

greater part of the rain which falls upon the tree, is made to drop from the leaves at the exact distance from the trunk, where, after it has soaked through the earth, it will be received by the extremities of the roots, and readily sucked in by the spongioles. We have here a striking instance of that beautiful correspondence, which has been established between processes belonging to different departments of nature, and which are made to concur in the production of such remote effects, as could never have been accomplished without these preconcerted and harmonious adjustments.

The spongioles, or absorbing extremities of the roots, are constructed of ordinary cellular or spongy tissue; and they imbibe the fluids, which are in contact with them, partly by capillary action, and partly, also, by what has been termed a *hygroscopic* power. But though these principles may sufficiently account for the simple entrance of the fluids, they are inadequate to explain its continued ascent through the substance of the root, or along the stem of the plant. The most probable explanation of this phenomenon is, that the progressive movement of the fluid is produced by alternate contractions and dilatations of the cells themselves, which compose the texture of the plant: these actions being themselves referrible to the vitality of the organs.

The absorbent power of the spongioles is limited by the diameter of their pores, so that fluids which are of too viscid or glutinous a consistence to pass readily through them are liable to obstruct or entirely block up these passages. Thus, if the spongioles be surrounded by a thick solution of gum, or even of sugar, its pores will be clogged up, scarcely any portion of the fluid will be absorbed, and the plant will wither and perish: but if the same liquids be more largely diluted, the watery portion will find its way through the spongioles, and become available for the sustenance of the plant, while the greater part of the thicker material will be left behind. The same apparent power of selection is exhibited when the saline solutions of a certain strength are presented to the roots: the water of the solution, with only a