch marks from the time of manufacture, when the craftsperson either wanted to stretch the ends and/or harden the material with a small-faced hammer. The central part of the handle is still visible in the excavation photographs but survived only as corrosion product which could not be saved during conservation. The central shield boss is completely missing, perhaps lost to more recent ploughing.

Measurements of the shield are, due to its fragile state, taken from the time of excavation and from the surviving fragments. The overall diameter was around 60 cm, and the central boss had a diameter of *c.*9 cm. The rim was rolled over along the edge and formed a roll of 0.7 x 0.4 cm. The thickness of the well-preserved sheet pieces from the rim measures 0.8 mm. The width of the concentric ribs is 0.5 cm and the diameter of the small bosses is 0.35 cm. The ends of the handle are trapezoidal and measure 4.3 x 3.1 x 3.1 cm and 4.23 x 3.23 x 3.1 cm and are made of 1–2.7 mm-thick bronze sheet. The ends of the handle were each attached with a rivet, the head of which would have been visible on the front of the shield, placed between the bosses of the concentric rows. The rivet shaft was put through a hole in the sheet body and the hole in the handle end. The latter hole was not wide enough and while flattening the shaft end the material around the hole was shaped, probably on purpose to resemble the rivet head on the front. This detail is observed on some of the British shields and on the handle remains of the shield from Woodstock (Figs. 3 and 4).

[1] The excavations at Woodstock were carried out at the request of Terence O'Rourke Ltd on behalf of Blenheim Estate and Pye Homes, whose support, including funding for this note, is most gratefully acknowledged. The fieldwork was led by Sian Reynish and managed by Ian Barnes. The conservation of the shield was undertaken by Pieta Greaves (Drakon Heritage and Conservation) and is to be cared for by Oxfordshire Museum Service. The post-excavation work was managed for Cotswold Archaeology by Andrew Mudd. Illustrations and photographs are by Marion Uckelmann (Figs. 2, 4, 5 and 6) and Aleksandra Osinska (Figs. 1 and 3). A full account of the excavations is available at https://reports.cotswoldarchaeology.co.uk; report no. 9282_1.

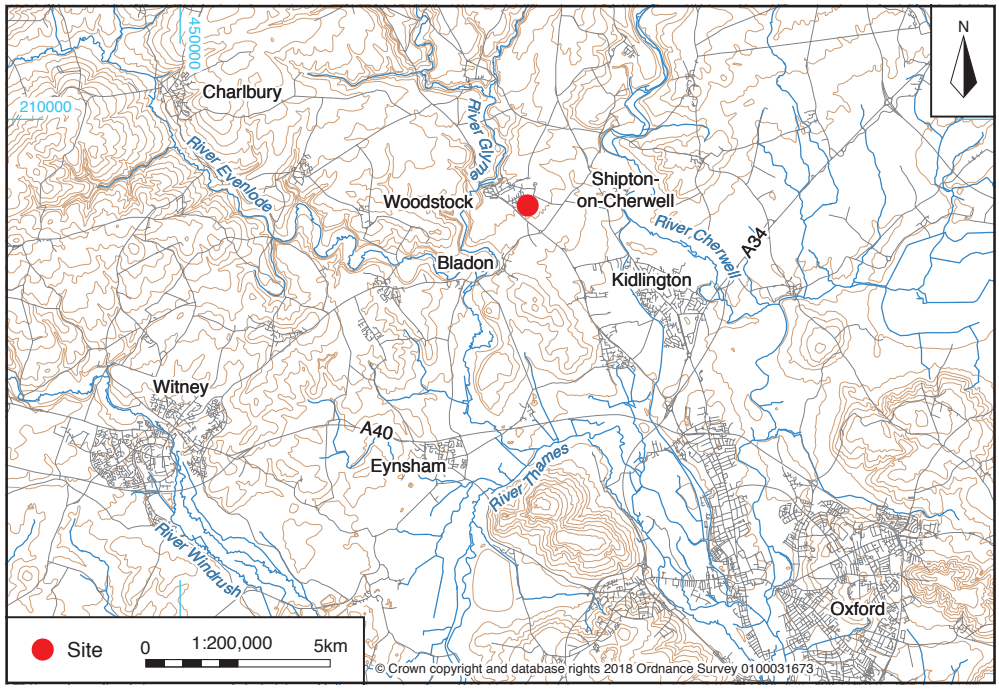

Fig. 1. Site location.

