

circle to an indefinite number, the increase being chiefly in the inner ones. Whenever a flower presents a crowd of similar organs, whether manifestly in successive circles, or by their closeness thrown into a confused mass, the explanation which first occurs to the botanist is multiplication of the circles, whether there may be sometimes reasons for rejecting this and seeking another may be afterwards considered.

3. Our third principle relates to the position of the circles. The most natural and general is with the parts of each (the numbers conforming) alternate with those of the circles without and within it. This evidently depends on the same spiral plan of growth which produces the arrangement of leaves on a stem, the members of the successive circles being indeed produced in the same plane, but when some growth becomes necessary to obtain space for another circle, the advance of the axis being as usual spiral, and to a degree just sufficient to make the parts alternate, but besides that a whole circle may be so nearly suppressed by close pressure, as to be scarcely, if at all, perceptible, which would make those immediately within and without appear opposite, the alternation being maintained by the unnoticed intermediate circle, which is doubtless the true explanation of the stamens opposite to the petals in the Primrose family, it is quite conceivable that in certain cases the spiral course might be either prevented, or carried too far for alternation, the parts thus becoming opposite and abnormal examples occurring in which this is seen to take place, proves that we are justified in assuming it as a sufficient explanation of the rare instances in which adjoining circles with opposite parts occur. Dr Lindley has justly appealed to varieties of *Camellia*, in which the petals are ranged in regular lines, giving the flower a star-like aspect as proof of the possibility of the opposite arrangement taking the place of the alternate, and those who think otherwise are driven to the most extravagant suppositions to evade the force of his argument. But I must afterwards recur to this subject in another connection. At present I wish to show the real nature of the law of alternation, and the possibility of deviation from it in exceptional cases, without disturbing our idea of the plan of structure or driving us to imagine other causes in operation.

4. The degree and mode of development of the separate leafy organs which form each circle may vary from the smallest to the fullest extent, and through several remarkable differences of form. All the parts of the flower consist of leaves modified in their development, and