

Transpiration. It has been a readily attained and rather generally accepted view that the abscission of leaves may be induced by disturbances in the water relations. The promptness with which many desert plants lose their foliage with approaching drought and their readiness to refoliation, even though stimulated thereto by such moisture as might be absorbed by their branches from rain (Lloyd, 28), as I have shown experimentally to be the case in *Fouquieria*; the dropping of leaves by houseplants on too meagre or too generous watering, both go to show that, directly or indirectly, such conditions may induce abscission. The early shedding of tendrils in *Ampelopsis*, above cited, may have been due to excessive transpiration. That merely reduction of water content of the leaf is, however, inadequate, in itself, to produce the result is shown by the fact that daily "incipient drying" and actual wilting, which we know from observation (Lloyd, 29), (Livingston and Brown, 30) to occur, is not followed by any such result. Desiring to produce abscission by reducing the water supply to organs known to be able readily to be caused to shed, I did the following experiments: A large sector (90°) of tissue was removed in a dozen cases from the stem below the insertion of the tendril in *Ampelopsis Virginiana*, and it was found impossible to induce abscission, although it will occur in cut branches in 36 or 48 hours in a moist chamber, without measureable loss of turgor, though doubtless there was some. The wounds healed, and they were later examined microscopically, and all the vascular supply to the tendrils was found to be extirpated for a distance of 5 to 10 mm. The water supply must then have passed around the wound, travelling laterally below and above it, yet either without the least prejudice to its movement or quantity, which is difficult to believe, or, if such prejudice obtained, without inducing abscission.

For some time I held the view that the peculiar anatomical relation in the flowering branch of the cotton was responsible for much of the boll-shedding. The view had been expressed that the shedding of fruit by orchard trees, said more often to occur near the ends of the branches, is due to the more favourable position of the proximal, since these are nearer the source of supplies.¹⁰ The occurrence of the vascular tissue in an organ of limited secondary thickening (the flower-stalk) alongside that in one of unlimited secondary thickening, namely, the functionally chief axis, seemed to supply a possibility for an increasing prejudice to the water supply of the boll as growth of the whole

¹⁰Sorauer, P. Abwerfen der Früchte. Handbuch der Pflanzenkrankheiten.