Fig. 2. Shield during excavation. The central boss has been lost completely and the handle beneath shows as little more than a stain.

Fig. 3. Handle remains from the shield where attached to the body, shown in four perspectives.

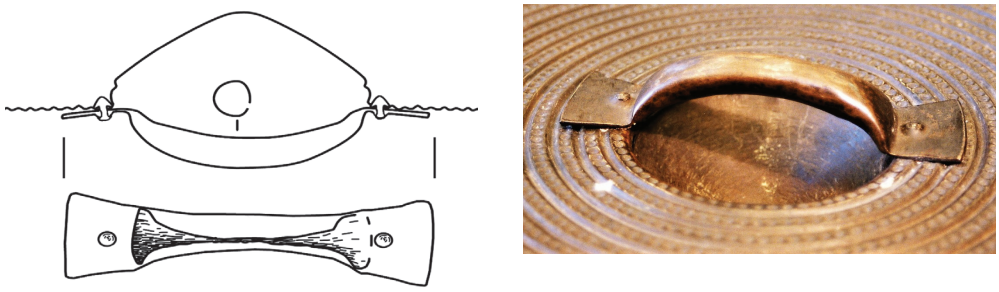

Fig. 4. Detail of handle from the Moel Hebog shield attached to the back of the shield.

COMPARISON WITH OTHER SHIELDS

Despite the poor state of preservation, it was soon clarified that this shield is one of a type of Bronze Age shields that is well studied. This is Type Yetholm, named after a find of three shields from a now dried-up bog near Town Yetholm, Roxburghshire, south-east Scotland.[2] With our new find, twenty-four shields of this type are currently known, plus about seven examples that are known only from the literature (the shields themselves destroyed or lost). This constitutes the largest group of Bronze-Age metal shields in Europe. With the exceptions of one find from Denmark and two from Ireland, Yetholm shields are found only in Britain (Fig. 5). The diameter of Yetholm shields is quite large and lies between 53 and 72.5 cm, but in most cases 59–67 cm, with a metal thickness of 0.4–0.7 mm. In extreme cases, they are hammered as thin as 0.3 mm or as thick as 0.8–1 mm. When complete they weigh around 1.2–2.0 kg, and in one case even 2.5 kg. The central boss has an average diameter between 10 and 12 cm and the handle on the back a length of 14.2 to 15.3 cm. The handle and tabs on Yetholm shields are all very similar and comparable to those on the other shields from Britain and Ireland. The tabs are small pieces of bronze sometimes with a hole, riveted on the shield's body left and right of one handle end, they were used to attach a strap or string to the shield, for carrying over ones shoulder. The ends of the handles are almost always trapezoidal and attached with one rivet, where the rivet head is placed in one of the inner rings of small bosses (Fig. 4). The decoration is very regular and consists of alternating concentric rows of bosses and ribs. Most shields have twenty to thirty alternating ribs and small bosses, while some have fewer rows – three to eleven – with larger bosses.[3]

In comparison with the other similar shields, the central boss of the shield from Woodstock, appears to be on the smaller side, thus leaving less space for the bearer's hand. Otherwise, the surviving features are all very much within the characteristics of the type. After a careful comparison of the details it can be proposed that the shield from Woodstock was very similar in appearance to a few shields of Yetholm type which measure around 60 cm and have similar other dimensions (ribs, width, boss diameter, small bosses diameter): Bagley, Shropshire,[4] Moel Hebog, Wales,[5] North Yorkshire,[6] and the three shields from Yetholm bog are also close.[7] These specific similarities might present one workshop in which these shields were manufactured.

