

small proportion of the salts, being taken up, and the remaining part of the fluid being found to be more strongly impregnated with the salts than before this absorption had taken place. It would appear, however, that all this is merely the result of a mechanical operation, and that it furnishes no evidence of any discriminating faculty in the spongiole: for it is found that, provided the material presented be in a state of perfect solution and limpidity, it is sucked in with equal avidity, whether its qualities be deleterious or salubrious. Solutions of sulphate of copper, which is a deadly poison, are absorbed in large quantities by the roots of plants, which are immersed in them: and water which drains from a bed of manure, and is consequently loaded with carbonaceous particles, proves exceedingly injurious when admitted into the system of the plant, from the excess of nutriment it contains. But in the ordinary course of vegetation, no danger can arise from this general power of absorption, since the fluids which nature supplies are always such as are suitable to the organs that are to receive them.

The fluid, which is taken up by the roots, and which, as we have seen, consists chiefly of water, holding in solution atmospheric air, together with various saline and earthy ingredients necessary for the nourishment of the plant, is in a perfectly crude state. It rises in the stem of the plant, undergoing scarcely any perceptible change in its ascent; and is in this state conducted to the leaves, where it is to experience various important modifications. By causing the roots to imbibe coloured liquids, the general course of the sap has been traced with tolerable accuracy, and it is found to traverse principally the ligneous substance of the stem: in trees, its passage is chiefly through the alburnum, or more recently formed wood, and not through the bark, as was at one time believed.

The course of the sap, however, varies under different circumstances, and at different epochs of vegetation. At the period when the young buds are preparing for their de-