During the archaeological survey of the limestone uplands of Cumbria carried out by Anthony Ellwood and ourselves in 1984, we were invited to visit a rescue excavation of a hut circle above the “Blue Stone” quarry, near Shap, which was in danger of destruction by the working of the quarry. The excavation was being undertaken by the Cumbria and Lancashire Archaeological Unit under the direction of Ms Val Turner. This is one of two large quarries to the south of Shap village on the A6; the other lies nearer to Kendal at Wasdale Bottom and is generally known as the “Pink” quarry (see Fig. 1). The quarries are so-called because of the colour of the rock. Our main purpose was to examine a number of flints which had been found, to see if they were of the same type as those we had been finding on the uplands. However, there were no specifically diagnostic flints among the collection, but there were similarities and it seems probable that they were Bronze Age or Late Neolithic. On the lower ground to the north was a small stream called Wickers Gill (this has now been piped underground) and in the field to the west of this were the vestigial remains of a settlement which had been almost completely obliterated by later cultivation.

At the time there was a British Gas pipeline being installed between Longtown and Manchester: the Longtown to Lupton section had just reached the “Pink” quarry on its way south and the parallel sided scar of the pipe-line was clearly visible from the site of the rescue dig, stretching away to the north.

We decided to go down to the scar and walk along the length exposed between Wickers Gill and the side road to Wet Sleddale. As soon as we crossed Wickers Gill we came across a spread of flint and black chert artefacts with neolithic and late-mesolithic affinities, lying in the top-soil.

We contacted Mr John Gater, who was the Gas Board archaeologist at the time, and arranged to meet him to show him the position of our discoveries. He arrived late and explained that he had been detained by the discovery of a wooden boat in the peat below the “Pink” quarry (NGR NY 5593 0818) and invited us to see it. On arrival we saw that the boat had been lifted out in the bucket of a large excavator, by the efforts of a very skilful operator, and placed carefully on the side of a trench, excavated to a depth of some two metres. At first sight the boat appeared relatively complete, but we quickly realised that despite every effort by the digger operator it had sustained considerable damage as it was first exposed by the excavator and again when it was lifted on to the side of the trench. Although still partly obscured by wet peat, it was obviously a boat which had been fashioned from a single piece of timber.

We had no measuring equipment with us and as a precaution we noted its length as about 10 feet, its width as about 2½ feet and the sides 3 inches thick along the length increasing to about twice this thickness at the stern. An unusual feature was two wooden pegs, one on each side, near the “bow” end, and a rectangular piece of wood secured by what appeared to be four small wooden pegs on one side of the bottom of the boat, a short distance from the “bow” (Plate 1). Only the heads of the
Fig. 1. Map showing area from Wickers Gill to Wasdale Beck.
pegs were visible. Several other smaller fragments of wood were also recovered from the trench. The boat was taken to the local Gas Board Headquarters at Penrith where the pieces were re-assembled as far as possible. They were then supported by polythene bags filled with sand and photographed (Plate 2). It was not until this point that we realised the full extent of the damage, which is shown in some detail in Figure 2. In the meantime a makeshift tank was constructed from polythene sheeting held in place by sandbags so that the boat could be kept under water for preservation (Plate 3). A further search was made of the excavated peat for missing pieces but none could be found, and it was finally decided that the boat must have partially rotted away while buried in the wet organic material. A drawing of a suggested reconstruction of the boat is given in Figure 3.

Realising recently that no report had been made of the discovery of the boat or its possible date, we decided to investigate. This paper records the results of our enquiries.

The land on which the discovery was made belonged to the Lowther Estate, and in a letter to The Times in August 1984 Lord Lonsdale wrote that discussions were ongoing with the National Maritime Museum as to the best way to arrange for the boat’s permanent preservation. It was intended to donate it to a suitable museum in Cumbria where arrangements could be made for its preservation and dating. The appropriate establishment would be the Windermere Nautical Trust.

The boat was sent to the Jorvick Viking Centre and preservation was carried out before it was returned to Windermere but, because of a lack of funding, a carbon date was not obtained. In 1990, Mrs D. R. Matthews, a Council Member of the Windermere Nautical Trust, arranged for an expert, Dr Damian Goodburn to see the boat and give his opinion on its probable date. Dr Goodburn kindly sent me a copy of his report, including his drawings and gave me the good news that a date had subsequently been obtained for the boat by Cathy Groves of Sheffield University using dendrochronology and funded by the Windermere Nautical Trust. She has kindly made her report available to us.

