in the same piece of ground. Similarly, the iridescent tints in the shells of mussels, oysters, and other submarine or subaqueous animals can be of no service to the species; in fact, instead of being of use, they often prove the species' undoing, since man fancies these tints and calmly appropriates the shell for his own.

It may be said, however, that, in the majority of instances, color is of advantage to plants. The brightest-colored blossoms are most successful in attracting pollinating insects, and there is considerable evidence to show that flowers cater to the esthetic tastes of the latter by producing the hues they like best. Bees are reputed to be fond of blues and violets, while wasps fancy red and chocolate-colored flowers. Insects uneducated in the matter of color are supposed, like the uneducated human animal, to like "any color of flower so long as it is yellow."

Not only do the plants lay themselves out to please their insect admirers by the selection of the right shade of color, but they go still further and display, upon petal or sepal, colored guides to the place where the nectar is secreted. Not infrequently the color of these guides changes with the age of the flower, thus indicating to the insect where the newest stores of nectar are located. In the catalpa, the linear honey-guides within the corolla are at first deep yellow, and later turn to orange brown. The horse-chestnut has a lemon-yellow spot at the base of each white petal that finally turns deep purple. In the toad-flax, the young flowers have a yellow palate which at length becomes deep orange. In some instances, the whole flower may change color. The common bush honeysuckle opens citron-yellow and later turns to scarlet; one of the climbing species of honeysuckle opens white and turns light orange; the shephardia opens white and turns to cream-color; while the hound's tongue is first red and then purple.

The causes of these color-changes is still somewhat obscure. Probably they are due to chemical processes in the cells, which are stimulated into activity by the pollination of the flower. This appears to be the more probable, since different chemicals in the soil are regarded as the cause of color-changes in other flowers. In New England the meadow lily is yellow; in the Middle States, red. Kerner has noted several species in the Alps that change color with the location. A bell-wort with white flowers in one soil produced blue ones in another. A violet was blue in one locality and yellow in another. A vetch found in the Tyrol was yellow, and the same species in Hungary was violet. In the central Alps, the alpine anemone is sulphur-yellow, in the eastern Alps it is white. A botanist who recently experimented with the color-changes in flowers was able to turn yellow, blue, pink and red flowers to green by adding alkali, and to turn them back to their original color when acids were added. From his experiments he concludes that flowers have but three pigments, red, yellow and blue, and that from these, by various combinations, all the others are produced.

To chemical changes in the fruit are undoubtedly due the bright colors which fleshy fruits assume in the process of ripening. Indeed, the chemical reactions in fruits seem often to determine the shade of color they shall assume. Small amounts of the pigment called anthocyanin, or carotin, may give the fruits a yellow or orange color; more of the same pigment makes them red, and a superabundance turns them black. The fruit of the blackberry runs through all these changes from youth to maturity.

The way in which colors are borne in the plants is also a matter of interest. In purple, violet, and blue fruits the color is diffused through the cell sap. In red and yellow specimens it may be borne in this way, also, but is more commonly borne in small bodies in the cell, which are called chromoplasts, and are related to the chloroplasts which make the leaves green. White flowers are white for the same reason that snow is white—because the light is reflected back from a multitude of tiny surfaces. In the flower, these surfaces are the walls of empty cells. When the petals of such flowers become water-soaked, they lose the power to reflect light and become almost transparent.

One of the most curious and interesting things in connection with this subject is what is known as the correlation of color. By this is meant that if a certain color is met with in one part of the plant it is likely to appear in others. Plants that produce red flowers usually have a red tinge to the stems, petioles, and veins, even when seedlings, and white-flowered forms are noticeably paler. The gardener often takes advantage of this to separate his plants from a mixed sowing into their different groups according to color, while they are yet in the seed-bed. But he can go still further. It is well known that deep-colored flowers are produced from the darkest seeds; and in plants that produce flowers of a variety of tints, such as snapdragons, verbenas, and the like, the plants that will produce the deepest colors may be selected before the seeds are planted.

Finally, it may be interesting to recall the fact that there are very few genera of plants in which both red and blue flowers occur. There are violets of many colors, but no pure red ones; roses of many hues, but no true blue ones. Nasturtiums are never blue; gentians are never red. Some few genera may produce both types. The great lobelia, with its deep blue flowers, belongs to the same genus that contains the cardinal flower, the most vividly red species in all our flora. Ordinarily, however, the flowers in a single genus run either from white through yellow and red, or from white to lavender and blue.

The Limit.

The following amusing story concerning Madam Sarah Grand, the well-known novelist, was told by a personal friend of hers.

It appears that the gifted author of "The Heavenly Twins," is very absent-minded. One day her friend, calling on her unexpectedly, found her with a big awkward volume on her knee, heated, excited, and evidently very much put out.

"Is anything the matter?" asked the caller.

"Oh, yes," she answered, desperately; "I've lost my pen, and I want to write to catch the post."

"Why, where are you looking for it?"

She glanced at the questioner and then at the book.

"I—I believe," she faltered, "I was looking for it among the p's in the dictionary."

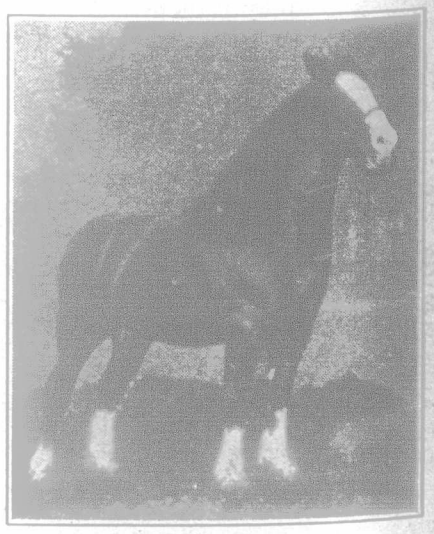
During an Episcopal convention in Boston one of the bishops had an experience he will long remember. He was a portly man weighing over three hundred pounds. One afternoon while walking through Boston Common he sat down on one of the benches to rest. When he attempted to get up he failed in the effort. He tried again and failed. About this time a little girl poorly clad came along and was attracted by the struggles of the bishop. Stepping up to him she exclaimed:

"Don't you want me to give you a lift?"

The bishop gazed at her in amazement and exclaimed:

"Why you can't help me. You are too little."

"No I am not" she replied. "I have helped my pa get up many times when he was drunker than you are."—Homiletic Review.



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