Report 1677

Dendrochronological analysis of the Fountains Abbey yew tree.

A large number of transverse sections were collected from near the base of the trunk of a large yew tree which fell recently at Fountains Abbey. It had been hoped that the tree would provide a tree-ring sequence of several hundred years to be used for radiocarbon analysis, but unfortunately this aim could not be achieved as rot had totally destroyed the inner area of the tree. Yew is a very compact coniferous wood, which is unusual in it's ability to form a trunk from several fused stems, thus causing extreme curvature and great variability in absolute width of the annual rings. It also shares with other conifers the capacity to form double rings, sometimes recognisable as a faint band of latewood cells, at others resembling true rings, and on occasion rings may also be missing. This causes some difficulty in assigning calendar years to particular rings; it may be resolved by measuring a large number of samples, or by checking a small number ring by ring, both being extremely time-consuming.

In this case, two sections have been analysed; the annual ring boundaries were clarified by cutting with a sharp knife, the rings measured with a x10 lens containing a 1/10mm. scale, and the values plotted on logarithmic recorder paper. About 200 rings were preserved in each section, and the ring sequence is illustrated in the accompanying diagram (h/s = the heartwood-sapwood boundary). Growth is very sensitive, and the two curves match well until about year 155 from where section 1 shifts by about 4 years. Some comparison between these curves and the recent oak curve for the north-east is apparent.

An estimate has been made of the original age of the tree from the average number of rings per centimetre, which is 7. The tree's circumference was about 6.25 m. giving a radius of about 1m. The mean of the two plotted radii is 200 rings per 70 cm. which indicates an age of between 650 and 700 years. The yew tree must have been planted at the abbey sometime around 1300 A.D.

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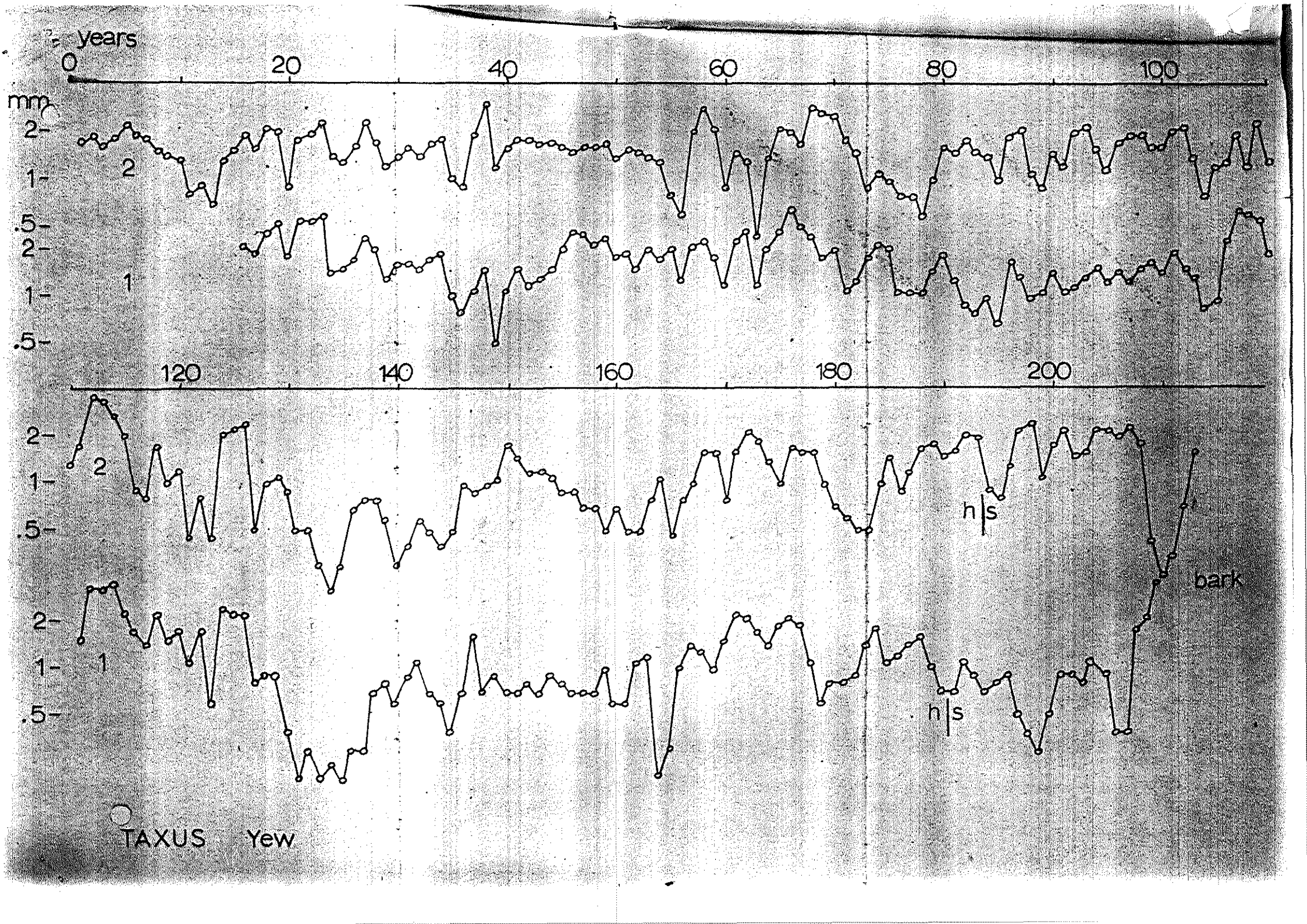
May, 1974.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