

Conjointly with physiology, botanical geography shows the distribution of plants all over the globe, their struggle with the elements, their migrations, and already raises a portion of the veil which covers the obscurity of their origin. All this ought to offer a real interest to horticulturists. We are beginning to have the power of expressing in figures the effect of each climate upon vegetation; consequently, the possibility of a given species enduring the mean or extreme climatal conditions of that country to which it is desired to introduce it. Already we can show, in the clearest manner, the analogy between the vegetation and climate of certain regions, widely separated the one from the other, and point out in which cases new attempts at cultivation should be tried or where they should be discouraged. A celebrated geologist was able to say, beforehand, there is gold in such a part of New Holland; and gold was found there. We can also say, the olive tree and the cork oak will succeed in Australia; the eastern and temperate region of the United States is favorable to the growth of Chinese plants, more particularly to that of tea; and we can assert that that part of America included between San Francisco and the Oregon territory will, one day, supply wines as varied and as excellent as those European ones produced between Portugal and the Rhine.

It is a singular fact, that the two principal beverages of the civilized world, wine and tea, which produce similar stimulating effects, but which to a certain extent are the substitutes one for the other in different countries, present also in the mode of cultivating them the most marked resemblances and differences. The vine and the tea-plant succeed best on stony, barren hill-sides, of which they sometimes increase the value a hundred-fold. According to the exposure, the soil, the cultivation and manner of preparing the produce, wine and tea are obtained of unquestionable excellence; while the neighboring crops, but a short distance off, may be more or less ordinary in quality. The two shrubs require a temperate climate, but the vine needs heat and no rain during summer, while the tea-plant requires rain and but little summer heat; the result of which is, that these two species are almost geographically incompatible. Vine-growing countries will never produce tea, and *vice versa*.

But you will say, these examples belong rather to agriculture, and concern neither botany nor gardens. I maintain the contrary. It is science, in the present day, which points out what plants to cultivate, and into what countries to introduce them. Horticulture makes the trial, with infinite pains. If successful, the young plants are submitted to the less refined treatment of agriculture. Before the happy introduction of Cinchonas into British and Dutch India could be effected, botanists were required to collect, distinguish, and carefully describe the various species of American Cinchonas; horticulturists were then called on to make cuttings, gather the seeds, raise the young plants, transport and establish them in another part of the world; and so at last they were passed over to the care of the agriculturists. The coffee-plant did not spread gradually from Arabia to India, from India to Java; nor was it the American colonists who brought it from its original country to their fazendas or haciendas. The shrub was first described by botanists and was afterwards introduced by the Dutch into a garden at Batavia; from thence it was taken to the Botanical Garden at Amsterdam, from whence a specimen was sent to the King of France in 1714. DeClicu, a naval officer, transplanted it from the garden at Paris to the French colonies in America. A multitude of such instances might be named. In the present day science has progressed, practical men avail themselves of it, governments and nations have abandoned those mistaken ideas in accordance with which it was supposed that a cultivation advantageous to one country was injurious to others. Hence we may hope to see, before long, useful species planted in all regions where they can thrive, to the great advantage of mankind in general.

One of the most evident effects of science has been to create in the horticultural public a taste for varied and rare forms. Formerly in gardens there were only to be found certain kinds of plants which dated back to the time of the Crusades, or even of the Romans. The discovery of the New World did not produce a change in proportion to its importance; perhaps because horticulturists did not travel enough, or acquaint themselves with those countries whose species were most suitable for cultivation in Europe. Botanists, fortunately, were more ambitious. Their collectors were numerous and daring. They enriched their herbaria with an infinitude of new forms, and published works upon exotic plants, such as those of Hernandez, Rumphius, Sloane, &c. The immense variety in the forms of plants was thenceforth recognized, and in point of taste the elegant simplicity of the primitive flowers was able to vie with the gaudiness of the double ones. Then ceased the reign of tulips and pæonies in flower gardens. Curiosity, that great incentive to all science, having penetrated horticulture, the change in gardens became rapid. Instead of a few hundred species such as were cultivated at the commence-

ment of the last century, there are now 20,000 or 30,000 to be found in most of the present catalogues. The single family of Orchids has probably more different representatives in our hothouses than was the case with all the families of plants put together, a hundred years ago. Fashion, united to the present curiosity of amateurs, causes, from time to time, old plants to be abandoned for new ones; and thus the entire vegetable kingdom will ultimately pass under the observation of civilized man.