Accordingly, the shield from Woodstock would have been decorated with around twenty-six alternating rows of small bosses and ribs, and most likely would have had two little tabs riveted on the back for attaching a string or wire for carrying. It would have looked very much like the shield found in North Yorkshire (Fig. 6).

DISTRIBUTION

Shields are a well-known object from the Bronze Age and later times and can be readily understood as such when unearthed. Bronze-Age bronze shields are, however, exceedingly rare when compared with contemporary weapons like spears and swords, of which hundreds are known. It is probable that wooden or leather shields were more common (although very rarely surviving) and that shields were not normally made of bronze.

The overall distribution of the Bronze-Age shields of all types reveals a strikingly high number of around fifty examples in Britain and Ireland, more than half of all known examples

2 J.M. Coles, 'European Bronze Age Shields', *Proceedings of the Prehistoric Society*, 28 (1962), p. 165 sqq.

3 M. Uckelmann, *Die Schilde der Bronzezeit in Nord-, West- und Zentraleuropa*, Prähistorische Bronzefunde III, vol. 4 (2012), pp. 37–50.

4 Ibid. no. 52; now lost.

5 Ibid. no. 43; British Museum, London (1873.2–10.1).

6 Uckelmann, *Schilde* no. 44; private collection.

7 Ibid. nos. 49–51; National Museums of Scotland, Edinburgh (X. DN1; X. DN2; L.1933.2114).

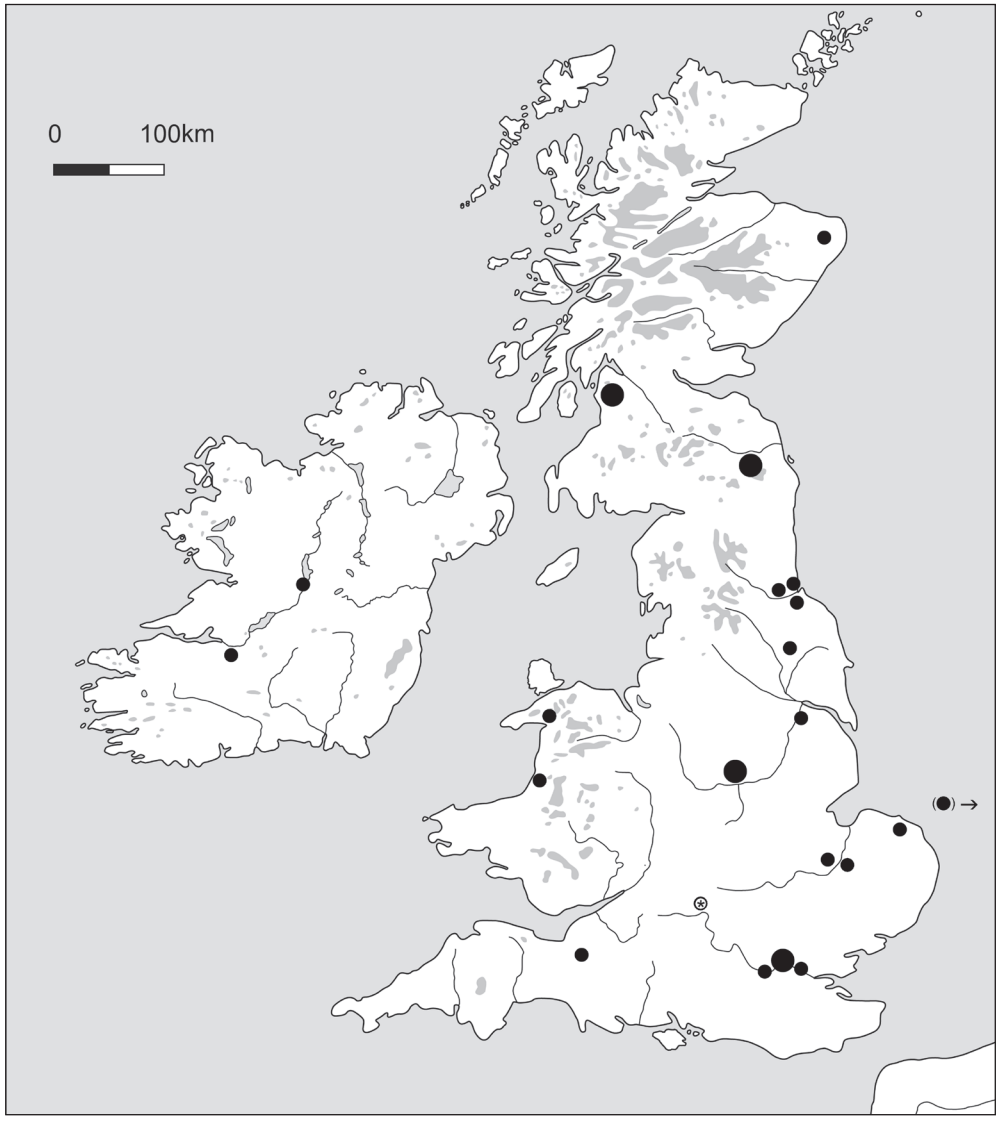

Fig. 5. Distribution map of Type Yetholm shields (known locations). Larger symbol shows more than one shield; asterix shows Woodstock findspot.