John Gater had given me copies of his photographs, taken as a safeguard, at the time of the boat’s discovery and Gavin Edwards has kindly sent me drawings made by him at the time the boat was at the Gas Board depot.

The boat

The remains are derived from a single oak log measuring about 3.3 metres in length with a maximum width of 76 cms. The thickness of the bottom and sides varied between 3 cms and 7 cms, being thickest along the base of the boat. At the stern the thickness of the sides gradually increased to 14 cms and it seems likely that a similar thickening occurred at the bow. This indicates that the boat would have originally been about 3.5 metres long. The timber had been hollowed out to a maximum depth of 28 cms. A semi-circular hole 4 cms deep and 7 cms in diameter on one side of the hull could possibly be a rowlock (Fig. 2) but the damage to the boat makes it impossible to tell whether a similar feature occurred on the opposite side.

A piece of wood secured by five nails towards the front right-hand side of the bottom of the boat seems to be a repair of damage, or a knot hole, which was causing the boat to leak (Plate 4 and Fig. 2). The two pegs in the bow section (Plate 1) are more problematic; there are also two holes here indicating that there were
PLATE 1. The Wasdale Beck boat – bow section with two of the four wooden pegs still in place.
PLATE 2. The Wasdale Beck boat – supported on sandbags from what we arbitrarily called the stern.
PLATE 3. The Wasdale Beck boat – illustrating the damage sustained. The water tank is in the background.
The Wasdale Beck boat – showing the patch fixed by nails, two of which are clearly visible.
four pegs originally, two of which have been lost. Dr Goodburn is of the opinion that there would be a tendency for the oak to split and that there would probably be a piece of wood fixed across the boat at the bow to prevent this from becoming serious. According to his report, the fact that the outside of the boat was badly abraded suggests that it had been in use for some time before being abandoned. The hull came from an oak tree with a suggested overall diameter of about 3 feet. The comparatively high number of knots in the trunk suggests that it did not come from within a wood, but grew in open ground. He also analysed the marks left on the hull by the use of different tools and concluded that the outside of the log was shaped by using a tool with a long thin blade used like an adze, while inside was cut mainly by means of smaller bladed adzes or axes. The holes in the bow into which the pegs were slotted were made by an auger with a bit about 25 mm diameter. Boring the holes before inserting pegs or nails would prevent the wood from splitting. The holes for the patch would be made with a gimlet-type tool, and a hammer would have been necessary to drive home the nails. From all the evidence, Dr Goodburn suggests that the tool kit used to produce the boat could have included the following: broad axe, small adze, medium-sized axe, spoon auger, possibly a cross-cut saw, felling axe and a hammer. In his 1990 report he concluded that in his opinion the boat was most likely of mediaeval date.

This opinion has been confirmed by dendrochronology, carried out by Cathy Groves at Sheffield University. Three cores were taken from one end of the boat and in the absence of sapwood it is only possible to give a date after which the tree must have been felled, and in her report she concludes that the oak tree was chopped down after 1224 A.D. but not later than 1300 A.D. It is reasonable to assume that the boat was made shortly after the tree was felled, so that its construction took place sometime between these dates.

To obtain a clearer picture of the boat, as it would have been when in use, Gavin Edwards produced from all the pieces, a reconstruction in section (Fig. 3). This drawing will be of great value when the boat is eventually put on display.

**Discussion**

It is unfortunate that so much damage was done to the boat, but the Gas Board made every effort to store the remains under water until proper arrangements could be made for its preservation. They also arranged for photographs and drawings while the boat was in their custody. We console ourselves with the thought that but for the Gas Board agreeing to re-route the pipeline to avoid a wildlife conservation area the boat would not have been discovered, and but for the diligence and skill of the excavator operator the boat would almost certainly have been completely destroyed.

