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IMAGINATION OVER KNOWLEDGE

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The Bumble-Bee

The flowers with pollen were cut off, those with ovaries wrapped each in a separate gauze-bag. Every morning they went and watched the blossoming. With pollen taken from the cut flowers they powdered the stigmas of four or five pistillate blossoms. And it happened just as their uncle had said. The ovaries whose stigmas had received the pollen became pumpkins, the others dried up without swelling. Now, during these experiments, which were both a serious study and a joyful amusement, Uncle Paul continued his account of the flower.

“The pollen reaches the stigma in divers ways. Sometimes the stamens, which are longer, let it fall by its own weight on the shorter pistil. Sometimes the wind, shaking the flower, deposits the dust of the stamens on the stigma, or even carries it long distances for the benefit of other ovaries.

“There are flowers whose stamens behave in such a manner as to fulfil their mission. They bend over alternately and apply their anthers to the stigma, there to deposit some pollen; then slowly raise themselves to give place one to another. They might be regarded as a circle of courtiers depositing their offerings at the feet of a great king. These salutations at an end, the role of the stamens is finished. The flower fades, but the ovary begins to ripen its seeds.

"The vallisneria is a plant that lives under the water. It is very common in the Southern Canal. Its leaves resemble narrow green ribbons. It is dioecious, that is to say it has flowers with stamens and those with pistils on different plants. The pistillate flowers are borne on long, tightly curled stems. The blossoms with stamens have only very short stems. Under water, where the current would carry away the pollen and prevent its fastening itself on the stigmas, the quickening action of the stamens on the pistil cannot take place. So the vallisneria, fixed by its roots in the mud, is obliged to send its flowers to the surface of the water to let them blossom in the open air. It is easy for the pistillate flowers. They unwind the curl that supports them, and mount to the surface. But what will the staminate flowers do, fastened as they are to the bottom with their short stems?" "I don't know" answered Jules. "Well, by their own strength, without any external aid, these flowers pull away from their stems, break their moorings, and mount to the surface to rejoin the pistillate flowers. Then they open their little white corollas and free their pollen to wind and insects, which deposit it on the stigmas. After that they die and the current carries them away, while the flowers quickened by the pollen curl up again and descend once more beneath the water, there to ripen their ovaries at leisure."

"It is wonderful, Uncle; one would say those little flowers know what they are doing."

"They do not know what they are doing; they obey mechanically the laws of nature, which makes sport of

difficulties and knows how to accomplish miracles in a simple blade of grass. Would you like another striking example of this infinite wisdom that foresees everything, arranges everything? Let us come back to the snap-dragon.

“Insects are the flower’s auxiliaries. Flies, wasps, honey-bees, bumble-bees, beetles, butterflies, all compete with one another in helping by carrying the pollen of the stamens to the stigmas. They dive into the flower, enticed by a honeyed drop expressly prepared at the bottom of the corolla. In their efforts to obtain it they shake the stamens and daub themselves with pollen, which they carry from one flower to another. Who has not seen bumble-bees coming out of the bosom of the flowers all covered with pollen? Their hairy stomachs, powdered with pollen, have only to touch a stigma in passing to communicate life to it. When in the spring you see on a blooming pear-tree, a whole swarm of flies, bees, and butterflies, hurrying, humming, and fluttering, it is a triple feast, my friends: a feast for the insect that pilfers in the depth of the flowers; a feast for the tree whose ovaries are quickened by all these merry little people; and a feast for man, to whom abundant harvest is promised. The insect is the best distributor of pollen. All the flowers it visits receive their share of quickening dust.” “It is in order to prevent the insects coming from neighboring gardens and bringing pollen that you have had the pumpkin blossoms covered with bags of gauze?” inquired Emile.

“Yes, my child. Without this precaution the pumpkin experiment would certainly not succeed; for insects

come from a distance, very far perhaps, and deposit on our flowers the pollen gathered from other pumpkins. And very little of it is necessary; a few grains are enough to give life to an ovary.

“To attract the insect that it needs, every flower has at the bottom of its corolla a drop of sweet liquor called nectar. From this liquor bees make their honey. To draw it from corollas shaped like a deep funnel, butterflies have a long trumpet, curled in a spiral when at rest, but which they unroll and plunge into the flower like a bore when they wish to obtain the delicious drink. The insect does not see this drop of nectar; however, it knows that it is there and finds it without hesitation. But in some flowers a grave difficulty presents itself: these flowers are closed tight everywhere. How is the treasure to be got at, how find the entrance that leads to the nectar? Well, these



closed flowers have a signboard, a mark that says clearly: Enter here.”

“You won’t make us believe that!” cried Claire. “I am not going to make you believe anything, my dear child; I am going to show you. Look at this snap-dragon blossom. It is shut tight, its two closed lips leave no passage

between. Its color is a uniform purplish red; but there, just in the middle of the lower lip, is a large spot of bright yellow. This spot, so appropriate for catching the

eye, is the mark, the signboard I told you of. By its brightness it says: Here is the keyhole.

Press your little finger on the spot. You see. The flower yawns immediately, the secret lock works. And you think the bumble-bee does not know these things? Watch it in the garden and you will see how it can read the signs of the flowers. When it visits a snap-dragon, it always alights on the yellow spot and nowhere else. The door opens, it enters. It twists and turns in the corolla and covers itself with pollen, with which it daubs the stigma. Having drunk the drop, it goes off to other flowers, forcing the opening of which it knows the secret thoroughly.

All closed flowers have, like the snap-dragon, a conspicuous point, a spot of bright color, a sign that shows the insect the entrance to the corolla and says to it: Here it is. Finally, insects whose trade it is to visit flowers and make the pollen fall from the stamens on to the stigma, have a wonderful knowledge of the significance of this spot. It is on it they use their strength to make the flower open.

Let's summarise. Insects are necessary to flowers to bring pollen to the stigmas. A drop of nectar, distilled on purpose for this, attracts them to the bottom of the corolla; a bright spot shows them the road to follow. Either I am a triple idiot or we have here an admirable chain of facts. Later, my children, you will find only too many people saying: This world is the product of chance, no intelligence rules it. To those people, my friends, show the snap-dragon's yellow spot."