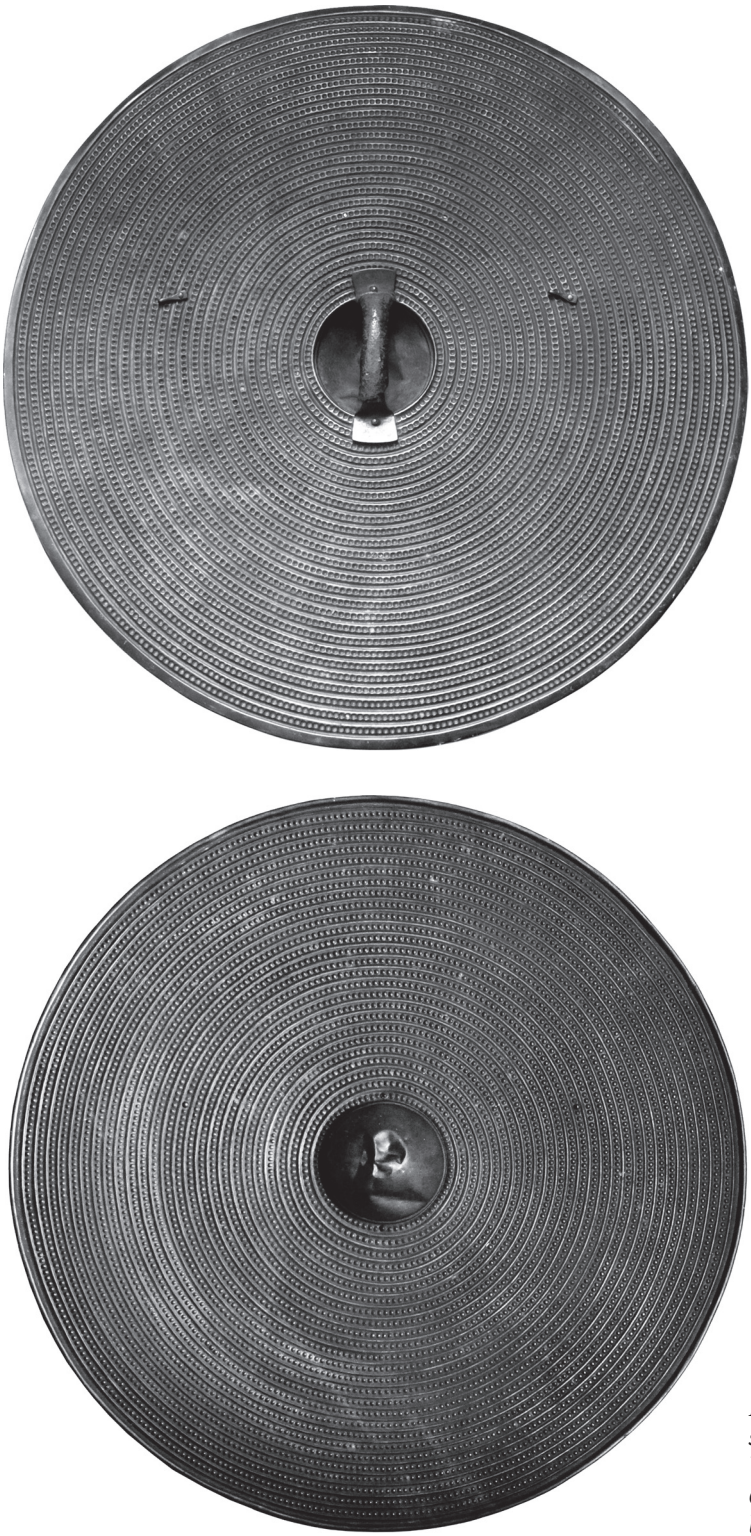

Fig. 6. Type Yetholm shield from North Yorkshire, Diameter 62.1 cm. Top: back, bottom: front.

from across Europe (ninety-three are currently known). A third of shields come from southern Scandinavia and northern Germany, with smaller groups from southern Germany and the Carpathian Basin, as well as single examples from Poland and the Czech Republic.[8] This distribution must, however, be completed with other evidence for shields, for example those represented by bronze nails, most likely used as fittings on wooden shields.[9] Many round shields are also engraved on the so-called warrior stelae in Iberia; these closely resemble actual shields.[10] Shields also appear on many Scandinavian rock carvings, but they are more roughly executed. Further afield representations of shields can be found on various objects with figural decorations (on vases wall paintings, jewellery, weapons, and so on) around the Mediterranean and as small votive shields as well as on Sardinian bronze figurines. It should be noted that in these areas original shields from the Bronze Age have not survived or not been found so far.[11] In contrast to continental Europe, shields are the only surviving defensive weapons for the Bronze Age in the British Isles as no helmets, cuirasses or shin guards have yet been found.[12]

