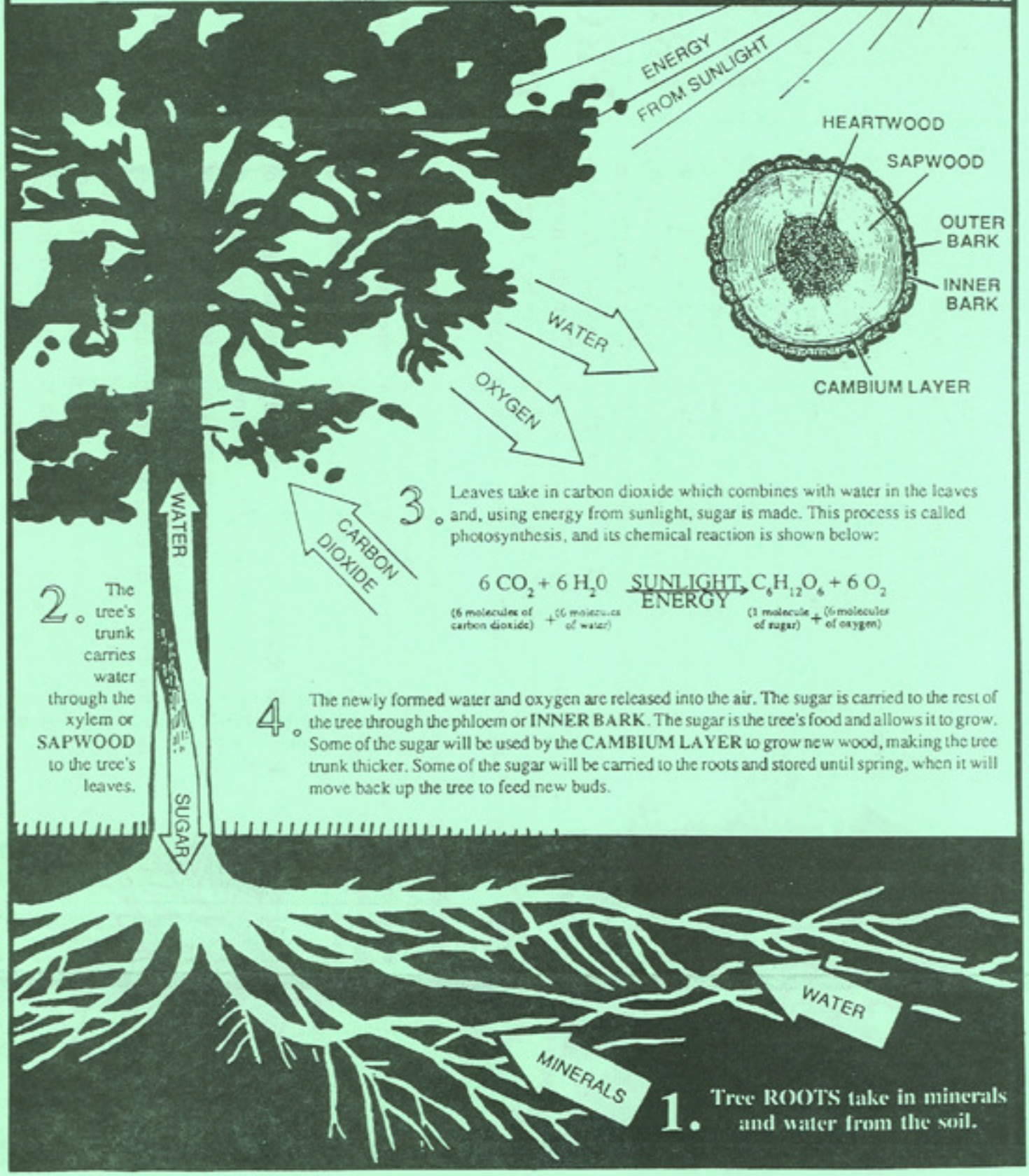
WHAT'S GOING ON IN THERE?



3. Leaves take in carbon dioxide which combines with water in the leaves and, using energy from sunlight, sugar is made. This process is called photosynthesis, and its chemical reaction is shown below:

