from light, as Sir Humphry Davy remarked ; and the flower of honeysuckle, which continues white while the light is excluded, acquires its red hue on exposure to light and air. It has not however as yet been ascertained what influence air and light exert on the colour of flowers. Ellis believes that, as in the case of leaves, the predominance of air and alkali may be the cause of the different colours of the petals. It is, however, probable that the chemical condition of the juices themselves, or the textures by or through which their colours are reflected or transmitted, are modified by variations of structure in the organs, which altogether escape detection, and become known only in their effects. Du Hamel considered many varieties of colour in the flower to arise from the intermixture of different species and varieties of plants, at the period of fecundation. Poppies and prim­roses, which grow wild in our fields, are respectively red and yellow; but the same plants, transferred to our gardens, furnish a prodigious number of varieties. If the wild variety of primrose be removed from its natural place, and set to grow among cultivated varieties of the same kind which possess different colours, the seeds obtained will produce many yellow flowers, because the parent plant will have been fecundated by some of its own stamens ; but it will also afford other varieties, because some of the seeds will have been produced by fecundation of neighbouring plants. Many of the fine varieties of flowers which florists procure by means of seeds, seem to be thus obtained. They in­deed attribute them to some particular infusion with which they have watered their seeds, or to some colouring matter which they have mixed with their soil, or even to some differ­ently coloured bodies which they have presented to their plants, or to a singular good fortune peculiar to themselves. “ I have tried without success,” says Du Hamel, “ these infusions and these mixtures of colours; and I deem it un­necessary to resort to experiment to destroy the other two means.” In the ultimate production of colour, modifica­tions may also proceed not only from the texture of the parts, but the configuration of their external surface, as exempli­fied in the prismatic tints of “ mother-of-pearl,” which, ac­cording to the observations of Sir David Brewster, owe their existence to the configuration of the surface alone. Schubler and Funk, in a memoir published at Tübingen in 1825, have made some interesting observations on the colour of plants. They have divided flowers, in reference to their colours, into two series : 1st, the Xanthic series, or those having yellow for their type, or which are capable of passing into red or white, but never into blue ; 2d, the Cyanic series, or those having blue for their type, and capable of passing into red and white, but never into yellow. For an account of these observations, as well as those of Köhler, on the colours prevalent in different natural orders, &c. we must refer the reader to the memoirs themselves, as it is impossible, in the space allotted to us, to give any thing like a correct view of the subject. From numerous experiments made on various leaves and flowers, Dr. Hope was led to the conclusion, that *chronogen,* or the colourable principle, is not an individual substance, as hitherto supposed, but that there are two distinct principles, one which forms a red compound with acids, which he names *erythrogen,* and another, which affords a yellow compound with alkalies, which he calls *xanthogen.* These principles exist sometimes separately, and sometimes to­gether in different plants, or in different parts of the same plant. All green leaves, all white, and all yellow flowers, and white fruits, contain xanthogen alone ; while in red and blue flowers, and in the leaves of a few plants which exhibit the former of these tints, the two principles oc­cur together. Light, says Dr. Hope, is indispensable for the production of the green chromule of leaves, but not for the formation of some of the finest tints of flowers and fruits, if essential for any; differences probably connected

with the fact, that the formation of the green colour in leaves is always accompanied, or rather preceded, by the evolution of oxygen gas.

2. *Odour of Flowers.*—Next to colour, the property in flowers that most strikes our senses is their odour. Other parts of plants, indeed, possess odour ; but the finer and more diffusible fragrance that emanates from them proceeds commonly from the flower. Of the peculiar organs in flowers which form and emit odorous particles, but little is known. Their ordinary seat is probably in the *corolla,* since many flowers, which are wholly destitute of sexual organs, emit their peculiar odours. Of the nature of the odorous matter, all we at present know is, that it is inflam­mable ; and this property, M. de Saussure considers to depend rather on the presence of an essential oil, than on any variety of hydrogen gas. That light is more especially concerned in its production seems probable from the fact, already stated, that the most pungent odours cease to be formed in plants which are kept secluded from light ; but are speedily produced in them when restored to its pre­sence. In climates and situations where the sun exerts the greatest influence, plants possess the most exalted odours and the most active inflammable ingredients; but of the mode in which the solar rays act in thus contributing to pro­duce odour and inflammability in plants, little is at present known. Schubler and Köhler have also made observa­tions on the odour of plants, as connected with colour ; for which we must refer to the memoirs already mentioned.

3. *Savour of Flinvers.—*Connected with the odour of plants, at least in the mode of its production, is the property which they possess of imparting sensations of taste. This pro­perty is more generally distributed through the vegetable, and is of a much less fleeting and diffusive nature than that of odour. Tastes have been regarded either as simple or compound ; and of each a great diversity is to be found in plants. Tastes differ also in quality, degree, and duration ; are more or less fixed or diffusible ; and, in some instances, affect variously the different parts of the organ which re­ceives the impression. Of all these, and some other varie­ties, Grew has given examples, taken from the savours of the juices found in the wood, bark, and root, or in the leaves, flowers, and fruits of various plants.

In general, however, the roots, and all those parts that are secluded from light, have a taste milder and less intense than others ; and, as we before remarked, plants, possessing naturally a hot or bitter taste, become mild, or even sweet, by the exclusion of light, and resume their pungent and acrid qualities if brought into day. Light, therefore, exerts a direct action in the formation of the savours as well as of the odours and colours of plants. The odour and savour are commonly more concentrated in some parts than in others ; and when formed in the leaves, they are frequently mixed with the proper juices, and more or less pervade every part of the plant. Although, therefore, the action of light, in the production of colour, odour, and savour, be, in the first instance, *local,* or confined to those plants, and parts of plants, exposed directly to its influence, yet these properties may afterwards be diffused, by the motions of the fluids, through all parts of the vegetable, including even those buried beneath the soil, and thereby protected from the action of light. From the whole it appears probable, that all the effects, simultaneously pro­duced in plants by the direct agency of light, are in posi­tion local, in operation chemical, and in nature entirely distinct from that series of actions accomplished by the air, and which contribute to their evolution, nutrition, and growth.

4. *Fecundation of Flowers.—*Although in appearance the flower differs so much from the leaf, yet in structure it is very similar ; and, for the due performance of its pro­per functions, not only requires the presence of the same