Looking closer at the find from Woodstock, one finds that in the Thames valley, which is known for its high density and large distribution of Bronze-Age bronze objects,[13] quite a few shields have been recorded. Some smaller shields are found very close by in the Thames: the Type Athenry-Eynsham shields from Eynsham bridge (only 8 km away),[14] and Little Wittenham (25 km),[15] and the Type Nipperwiese shield from Long Wittenham (25 km).[16] In contrast, the closest finds of Type Yetholm shields were found in a distance of *c.*120 km: South Cadbury (Som.),[17] Langwood Fen (Cambs.),[18] and Church Wilne (Derbs.).[19]

FIND CIRCUMSTANCES

Most Yetholm type shields were found in bogs while cutting turf or working on drainage; fewer come from rivers, although four come from the Thames. One shield was found in the ditch of an enclosure at South Cadbury, Somerset (just outside Cadbury Castle hillfort), this the only example from a settlement,[20] and is the only shield apart from the Woodstock shield to have been discovered during an excavation. Many were found in association with other shields: as near Beith, Ayrshire, where five or six shields were found standing upright; only one of these has survived.[21] Most shields were deposited in a complete or nearly complete state, and only three examples were recovered as fragments. Some show special treatment, like standing upright or in burnt remains and many are found together with other shields, and a few are possibly associated with spearheads.[22] They have never so far been found in a grave, although graves of this period in Britain are in any case rare.

