

The odours of plants are due to principles very unequally distributed in the various organs; some are solid, as balsams and resins; others are liquid, and are called essences or essential oils. In the majority of cases the essence concentrates in the flower, as is seen in the rose and violet; in other plants, such as the vetiver (*Anatherum muricatum*) and orris (*Iris Florentina*), the root alone is perfumed. In the cedar and santal it is the wood, in mint and patchouli it is the leaf, in the Tonquin bean it is the seed, and in canella it is the bark which are the seats of the odorous principles. In the orange the leaves yield the essence known under the name of "petit-grain," the flowers furnish the "neroli," and from the rind of the fruit is obtained the "essence de Portugal." A great number of vegetable odours are obtained from tropical plants, but the European flora furnishes a large proportion, and nearly all the essences employed in perfumery are of European origin. In England are cultivated lavender and peppermint; at Nîsmes the cultivators pay particular attention to rosemary, thyme and lavender; Nice has the specialty of the violet; Cannes extracts the essences of rose, tuberose, cassia (*Acacia Farnesiana*), jasmin, and neroli;* Sicily gives the citron and orange; Italy the Iris and bergamot.

Modern chemistry has allotted nearly all vegetable odours to three categories, namely, hydrocarbons, aldehydes, and ethers. Apart from a small number among them which contain sulphur—as the essences of the family Cruciferæ—they all present the same qualitative composition, carbon and hydrogen, with or without oxygen. The proportions of these three constituents change, but always in regular gradations, as hydrocarbides, aldehydes, and ethers. Here, as in all organic chemistry, everything depends upon the proportions of the constituent principles; the qualitative constitution imports so little that a variation in the proportional weights of these constituents gives rise to an infinite variety of distinct compounds which have not the slightest resemblance to one another.

But the wonderful properties of the elements, and the mysterious energies with which matter is endowed, are apparent in the still more remarkable phenomenon, known under the name of isomerism. Two bodies, completely dissimilar in their properties, may present absolutely the same ultimate composition, both qualitatively and quantitatively. But, it may be asked, in what do they differ? They differ in the arrangement of their molecules. Charcoal and the diamond are identical as to their matter; ordinary phosphorus and amorphous phosphorus are one and the same substance. Now, the inodorous principles of plants supply some extremely curious ex-

* Grasse and Cannes, which are the principal centres for the manufacture of essences in France, produce 150,000 kilograms of perfumed pomades and oils per annum, and nearly 7,000 kilograms of pure essence of neroli, petit-grain, lavender, rosemary, and thyme, a quantity that represents a prodigious number of flowers. Orange-flower water is reckoned by millions of litres.