The boat is of special interest because it is a true dugout and is the earliest of the three dugout boats to have been discovered so far in Cumbria. The first was found in Whinfell Tarn and the only record is in a report in 1888 by H. Swainson Cowper.' This boat, which was made from a single trunk of ash, was seen lying on the bottom of the tarn but was not embedded in the mud. On the evidence of a local inhabitant it had still been in use some 40 or 50 years earlier. Swainson Cowper emphasised the possible late use of dugout boats by quoting an account from the manor of Hawkshead.
Whereas the fishery of Blaylome Tarne is become forfeited to the lady of this manor for no payment of the rent of 2s. per ann., and Clemt Rigg, gent., of Hawkshead, having undertaken (for the consideration of an oak tree to be delivered out of Braithwaite garrs) to pay eight shillings, the arrears of said rent, & to continue the payment of the accruing rent I do therefore, so far as in me lies, order and authorize to take possession of the said fishery, and do also direct the Bailiff of said manor to deliver such oak tree for the making of a boat for the fishery, & that Mr. Benjamin Brown be acquainted with the delivery of the said tree.

20 Nov. 1716.

If this is correct, it means that primitive dugouts were in use in Cumbria as late as the mid-19th century. Dugouts are known to be associated with crannogs, and were in use until the late mediaeval period.

In 1955 a dugout boat (Fig. 4) was found during excavations for diatomaceous earth by the Cape Asbestos Company in Kentmere. Our members, Miss Clare Fell and Dr J. E. Spence were involved and a carbon date of 1320 ± 130 years was subsequently obtained. However, the Kentmere boat differs from that found at Wasdale Beck in that it is a composite boat, more sophisticated in its method of construction. It consists of a dugout hull to which four naturally curved ribs of oak were fixed by nails; to these were attached five strakes, nailed clinker fashion, on each side of the boat. In proportion it is similar to the Wasdale Beck boat, being about a metre longer overall and about 10 cms wider but it differs markedly in section; the Kentmere boat being more V-shaped while the Wasdale Beck boat is almost flat bottomed (Figure 7). Both boats have what could be a rowlock still preserved, but whereas in the case of the Kentmere boat it is a separate piece which has been attached to the upper side of the boat, in the Wasdale Beck boat it is an integral part of the dugout shell.

The measurements of the three boats for comparison is given in Table 1.

<table>
<thead>
<tr>
<th>Material</th>
<th>Interior Length</th>
<th>Exterior Length</th>
<th>Exterior Width</th>
<th>Internal Depth</th>
<th>External Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shap</td>
<td>Oak</td>
<td>3.05 m</td>
<td>3.43 m</td>
<td>75.0 cm</td>
<td>21.0 cm</td>
</tr>
<tr>
<td>Kentmere</td>
<td>Oak</td>
<td>4.10 m</td>
<td>4.25 m</td>
<td>61.0 cm*</td>
<td>48.0 cm</td>
</tr>
<tr>
<td>Whinfell Tarn</td>
<td>Ash</td>
<td>2.60 m</td>
<td>3.00 m</td>
<td>48.5 cm</td>
<td>15.5 cm</td>
</tr>
</tbody>
</table>

*refers to the dugout portion only.

Other clinker built boats of early date, based on a dugout hull, have been found in Europe, but usually the dugout portion acts merely as a keel plate so that these are closer in form to the modern clinker-built boat.

Wasdale Bottom is now a boggy valley stretching away to the south of the “Pink” quarry with Wasdale Beck, a tiny stream running through it, but in the distant past it was a small lake which probably silted up and the valley was said to have been drained towards the end of the 19th century by a farmer to create more grazing land for sheep. In view of the close proximity of Shap Abbey, it is quite possible that in mediaeval times this lake was used to provide fish for the monks, and this would account for the boat in this isolated location.

All the technical reports, drawings and photographs used in the compilation of this paper are to be deposited with the Society.
FIG. 2. Wasdale Beck boat showing the position of the patch and possible rowlock. It illustrates the extent of the damage.
FIG. 3. Wasdale Beck boat – a reconstruction drawing.
Acknowledgements

We would like to acknowledge the assistance of Ian Caruana and Taryn Nixon and to express our thanks to John Gater for the photographs of the boat and for the interest and help he has given us in our investigation. We are most grateful to Mrs Diana Matthews and the Windermere Nautical Trust, Gavin Edwards for sending us his drawings of the boat, and Alex Bayliss, Scientific Dating Co-ordinator, English Heritage, for his advice. We are especially grateful to Dr Goodburn for the detailed information on the making of the boat and Cathy Groves for her report on the dendrochronology.

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