8 Uckelmann, *Schilde*, pp. 157–8.
9 Ibid. pp. 81–6.
10 Ibid. pp. 127–37; R.J. Harrison, *Symbols and Warriors* (2004).
11 Uckelmann, *Schilde*, pp. 137–56, with more sources and discussions.
12 Ibid. pp. 198–9.
13 J. York, 'The Life Cycle of Bronze Age Metalwork from the Thames', *Oxford Journal of Archaeology*, 21 (2002), pp. 77–92; R. Thomas, 'A Concentration of Bronze Age Metalwork from the River Thames at Sandford-on-Thames', *Oxoniensia*, 83 (2018), pp. 249–56.
14 Uckelmann, *Schilde*, no. 27; Society of Antiquaries, London (LDSAL 81).
15 Uckelmann, *Schilde*, no. 28; British Museum, London (1873.6–20.1).
16 Uckelmann, *Schilde*, no. 9; Ashmolean Museum, Oxford (1980.212).
17 Uckelmann, *Schilde*, no. 45; Somerset County Museum Taunton (TTNCM 97/1993/1547).
18 Uckelmann, *Schilde*, no. 46; Museum of Archaeology and Anthropology, Cambridge (1910.229).
19 Uckelmann, *Schilde*, nos. 37, 57; Buxton Museum (no. 57, lost).
20 J.M. Coles et al., 'A Later Bronze Age shield from South Cadbury', *Antiquity*, 73 (1999), pp. 33–48; S.P. Needham et al., 'South Cadbury: The Last of the Bronze Shields?', *Archäologisches Korrespondenzblatt*, 42 (2012), pp. 473–92.
21 Uckelmann, *Schilde*, no. 34, pp. 53–6; surviving one in the Society of Antiquaries, London (LDSAL 80).
22 Ibid. pp. 47–9.

It is curious that the Woodstock shield was laid down so close to the rivers nearby, only *c.*1 km from the river Glyme and 2 km from the convergence of the rivers Glyme and Evenlode. Given that in this region the depositional practice at the time was clearly focused on rivers rather than dry land, the question as to whether the deposition of the shield from Woodstock carried the same meaning as other, riverine, depositions must remain unanswered.[23]

MANUFACTURE

The metal shields were hammered out from a blank made of a high tin bronze (between 9–16 per cent tin) weighing around 1.0–1.5 kg. Such a disc had to be flattened out to a thin sheet of, in the case of the Yetholm shields, about 60 cm and more across. This process would have taken many rounds of annealing to keep the metal from turning brittle, and then continue the hammering, and eventually produce a thin bronze sheet. This would have been a time-consuming and labour-intensive process; only very skilled craftspeople could have achieved such large and thin sheets of bronze; in experiments a large disc could be spread only 2 mm each hammering phase. To expand a blank of 20 cm to a disc measuring 60 cm would therefore take approximately two hundred rounds of hammering and annealing. To anneal frequently the large, growing disc a substantial amount of fuel was necessary, as well as extensive knowledge of heat control using temperatures of 500–600°C. The hammering work was most likely carried out by at least two people, one holding the disc in place over the anvil, the other one striking it with the hammer. On some of the shields the hammer-marks are still visible, but most of them were polished away before the decoration was embossed. The decoration of bosses and ribs was made with round punches for the small bosses and with elongated punches for the ribs, moving the punch along the rib. To achieve such a regular and even design, as seen in the Yetholm shields, the use of a caliper can be assumed and maybe also a wooden model into which parts of the design were cut. After the decoration had been punched in, the central boss was hammered out. All Yetholm shields have a rolled-over rim, which in some cases has a bronze wire for strengthening, although this could not be detected by X-ray on the shield from Woodstock and may well have been absent. Through this process the rim becomes to the strongest part of the shield, the rolled rim of sheet metal and the wire combined being strong enough to withstand sword blows, as shown in experiments with a replica shield.[24] When the body of the shield was finished, a grip and two tabs were attached with rivets, the head of these was incorporated or rather hidden in the decoration of bosses on the front. The handle was made out of a cast strip of bronze, about 3 mm thick, with two cast holes for the rivets. In the middle this strip was hammered out to form a round sheet with 1 to 0.5 mm thickness, while the handle ends remained, the round sides were bent or rolled inwards to form the tube of the handle. The discovery of punch marks on the handle ends of the shield from Woodstock are intriguing and show another aspect of the manufacturing process previously not recorded. It is possible that the ends needed stretching to fit the hole for the rivet over the right place on the shield.[25]

