

leaves, as the several species of *Ranunculus* and of *Lactuca*. Nor will color or shape of the flowers help us better; for what has *Vitis* in common with *Ceanthe*, except the resemblance of the flower?" He then goes on to say, that if we seek a too close coincidence of all the characters we shall have no Species; and thus shows us that he had clearly before his view the difficulty which he had to attack, and which it is his glory to have overcome, that of constructing Natural Orders.

But as the principles of Cæsalpinus are justified, on the one hand, by their leading to *Natural Orders*, they are recommended on the other by their producing a *System* which applies through the whole extent of the vegetable kingdom. The parts from which he takes his characters must occur in all flowering-plants, for all such plants have seeds. And these seeds, if not very numerous for each flower, will be of a certain definite number and orderly distribution. And thus every plant will fall into one part or other of the same system.

It is not difficult to point out, in this induction of Cæsalpinus, the two elements which we have so often declared must occur in all inductive processes; the exact acquaintance with *facts*, and the general and applicable *ideas* by which these facts are brought together. Cæsalpinus was no mere dealer in intellectual relations or learned traditions, but a laborious and persevering collector of plants and of botanical knowledge. "For many years," he says in his Dedication, "I have been pursuing my researches in various regions, habitually visiting the places in which grew the various kinds of herbs, shrubs, and trees; I have been assisted by the labors of many friends, and by gardens established for the public benefit, and containing foreign plants collected from the most remote regions." He here refers to the first garden directed to the public study of Botany, which was that of Pisa,<sup>17</sup> instituted in 1543, by order of the Grand Duke Cosmo the First. The management of it was confided first to Lucas Ghini, and afterwards to Cæsalpinus. He had collected also a herbarium of dried plants, which he calls the rudiment of his work. "Tibi enim," he says, in his dedication to Francis Medici, Grand Duke of Etruria, "apud quem extat ejus rudimentum ex plantis libro agglutinatis a me compositum." And, throughout, he speaks with the most familiar and vivid acquaintance of the various vegetables which he describes.

But Cæsalpinus also possessed fixed and general views concerning the relation and functions of the parts of plants, and ideas of symmetry

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<sup>17</sup> Cuv. 187.