Supposing it to be true, that all our forest trees are sustained only by the circulation carried on immediately under their bark,

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apply to endogens, as well as to exogens. The origin of the fibro-vascular system is presumed to be the same in both cases; and so also its development, except in the single particular of its arrangement."

"There are certain facts respecting the production of the wood, which have been established by careful and oft repeated experiments. To these we will first attend. The first of these is, that the wood, or at least the material of which the wood is formed, is elaborated in the upper part of the plant, and sent downward; and not in the root, and sent upward. This has been established by such experiments as the following; early in the spring a light ligature was tied around a young branch, and in this condition the branch was suffered to remain for the season. On examining it, towards autumn, the part above the ligature, was found to have increased in size, whilst that below had remained unaltered. A ring of bark was removed from a growing stem of a young tree, when the wound commenced healing, the new woody matter was formed on the upper lip of the wound, and not on the lower. Second, the new wood is produced, either from the bark, or between the bark, and the wood of the last year, and not by that wood. This was proved by Du Hamel, in the following manner: having carefully introduced plates of tin foil, between the bark and wood of a growing tree, he suffered it to remain undisturbed for several years. On cutting across the stem, at the end of this time, he found, that the new layers of wood had been deposited on the outside of the tin foil, without in the least disturbing it. Third, the origin of the wood is in some way intimately connected with the action of the leaves. It has long been known, that the diameter of a stem depends very much upon the number of leaves which it bears; and that the larger the number of leaves developed upon a stem, the greater will be its diameter, and the more rapid its growth. And also, that the largest quantity of wood is always found on that side of a stem which developes most leaves. But had we only these facts, on which to base a judgment, we might hesitate which to consider the cause and which the effect; whether to believe that the luxuriance of the stem arose from the increased number of the leaves, or the increased number of leaves from the luxuriance of the stem. This question, however, has been determined by direct experiment. Mr. Knight stripped off the leaves from the upper portion of a young shoot; as the consequence, the shoot died as far down as the leaves were removed, whilst below that point, it flourished. He afterwards insulated a single leaf, by removing a ring of bark, at some distance above the point at which it was inserted into the stem, and another at an equal distance below that point. In the course of the summer a perceptible increase in the wood took place above the leaf, but none below it. In another instance, he removed a narrow ring of bark from the lower part of a growing stem; the stem afterwards increased sensibly in diameter down to this ring; but not at all between the ring and the leaf next below it. From these and similar facts he has inferred, that the matter of which the wood is formed, is elaborated in the leaves and sent downwards. Fourth, the portion of wood formed each year, is entirely independent of, and distinct from, that of every other year; and when once formed, undergoes no change, except the slight change which takes place when it is converted from sapwood into heartwood. In confirmation of this, many curious facts may be mentioned. On what are called "line trees," in the west, certain marks are made when the land is first divided off into lots. This is done