consisting of numerous thin plates radiating from the pith to the circumference, intersecting the concentrical layers, and visible in almost all kinds of wood; in the oak every tube is touched by them at short distances, and slightly diverted from its course. These plates, it is supposed, perform some important functions in the circulation of the sap. *Ruffin on Calcarious Manures, chap.* 12 *and* 13; *Rees' Cyclo. v. Circulation of Sap and Silver Grain; Thompson's Chem. b.* 4, *c.* 3, *s.* 3; *Roget Anim. and Veget. Physi. pt.* 1, *c.* 1, *s.* 3.(*d*)

86 * It has been often said, not only that the age of a tree may be ascertained by the number of its concentrical layers; but that their closeness or distance from each other indicates the slowness, or the rapidity of their growth. The concentrical layers of the wood of the live oak, (*quercus virens,*) are very close, and it is very hard and heavy. The concentrical layers of the wood of the white cedar, (*thuya occidentalis,*) which grows near the falls of the Potomac, are also very close; as many as one hundred and seventeen have been found in a log of little more than thirteen inches in diameter; but the wood is very light, soft, and fine grained. Yet the closeness of the concentrical layers of the wood in these two species of trees, differing so widely in all other respects, is said to shew the extreme slowness of their growth. 1 *Mich. Am. Sylva.* 59; 2 *Mich. Am. Sylva.* 359. The rapid growth of the catalpa, and the loblolly pine, is said to be proved by the great width of their concentrical layers. 1 *Mich. Am. Sylva.* 330; 2 *Mich. Am. Sylva.* 289. But the wood of the locust, (*robina*

(*d*) "To illustrate the theory, that vegetables extract their matter chiefly from the atmosphere, and are of course a powerful vehicle for fixing and bestowing atmospherical manure on the earth, the following fact is circumstantially related, on account of its complete application and to expose it to investigation. Some years ago, a locust tree at Colonel Larkin Smith's in the County of King and Queen, and State of Virginia, received an injury which made it necessary to cut away entirely the bark around its body for eight or ten inches, so that its bark above and below was wholly separated, without a cortical vein between. The wound was entirely covered with a close bandage of some other bark, which lapped beyond the edges of the wounded bark, above and below. And the tree was left to its fate. The plaster bark never grew to the tree, but the edges of the wounded bark, gradually approached each other under its shelter, and after several years met and united. By the time the wound was healed, the body of the tree above had became one-third larger than its body below it. And though several years have elapsed, the latter has not been able to overtake the former. The upper part of the tree, rooted in the air, vastly outgrew the under rooted in the earth. Therefore it must have drawn either its whole or chief sustenance from the atmosphere. Indeed between the bark and the wood of most trees, and of the locust particularly, we find the chief channel of their juices; and the communication of these juices were utterly cut off so that neither portion of the tree could supply the other."—*Arator, by John Taylor, of Caroline, p.* 85.