Assuming that the fossil wood found within the tree containing reptilian remains, belongs to the trunk of that tree, it affords the following data for calculating the age of the tree and the date of deposition of the containing beds.

In a large transverse slice of this wood, ~~are seen~~ numerous slender dark waving bands traversing the cellular tissue in a direction corresponding to that of the medullary rays. Cropping these are three broader bands, parallel to each other, and apparently indicating denser cellular tissue, like that seen at the margins of the rings of annual growth in recent trees. Such rings of growth are well known to occur in Coniferous wood found in the Coal formation, and Mr Dawson has described wood of with the structure of the araucarian pines and distinct growth rings, in the eastern prolongation of the Joggins Coal measures at Cape Malagash.[x] That they ought to occur in Sigillaria, may be inferred from its exogenous mode of growth which is maintained by Lindley & Hutton and admitted by Brongniart, and strongly confirmed by some appearances observed in erect trunks found at the Joggins.[xx]

The bands supposed, for the above reasons, the rings of annual growth, now measure 0.15 inch

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[x] Lindley & Hutton Fossil Flora 0.14. Journal of Geol Soc vol 2. P 133

[xx] Brongniart, though admitting the exogenous growth of Sigillaria, hesitates on account of the persistance of regular rows of scars to the very root. Erect trunks at the Joggins show two modifications of the scars at the base, evidently owing to increase of diameter

in width. The bending of the medullary processes, however, indicates compression, and it may be assumed that the fragments of ~~wood~~ in question are portions of the outer surface of the wood which fell in after the trunk became hollow, and therefore show narrower growth rings than those nearer the centre. On these grounds, we may allow two lines (⅙ in.) for the average breadth of the rings of annual growth, which for a specimen 22 inches in diameter gives an age of 55 years. The other tree in the same bed ~~is~~ may have been older. Of course the six-inch coal on which these trees stand, must have existed as a soil supporting a forest, for at least half a century, and probably much longer.

The time occupied in the deposition of the sandstone enclosing these upright trees, may be roughly estimated from its character and fossils. It is fine grained, ~~and~~ argillaceous, and thinly laminated, and has carbonaceous films on its surfaces of deposition, indicating a gradual and intermittent mode of accumulation, and making it possible that the trees may have continued to grow for some time after the sand began to be deposited. At the height of about two feet above the coal, is a surface on which calamites and trees with stigmaria roots have grown, and are now standing. One of the latter is a foot in diameter, and therefore probably required

thirty years for its growth. At a second level, parallel with the middle of the erect calamites, are a few Stigmaria roots, but no importance need be attached to these, as they may have descended from a higher level with roots, more than a foot below the tops of the erect trees ~~last mentioned~~ first noticed, and nearly parallel with the layer in which the tops of the erect calamites are broken off. Thus no erect stumps stand on this surface, the number and size of the Stigmaria roots show that it must have supported large trees, and it is probably much under the truth to estimate the time during which it was a forest soil at another thirty years. Without making any allowance then for the deposition of sand between these two levels of forest roots, and above the upper one, the time occupied in the burial of this two largest erect trees must have been 60 years, ~~and~~ which added to 55 years gives 115 years as the minimum time required for their growth and decay, until they were finally broken off and their hollow interiors filled with sand. During this time, the locality must have been first a peaty swamp and then a muddy flat, on which trees and brakes of calamites grew and were gradually silted up by periodical inundations, and on which reptiles may have lived and multiplied during the whole period, though their remains have

perhaps been [illegible] in the hollow trees into which ~~the stone~~ of them fell toward its close. The beds both above and below that which contains these trees, show that similar conditions existed without interruption for some time both before these trees began from the soil, and after they were entirely decayed and covered.

It may be mentioned that other facts seen in the Joggins section, indicate that Sigillarieae were woody plants, not liable to more rapid decay than the ordinary deciduous trees of modern forests.

Wood of Respt tree