

FALCON

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DIRT

by **Joanne Wilke**

You are walking down a path. You kick a rock and it breaks. Did you know that you are helping make dirt? That's right, dirt, the grimy stuff that catches under your fingernails and stains your pants. What does a broken rock have to do with that?

Believe it or not, even rocks decay. Imagine a nice firm orange covered with mold. It becomes soft and rotten from the outside in. So does a rock covered with lichens. It softens and chips off, breaking into smaller and smaller pieces that finally become dirt. Billions of years ago, the world was made of more solid rocks and minerals. Wind, sun, water, and cold temperatures weathered the rock and caused it to decay into pebbles, sand, and silt. Things that are not alive are called inorganic matter, while parts of soil that come from decayed plants and animals are organic matter.

GLASS FROM QUARTZ

Soil contains lots of minerals, but some of the main ones are quartz, feldspar, iron, and mica. Quartz is a hard mineral. It looks like glass and glass is made of quartz. Different minerals color it into rose quartz, amethyst, or agates. If you look at a handful of sand, you see shiny particles of quartz. Feldspar and mica are softer minerals. They turn into clay. Feldspar can be pink, yellow, brown, gray, or white. If you find a stone that breaks into flakes, it is probably mica.

PUSHY PLANTS

Plants help make dirt, too. Their roots push into cracks and break apart rocks, boulders, even mountains. Whenever you see a weed growing in a crack in the sidewalk, you know dirt is being made there. Water collects in the crack. When the water freezes, it bulges and begins to break apart the sidewalk, or the rock or boulder. Dirt catches in cracks, too, allowing more plants to grow. Then, old leaves, roots, twigs, and bark are added. Anything that was ever alive, either plant or animal, decays into organic matter called humus (HYOO-mus).

ACTION-PACKED

There is always something going on in the dirt. Insects and spiders tunnel through the ground. Worms eat organic matter, mixing and mashing it into soil inside their bodies, aerating (AIR-ating--loosening) the soil as they go. Rabbits, gophers, prairie dogs, and even bears dig and tunnel through the ground, breaking up rotted stones and pieces of wood, and leaving behind broken seed husks, chewed grass, hair, and droppings. Mushrooms and toadstools grow on rotten wood and help crumble it into dirt.

Other organisms in dirt are called bacteria. They produce chemicals that slowly decompose and recycle organic matter into soil. If you look at rich, healthy soil under a microscope, you find millions of bacteria per tablespoon of dirt!

AH-H-H-H-H, SMELLS DIVINE

Healthy dirt, which is moist, crumbly, and almost fluffy, is a mixture of clay, silt, sand, and humus. It is called loam, and is usually black. Even though everything in it has decayed, it doesn't smell rotten. It smells rich. Some gardeners even say it smells sweet! It is alive with microscopic organisms. There is a whole community in a bucketful of loam.

Unhealthy dirt, on the other hand, is usually dry, hard, caked, or grainy--hard for anything to live in. If soil has too much sand, it doesn't have enough nutrients for plants or bacteria to survive. Any plants that try to grow are uprooted easily. If soil has too much clay, it becomes dense and lumpy, and roots and moisture can't get through it. Dirt needs a good quantity of humus and air spaces for bacteria and roots. It needs sand to absorb moisture, and it needs clay to hold it together.

DIRT HAPPENS EVERY DAY

Many gardeners add fertilizer to their soil because plants use up the humus. Often, gardeners bury livestock manure, which turns into humus over time. Or they add compost made from leaves, lawn clippings, and kitchen scraps.

If you crumble dirt between your hands, you will find all sorts of things: stones, twigs, leaves, bugs, feathers, bones, ashes, animal droppings, fingernails, hair, and--although you might not see it--skin. When your skin sloughs off in tiny flakes (which it does every day, even without a sunburn or dandruff) it goes into the soil, too. Every minute of every day, weather, plants, and animals are changing things into dirt. These changes are so slow and small that we cannot see them happening. But dirt is being made all the time--even by you.

Don't tell your mom!

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OVERNIGHT EXPERIMENT

Put a big handful of dirt in a jar, fill it with water, cover it, and shake it up. Let it stand overnight to settle, and see what happens.

Rocks and big clumps of soil end up at the bottom, then smaller, finer soil, and finally, fibrous pieces of humus settle over that. Any floating stuff is probably humus, too. If the dirt at the bottom is mostly coarse, it is sandy soil. If it is mostly fine, it is silt or clay soil.