What would horticulturists do, amidst this invasion of thousands of species, had not botanists devised convenient plans of classification and nomenclature? The families, genera, and species, have all been arranged in books, just as the districts, streets, and numbers of the houses are in our gr at capitals—with this superiority of method, that the form of the objects indicates their place—as if, in looking at a house in a town, one might discover, at a glance, to what street and what quarter it belonged. The plan of giving a single name to each species, besides its generic name, together with the prohibition of changing names without due reason, of giving the same appellation to two different species or two genera, far exceeds our plan of distinguishing individuals. How much it would simplify our intercourse with men, and facilitate our inquiries, if, in the whole world, the members of one family only bore the same name, and if each individual had but one christian name, differing from those of the other members of his family. Such is, nevertheless, the admirable plan of nomenclature that science has provided for horticulturists, and which they cannot too much appreciate and respect. (2)

3. *The beneficial effects of the association of Botany with Horticulture.*—The pursuit of horticulture demands books and herbaria, as that of scientific botany requires cultivated living plants. Thence the necessity, which is more and more recognized, of bringing together the materials for comparison in the same town, the same establishment, and even under the same administration, organized so as to facilitate the use of them. How many institutions in Europe, either private or public, would be benefited by this arrangement! How many towns and countries are now deficient—some in libraries, some in herbaria, some in respect to horticulture. Professional men proffer their complaint; let us hope that public opinion may end by listening to them. (1)

The bringing together the means of study, I have said, is desirable. Not less so is the interchange of ideas and impressions, both of botanists and horticulturists. Each of these classes must clearly have distinct characteristics; but the one should be influenced by the other. By these means, some too retiring dispositions may be brought out, and certain dormant powers developed. Horticulture, for instance, has a commercial tendency which may be carried too far. Charlatanism may slide in among flowers. Botany, on the contrary, is a science, and consequently rests on the investigation of pure and simple truth. A horticulturist who allows himself to be influenced by a scientific spirit necessarily frees himself from over-selfish tendencies. Natural history, on its side, by reason of the perfection of its method, its nomenclature and its minute observations, has something technical and dry about it, which contrasts with the grandeur of nature, and with the sentiment of art. It is for horticulture, combining, as it does, the planning and the decorations of gardens, to develop the æsthetic faculties of the savant, as of the world in general. A lovely flower, beautiful trees, a splendid floral exhibition, excite a sort of admiration, and even enthusiasm, similar to the effects produced by music or painting.

The powers of the German composers of modern days, and those of the Italian painters of the 16th century are justly extolled; but may it not also be said, that in point of art they are equalled in their way by the beautiful parks of old England? The feeling of harmony,

(2) Two years ago I made a request to the Fédération des Sociétés d'Horticulture Belges, which appears to have been favorably received, and it may not be useless to repeat it here. It consisted in begging the horticulturists who obtain new varieties not to give them botanical names, with a Latin designation, but merely arbitrary names of quite a different nature, in order to avoid confusion and useless researches in books. For example, if they called a *Calceolaria*, *Sebastopol*, or *Triomphe de Gand*, every one would understand it meant a garden variety; but if they named it *Lindleyi*, or *mirabilis*, one would think that it was a botanical species, and would search for it in scientific works, or in the *Floras* of Chili; and botanists, happening perhaps to mistake it, would add it to the end of a genus in their books as a species imperfectly known. The more horticultural names differ from Latin ones, the better it is, unless they can be appended to the scientific nomenclature: as when we say *Brassica campestris oleifera*, instead of, shortly, *Colza*.

(1) The Botanical Gardens at Kew are a fine example of what should be done, either on a larger or a more modest scale, in many towns where the means of study are yet inconvenient or incomplete.