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II. On the Morphological Import of certain Vegetable Organs

Christopher Dresser Ph.D.

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Daily exercise is absolutely necessary for health out here.

Dr. Livingstone and I have had fortunate health all along, although constantly in the most malarious districts, such as the Mangrove swamps of the Suabo, or the low lands of Senna and marshes of the Shire; out the whole day in the sun or rain. I believe the exercise more than counterbalances all these. One day when exposed to the sun, dissecting a young elephant, I found I could not stand it at all; had I been walking I should not have felt it.

We are not without our own politics here, even in this outlandish place. The slave-trade goes on briskly from one of the mouths near Quillimane, to supply the demand at Bourbon. Those in power being of the French party, wink at it. The authorities are poorly paid, and have to make it up by other means. Trade is difficult; they lay themselves out for nothing but ivory and gold. They might have cotton and sugar, and that without the use of guano, as is required in Mauritius, and by the very hands they ship off to the French. The whole of Suabo, at the mouth of the river, is splendid cotton and cane land, and in the hands of the Portuguese. Those up the Shire are quite beyond their power; and even at Shupenya, near Senna, they have to pay tribute to the Landeens. They have last autumn finished the war with Mariano, who set himself up as independent; but there is still a great robber within a few miles of the town of Tette, which every canoe must pass on its way to Quillimane. We expect the Governor-General of the Province here immediately; he comes to establish his brother at Tette, as Governor of a new district which they call Zambezia, and which was formerly under that of Quillimane. We shall feel the want of Senhor Tito, the former commandant, who ought to have been made governor; he is the best man for it. We shall have to change our quarters, being at present established in the Residency at Tette.

II. *On the Morphological Import of certain Vegetable Organs.*

By CHRISTOPHER DRESSER, Ph.D.

The author gave the results of his investigations into the morphological import of certain vegetable structures, especially those entering into the composition of the flower.

He commences his argument by contending that bud-scales, or *Perulae*, are in many instances not metamorphosed leaves, but merely flattened petioles. He appeals to examples in *Acer* and *Æsculus*, where not unfrequently the bud-scales are furnished with small laminæ at their extremity, while they themselves remain unaltered. This proves, he considers, that the bud-scales are not metamorphosed or rudimentary entire leaves, but only represent petioles.

The tubercular papilla at the point of the normal bud-scale, and which is the first part that appears in its development, suffers what he terms a quasi-paralysis, or arrest of development; while, in the abnormal examples cited, this arrest does not take place, but the papilla proceeds to be developed into a lamina, as in the true leaf—the so-called transmutation in these instances resulting only from a more or less complete evolution of this papilla.

The author then endeavours to prove that the *Calyx*, in many instances, is a whorl of petioles—laminae, in these cases, not entering into its composition. He refers, 1st, to the calyx of lavender, where one of the sepals develops a little lamina, which is more or less completely articulated to it; 2d, to the calyx of *Mussenda macrophylla*, where one sepal develops a lamina, while the other sepals, which are normal, are precisely parallel to the petiolar portion of the developed one; and lastly, to the monstrous calyx of a rose (which was exhibited), where from the sides and apex of the sepals, leaflets in various states of development were seen to spring, while the sepals themselves retained more or less completely their flat, phyllous, and conical normal form; in this instance the sepals are not *transmuted* into true leaves, but leaflets are developed upon their sides. This mode of reasoning is the same as that by which the *Phyllodium* of the acacia is universally regarded as a leaf-stalk, simply because a compound leaf is sometimes emitted from its apex.

Regarding *Petals*, the author adduces the following:—That petals continually become sepals in monstrous flowers, and this most commonly in flowers whose sepals have most manifestly a petiolar origin, as in roses; again, that in the *Caryophyllaceæ* flowers occur having petals with the most fully developed and clearly defined claws and limbs, while in those plants the leaves are so constantly sessile as to afford a characteristic of the race. From these circumstances he infers that in some cases, probably in roses, the petals result from petioles; whereas in other cases (as in the *Caryophyllaceæ*) they result from entire leaves. He does not, however, consider that, in these latter plants, the claws and limbs of the petals correspond to petioles and laminae. "It seems contrary to reason to suppose that all the normal leaves of the plant should be sessile, as well as the leaves composing the outer floral envelope (the sepals); whereas the members of the inner floral envelope (the petals) should be raised upon long stalks."

Regarding the *Stamens*, the author urges arguments similar to those applied to the petals. The stamens may pass through the stages of petals and sepals, so "that whatever is the nature of the petal, such is the nature of the stamen also." Moreover, that in plants with sessile leaves, the filaments and anther cannot correspond to petiole and lamina. He also refers to a monstrous stamen of *Tradescantia virginica*, where one-half of the stamen was converted into a petaloid member, which extended from the base of the filament to the summit of the anther, indicating that here the *whole stamen* corresponded to the sessile petal, and that there was thus no distinction, in this case, into petiole and lamina.

The author inclines to the belief that the carpel is in some cases equivalent to a petiole, from the fact that in certain cases monstrous carpels develop their ovules into rudimentary leaves. He does not, however, insist strongly upon this point, since he does not think it yet proved that ovules may not be true buds.

Professor Balfour read the following letter, which he had received from Sir Thomas B. Hepburn, Bart., of Smeaton:—

I wish to call your attention to what seems to me to be peculiar in the mode in which the *Sequoia* or *Taxodium sempervirens* sheds its leaves.

The leaves themselves do not fall, but the small branchlets drop off as if each branchlet was a pinnate leaf. I have not observed this remarked on in any descriptions of the tree which I have seen. I send a fresh extremity of a branch, and some of the fallen branchlets, which will show you what I wish to describe better than I can do it in words. The tree from which the specimens were taken was planted a small seedling in 1844, and is now about 28 or 29 feet high. Its mean annual growth for the last five years up to December 1858 has been about feet 4 inches. It has not yet blossomed.

8th December 1859.—Professor BALFOUR, V.P., in the Chair.

The following Gentlemen were elected Fellows of the Society:—

As Resident Members.

R. J. B. CUNYNGHAME, Esq.
DYCE DUCKWORTH, Esq.

As Non-Resident Member.

WILLIAM KEDDIE, Esq., Lecturer on Natural Science.

As Foreign Member.

DANIEL JEROME M'GOWAN, M.D., Ningpo, China.

The following Office-bearers for the ensuing year were elected:—

President.

Professor ALLMAN.

Vice-Presidents.

Dr W. H. LOWE.
Dr SELLER.

ANDREW MURRAY.
Professor BALFOUR.

Council.

FINDLAY ANDERSON.
J. G. BOOTH, Jun.
GEORGE S. LAWSON.
Dr JOHN CLELAND.
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