

two fields of wheat alongside of each other are ready for fertilization at the same time, the pollen may be carried from the one to the other by the wind, the one field will produce pure grain, while the other may be largely crossed or hybridized.

We now come to the most interesting part of our subject, which is to show the important duties performed by insects in the process of fertilization. All plants requiring their aid display certain attraction or hang out advertisements which mean "Good entertainment for bees and butterflies free." But where free lunches are provided some advantage is expected from the treat. The most prominent attractions are (1) Brilliant and varied colors, which render them conspicuous from a distance. All flowers admired as beautiful for their red, white, blue, purple, violet, lilac or other colors, or for the varied colors arranged in lines or dots are intended to catch the eyes of the insects and secure their attention. Expanded color surfaces are conspicuous from a distance, white and yellow being often very noticeable in the twilight. The different colors are adapted to the aesthetic tastes of different classes or species of bees, butterflies and other insects. (2) Odors of various kinds and in different degrees of intensity, are also allurements inviting the attention of insects. Some plants are only fragrant in the twilight when certain moths flutter round and visit them; some emit the odor of decaying flesh and appeal successfully to the blue-bottle flies and similar carrion living insects. (3) The real attraction, however, is the nectar, the sweet liquid which most flowers produce. The bright colors and the fragrance are merely the advertisements announcing the presence of the feeding places. When the nectar is concealed in some deep and safe recess where wet cannot injure it, many plants have lines or dots upon some of their petals to point out where it may be found, and thus save their visitor's time. What advantage does the plant derive from its elaborate preparation for the furnishing of free entertainment? The answer is easily perceived. The insect carries the pollen to the spot where it is needed. The great law of vegetable life is "Get fertilized, cross fertilized if you can," and these are some of the means by which it is obeyed. (4) Another set of adaptations is conspicuous in these entomophilous flowers. The grains of pollen are mostly moist or glutinous, or roughish or studded with projections, or strung with threads so as not to be readily dispersed in the air, but to have some slight coherence as well as capability of adhering to the head and limbs or bodies of insects. The stigma is also fitted for the reception of the pollen by roughness, moisture or glutinosity. It is also worthy of notice that the bodies of insects are covered with hairs or bristles and rough excrescences, to which the pollen grains adhere till they come in contact with the stigma which is fitted to receive them. It is true that in the realm of nature that no one liveth to himself, not even an insect.

A few examples of the need of insects at the proper time may illustrate their work and its value. Orchards and gardens may be a mass of blossom, but without the aid of nature's laborers few apples, strawberries or raspberries and absolutely no melons or cucumbers will be produced, however favorable the weather may be. For example Mr. Belt, the naturalist, tells us that in his garden at San Domingo, Nicaragua, he sowed some scarlet runner beans. The soil was good, the climate was favorable for bean life, and the scarlet runners grew and flourished, and finally blossomed abundantly, but there their career ended. They did not produce a single bean among them, simply because the right laborers were not at hand to give the requisite help to secure fertilization. The garden was a new one in the forest, the beans were foreigners and the species of bee who understood the wants of the scarlet runners was absent from the district.

When clover was sowed in Australia and New Zealand at first no seed was produced,—the busy bee was not there to fertilize the flower. Prof. Huxley used to say that the quantity of clover grown near London depended upon the number of old maids. These venerable ladies kept cats, the cats wandered round and killed the mice, the mice destroyed the bees' nests and the young bees, and the bees fertilized the clover. Our fruit trees are dependent upon the bees and any agency which lessened their numbers would be felt in the harvest. Take another case. When the young gooseberries, or what should be gooseberries, wither and drop in early spring, instead of swelling as they ought to do, it is not so much because they have been nipped, but that the frost has kept