These manufacturing processes reflect a workshop where a highly skilled craftsperson was able to produce large bronze castings and hammer them into sheets to produce shields and similar objects of sheet bronze. Only 3 km to the east of Woodstock, the contemporary cauldron from Shipton-on-Cherwell was found in the river Cherwell,[26] and the previously mentioned

[23] York, 'Bronze Age Metalwork', pp. 77–92; G. Lambrick, 'Chapter 5: The Later Bronze Age and Early Iron Age: Resource Assessment', in G. Hey and J. Hind (eds.), *Solent-Thames Research Framework for the Historic Environment: Resource Assessments and Research Agendas* (2014), pp. 140–4.

[24] R. Hermann et al., *Bronze Age Combat: An Experimental Approach*, BAR IS, 2967 (2020), pp. 10–12, 51–5, 71–4, 94–6.

[25] Uckelmann, *Schilde*, pp. 108–16; M. Uckelmann et al., in preparation.

[26] S. Gerloff, *Atlantic Cauldrons and Buckets of the Late Bronze and Early Iron Ages in Western Europe*, Prähistorische Bronzefunde II, vol. 18 (2010), no. 3; Ashmolean Museum, Oxford (1929.324).

shields nearby in the Thames. Most likely only a few craftspeople were capable of producing such high-end objects and, even though the shields and bronze vessels are distributed across Britain, they were probably made in only a few workshops.

DATING

Insular bronze shields are dated through a few radiocarbon dates and metal analyses. The metal compositions and technical construction elements compare best with other objects of the Penard period (*c.*1300–1125 BC) and the radiocarbon date of a Yetholm type shield underlines this.[27] This date comes from a piece of leather, covering the handle of a shield, that was re-discovered in a North Yorkshire stately home. This is the Yetholm type shield that is very well preserved and is similar to the one from Woodstock (Fig. 6). The radiocarbon date is 1256–998 cal BC, a range spanning much of the Penard and Wilburton (*c.*1125–950 BC) phases.[28] The overall evidence suggests that the production of bronze shields in Britain and Ireland may have predominantly taken place in the Penard period, with some continuation into Wilburton.

CONCLUSION

The shield from Woodstock is now preserved only in small fragments, but in its days of use it would have been a striking and most valued object in the world of Bronze-Age people, manufactured as an extremely prestigious product using the high-end technology of its time. With over 60 cm in diameter it would have covered most of his bearer's torso and, with the polished finish, it would have gleamed golden and most likely reflecting the light brightly, an imposing image for any onlooker. Earlier assumptions that these shields were mainly for ceremonial use, due to the thin sheet, have been challenged by the identification of weapons marks on some of them, while recent experiments have shown that they were capable of defending against both sword and spear impacts.[29] Next to their purpose as a weapon, the shields will also have certainly served as markers of prestige. Shields are so far never found in graves and at the end of their use many of them are placed into water (bogs or rivers) most likely by a community, maybe as a valuable offering.

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[27] Full discussion in: Needham et al., 'South Cadbury', pp. 485–9; Uckelmann, *Schilde*, pp. 158–68.
[28] Uckelmann, *Schilde*, no. 44, p. 163.
[29] Ibid. pp. 175–8; Coles, 'European Bronze Age Shields', pp. 184–6; Hermann et al., *Bronze Age Combat*, pp. 94–6.