

the similar runes 'o', 'a' and 'æ'. He gives 'æ' for 'a' (25), 'o' for 'a' (29), and 'a' for 'o' (33), though the last is not a glaring mistake, for the outer stave of the lower arm of the rune is very faint, and it appears as 'a' in a number of later drawings. It is unlikely, then, that Bainbrigg's version was influenced by any previous knowledge of runes, and it can be looked upon as a rather fumbling attempt to represent what he actually saw.

Of the four characters indicated by Bainbrigg before 2, three can be readily identified. The first is a cross, the third 'n', the fourth 'd'. 'd' is here given the older form, but, as in the case of 6, this is probably a mistake. The second character cannot be identified with certainty. Formally it seems to be 'æ', but in view of Bainbrigg's difficulty with this type of letter it may have been 'o', 'a' or 'æ'. 'æ' is not possible in the context, but both 'o' and 'a' are. The text then began with '+ond' or '+and'. Either reading would fit into the space available on the stone.

The cross at the beginning is paralleled in a number of runic inscriptions—those, for example, of the Dover grave-stone, the Falstone 'hog-back' and the Great Urswick and Thornhill stones—while early drawings of section *c* of the Ruthwell *Dream of the Rood* text show that that too once began with a cross, which seems to have disappeared towards the end of the 18th century. The verbal prefix *and-* appears in OE as a doublet of the *on-*, found in the *on3 yrede* of the parallel Vercelli text. *And-* is properly a stressed form found in nominal and adjectival compounds, *on-* appearing as its unstressed equivalent proper to verbs. Confusion of use does, however, sometimes occur in Old English, with the result that *and-* is evidenced in verbal compounds.¹¹ *Ond-* is a common variant spelling of *and-*, produced by the partial rounding of earlier *a* before a nasal consonant. Both *o* and *a* are used as symbols for this sound in early Northumbrian texts, *o* spellings predominating.¹² Unfortunately the sound does not occur again in the Ruthwell texts, so we do not know how the Ruthwell rune-master represented it. The first word of section *a* of the *Dream of the Rood* text must, then, be transcribed '[+_{nd}]geredæ', where the second character is either 'o' or 'a'.

One other point deserves mention in connexion with Bainbrigg's drawing. o·4 in. to the right of the crossing of rune 23, 'g', and on the centre-line of the line of runes there now appears a small dot. This could be accidental, but section *b* of the text begins '[.]|icr|iicn|æky|niŋ|c' (*ahof ic ricne Cynin3* in the Vercelli text), after the last letter of which there is also a small dot, this time less likely, judging from its appearance, to be intentional. Accidental pitting of the surface at this part of the stone is, however, rare, and the two dots appear each at the end of the first verse line of its text. They could then be punctuation points. The lack of punctuation elsewhere in the runic texts of Ruthwell is not a significant objection, for Old English punctuation is irregular, both in written and in epigraphical material. The accidental appearance of two dots in such positions would be something of a coincidence, and strong evidence would be needed to reject them. Nicolson did not show them, but this may have been because he did not notice them or did not regard them as important. The *a* dot is first given in pl. 57 of Gordon's *Itinerarium septentrionale*, but Gordon does not show the *b* dot, which is first recorded in A. de Cardonnel's pl. lv in *Vetusta Monumenta*, II (London, 1789). The fact that Bainbrigg does not show the point after rune 23 of the *a* text may be thought further evidence for the belief that these dots are accidental. R. I. PAGE

CROSS-DATING OF ANGLO-SAXON TIMBERS AT OLD WINDSOR AND SOUTHAMPTON

Specimens of timber from the Saxon town of Old Windsor, excavated by B. Hope-Taylor, have been subjected to tree-ring analysis. The ring-patterns of the two specimens

¹¹ A. Campbell, *Old English Grammar* (Oxford, 1959), p. 31 and note 1.

¹² *Ibid.*, p. 51, note 2.

examined were found to match; measurements of these rings have now made it possible to build up a master plot covering 250 years of the Saxon period.

Southampton timber (from Pits 11 and 17 at Saxon Hamwiĥ) had been previously used as the basis of a floating chronology for the Anglo-Saxon period (Schove and Lowther in *Med. Archaeol.* 1 (1957), 78 ff.; and cf. Schove, 'Droughts of the dark ages and tree-rings', *Weather*, x (1955), 368-71, 395). It had been supposed that the huts were after 770 on archaeological grounds and, on the assumption that the ring for the notorious drought-year 764 was included in the specimen, tentative dates (714-835) were added to the diagram. It was pointed out then that the meteorological evidence 'in the early period is too fragmentary to be decisive'. I have now met the excavator, M. R. Maitland-Muller, and learnt that the assumption that the huts were after 770 was unjustified. My provisional dates, together with the two alternatives suggested, must therefore be rejected.

The archaeological evidence for dating Hamwiĥ merely provides a *maximum* date in the 9th century; there is no minimum date. The coin-find dated *c.* 845 mentioned previously (Schove and Lowther, 1957, p. 82) related to a different kind of pit (no. 36). Likewise, although red-streaked glass which might be 9th-century Carolingian had been found in Pit 16, that pit appears to have been cut into Pit 17 and must therefore have been *later* than the Hamwiĥ timber. The tentative dates previously indicated will therefore be termed below 'maximum' dates.