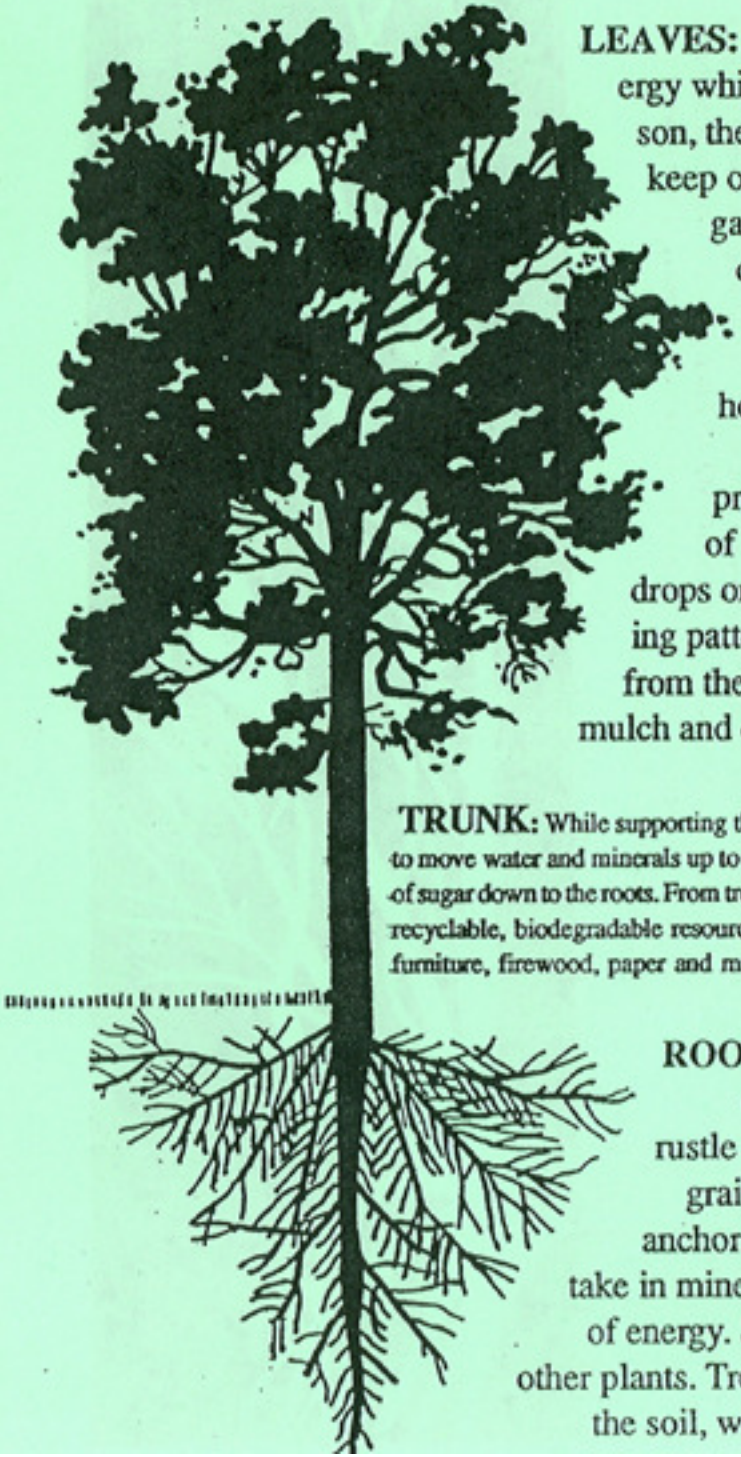
$$6\,CO_2 + 6\,H_2O \xrightarrow[\text{ENERGY}]{\text{SUNLIGHT}} C_6H_{12}O_6 + 6\,O_2$$

(6 molecules of carbon dioxide) + (6 molecules of water) → (1 molecule of sugar) + (6 molecules of oxygen)

2. The tree's trunk carries water through the xylem or **SAPWOOD** to the tree's leaves.

4. The newly formed water and oxygen are released into the air. The sugar is carried to the rest of the tree through the phloem or **INNER BARK**. The sugar is the tree's food and allows it to grow. Some of the sugar will be used by the **CAMBIUM LAYER** to grow new wood, making the tree trunk thicker. Some of the sugar will be carried to the roots and stored until spring, when it will move back up the tree to feed new buds.

1. **Tree ROOTS take in minerals and water from the soil.**



THE TREE: FROM HEAD TO TOE

LEAVES: Green plants manufacture their own food and store energy which can be drawn upon at any time. In one growing season, the leaves of a mature tree will provide enough oxygen to keep one person breathing for a year and release thousands of gallons of pure, unpolluted water, while removing carbon dioxide, ash, dust and other pollutants from the air. One moderately-sized tree has as much cooling effect in a city as 20 average room air conditioners running 20 hours per day, cooling an individual home as much as 12 degrees on a hot day. Leaves from trees absorb noise, provide food and shelter for wildlife, reduce the velocity of cold winter winds and break the impact of pelting raindrops on the soil's surface. Leaves salve the psyche with pleasing patterns and seasonal splashes of color. Even after they fall from the tree, leaves continue to benefit the earth by acting as a mulch and enriching the soil when they decompose.

TRUNK: While supporting the crown, the trunk acts as an elevator to move water and minerals up to the leaves, and move food in the form of sugar down to the roots. From tree trunks we obtain wood, a renewable, recyclable, biodegradable resource that satisfies our needs for lumber, furniture, firewood, paper and many other products. Each of us in the United States uses an average of one ton of wood products per year, including about 600 pounds of paper. In addition to wood, trees also provide important compounds used in manufacturing electrical recepticles, telephone and appliance housings, photographic films, textile products, foods, paint, varnish, adhesives and medicines, to name only a few.

ROOTS: Roots might be considered the "unsung heroes" of the tree. They do not put on showy displays of color or rustle in the wind, and they are not lauded for their beauty of grain or form. But buried deep in the ground, they serve as anchors for the tons of wood fiber standing above them. They take in minerals and water to feed the tree and act as its storehouse of energy. Some trees even stabilize nitrogen in the soil to benefit other plants. Tree roots help air and water penetrate and move through the soil, while holding the soil in place so it is not lost to erosion.