This photo shows tiny grains of pollen sticking to a honeybee.

Electrostatic Force and Bees

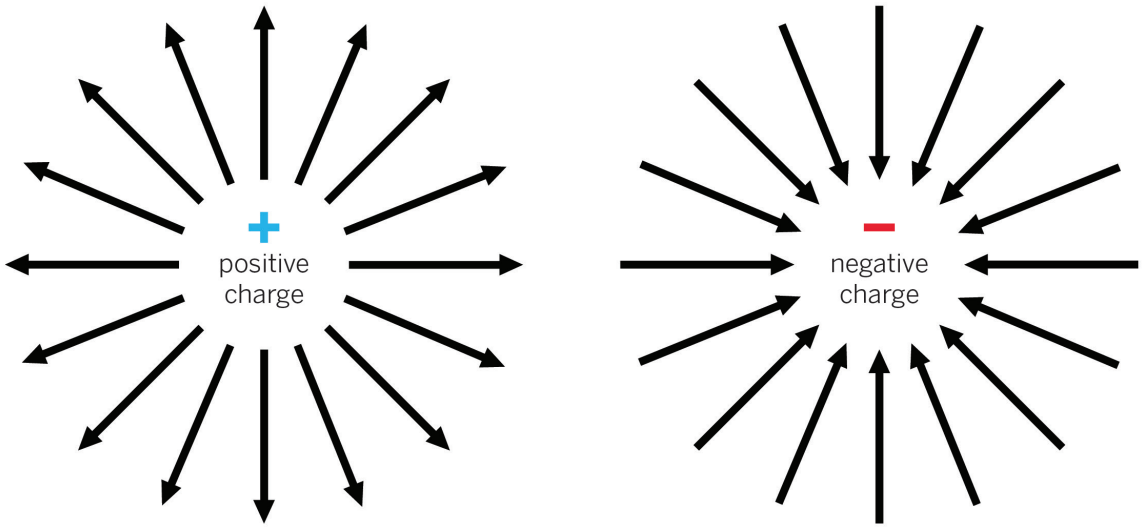
This honeybee has grains of pollen stuck to its hairy body. Why? The answer has to do with electrostatic force. That's the same force that causes socks to stick together when you take them out of the dryer.

Forces are pushes and pulls that can change the motion of an object. Some forces require that objects touch. For example, if you want to separate two socks, your hands have to touch the socks to exert the force that pulls them apart. Other forces, like electrostatic forces, can act at a distance. That means objects don't need to be touching in order to exert electrostatic force on one another. Electrostatic force happens between two objects with electric charges. Electric charges can be positive or negative. Two objects with the same charge (both positive or both negative) will repel each other—that means they push each other away. On the other hand, two objects with opposite charges will attract (pull on) each other.

Electrostatic forces can be explained by electrostatic fields. An electrostatic field is the space around a charged object where that object can exert electrostatic force on other objects. The greater the electric charge, the stronger the electrostatic force. Electrostatic force also becomes stronger as objects get closer together.

Why does a honeybee have an electric charge? Honeybees have tiny hairs all over them. As a bee is flying through the air, gas molecules in the air rub against the bee's hairs, giving the bee a slight positive charge. (In a similar way, you can pick up an electric charge by wearing socks and rubbing your feet across a carpet.) Flowers, on the other hand, have a slight negative charge. Electrostatic force causes negatively charged pollen from a flower to stick to the positively charged hairs of a honeybee. That's helpful for the bee, because bees use pollen as a food source. Electrostatic force helps a bee collect pollen and bring it back to the hive to share. The attraction between flowers and bees is truly electric!

Electrostatic Fields



There are two kinds of electric charge: positive and negative. In a diagram of an electrostatic field, the arrows show the direction of the force that would be exerted on a positive charge.