The two floating chronologies, thus established separately for *Old Windsor* and *Southampton*, were compared with one another. They were found to match over a period of 70 years. The agreement between the two curves is close, and this is illustrated—in inverted form—by 'disagreement percentages' (Schove and Lowther, 1957, p. 81). For consecutive ten-year periods these are as follows:

Old Windsor ring numbers	%	Hamwiĥ 'maximum' dates
21/30	25	726/735
31/40	35	736/745
41/50	30	746/755
51/60	35	756/765
61/70	40	766/775
71/80	35	776/785
81/90	30	786/795

Had the agreement been accidental, a disagreement percentage of 50 would have been expected in at least some of the periods. After 795 the agreement breaks down for some unknown reason. However, as the percentage is never greater than 40 per cent. over seven consecutive decades, the matching of the two curves must be real. Ring 250, therefore, should on this basis correspond to the year 955. Allowing for a further ring or so to the bark, we reach a 'maximum' date of 960 ± 5 for the felling of the Old Windsor timbers.

When this tree-ring date of 960 was initially put forward, in correspondence, for the Old Windsor timbers, the excavator pointed out that all the archaeological evidence is consistent with a dating in the 9th century (most probably in its first half) for the mill of which these timbers were part. At that time I had supposed that the Hamwiĥ material was reliably dated by coins and meteorological evidence, and I therefore attempted to check that the 10th-century date was correct by matching it with timber from early Norman buildings.

The inner part of a single 'Norman' specimen from Westminster Abbey provides rings for the whole of the 10th century, and these rings had previously been measured by A. W. G. Lowther (Schove and Lowther, 1957, p. 83, specimen WA/1). No satisfactory match with the Old Windsor timber could be found at *c.* 960 or at any other 10th-century date. This could be explained by a different microclimate of the two oak

trees when alive, but it is more likely that the tentative Hamwih dates, the 'maximum' dates, were too late by about a century.

The precise dating of these timbers cannot be determined satisfactorily at this period from meteorological evidence alone. The famous three-year drought of St. Wilfrid, *c.* 678-81, despite the contemporary authority of Bede (*c.* 730), may be legend, for certainly there is no indication of a drought of such severity in either the Hamwih or the Old Windsor curves.

Overlap with precisely-dated timber, both earlier and later, is now necessary. The only dated earlier timbers known are the fragments of St. Cuthbert's coffin at Durham Cathedral, dated *c.* 698, and the possibilities that these may help are being investigated by B. Colgrave and Rosemary Cramp. Later timber spanning the 9th and 10th century may soon be found, and a single specimen of Saxon timber covering 200 rings might well provide the absolute dates required. Such timber, if found wet, should be cut diagonally—to 'magnify' the rings—and left to dry slowly in polythene bags.

The tree-ring evidence, in the meantime, can only prove that the Old Windsor trees were cut about 120 years after those on the Hamwih site. The absolute dates of *c.* 960 and *c.* 840 initially put forward for the two sets of timbers must now be abandoned. The stages, described above, which have led to this view may be summarized as follows:

- (1) The excavator pointed out that the archaeological evidence at Old Windsor was not consistent with a 10th-century date.
- (2) No satisfactory correspondence could be found between the tree-rings at Old Windsor and those known to be 10th-century at Westminster.
- (3) The basis on which the provisional Hamwih dating was constructed (*i.e.* the 764 tree-ring and a coin of about the 840's) was found to be insecure.

The procedure must now be reversed; the archaeological evidence at Old Windsor must determine the dating of the Hamwih timber. The relative dating is established by the tree-ring method and the provisional archaeological dating of the Old Windsor material therefore implies that the Hamwih timbers were felled in the early 8th or late 7th century.

D. J. SCHOVE

NOTTINGHAM MEDIEVAL TOWN WALL, CHAPEL BAR

(PL. XXVII, FIG. 100)

In the autumn of 1958 the Corporation of Nottingham, while demolishing old properties in the angle between Park Row and Chapel Bar, encountered what must be part of the medieval town wall. It was decided to preserve it and ultimately to make it accessible to visitors.

The site is about $\frac{1}{4}$ -mile N. of the Castle, and 30 ft. E. of the front of the houses in Park Row. It was already known that Park Row and Parliament Street represented this line of the wall, which had been seen on several occasions in Parliament Street, and at least once (but not recorded) in Park Row. The gate known as Chapel Bar, 40 ft. to the N., survived until 1743, and was sketched by Nicholas Hawksmoor in 1680 and by Paul Sandby in 1742.¹³

The property under which the discovery was made had not (fortunately) had cellars immediately below ground level, though there were, here as everywhere in the centre of the city, cellars of unknown date at a lower level, cut out of the soft sandstone. The wall was found after a bulldozer had removed part of it, in making new cellars, its lowest course more than 11 ft. below present ground level. The surviving portion

¹³ A print of Sandby's sketch was published in Deering's *Nottingham* (1751), sect. 1, p. 3; Nicholas Hawksmoor's book of sketches is in the library of the Royal Institute of British Architects. Thoroton's *Nottinghamshire* (1677) also includes a view of the gate in the 'prospect of Nottingham from Derby Road' on p. 49. The opening was flanked by drum towers.