

Leaves

Works Of Art, Not Just For Shade

By Patti Albrecht, Owner of Earth's Treasures

Week after week of these long, hot summer days makes us appreciate the soothing coolness that a moment under a shade tree provides. Bozeman is a city that promotes and protects a large quantity and variety of wonderful shade trees. These deciduous trees support leaves in a variety of shapes and sizes.

There are four main functions of leaves:

- To produce nutrients for the tree through the process of photosynthesis. Leaves are thin to expose as much surface area to sunlight as possible. Along with the chlorophyll already present, the leaf then takes in sunlight, water and carbon dioxide and converts these into nutrients and oxygen.
- To aid in the natural filtration and exchanging of gases. Leaves draw in carbon dioxide and it is through the leaves that oxygen is released back into the air.
- To produce shade and shelter for the trunk and root system (and sweltering humans).
- To become food for insects and animals.



When the long hot days of summer turn to shorter days and cooler nights, the process within the leaves begin to change. The trees are preparing for winter and cutting off the water and nutrients to the leaves. By shedding their leaves, trees conserve water and energy during the winter. But why do leaves change color? It is due to the changing types of pigments and to the absence of chlorophyll. Yellow or orange leaves come from the Xanthophyll pigment. This pigment is usually present throughout the summer, yet goes unnoticed because of the predominant green chlorophyll in the leaves. Red leaves come mainly from the Anthocyanin pigment, which is not produced until autumn. When the chlorophyll is gone, the other pigments shine through. A poplar leaf turns bright yellow while a maple leaf becomes a brilliant red. Many different shades can transform landscapes into flaming sprays of color that transfix our eyes and touch our heart. And then, in a seemingly fleeting moment, the trees are bare and the bright colors are gone except in our memories.

As keepsakes, people have been preserving leaves by pressing them for a very long time. Yet, hundreds

of years ago, stories were told of Sea Captains or East India Traders having lacy leaves that were translucent, delicate and only had the veins intact, no pulp. Then, in 1645 it is said that a surgeon and anatomy professor named Marcus Aurelius discovered a way to take the flesh away from a leaf, while keeping the structure (veins) in place. This feat went unpublished until 1723. In that year, another man, Dutch naturalist Fredrick Ruysch, was the first to publish a method on how to remove the flesh from leaves. The results of his process were welcomed with astonishment and enthusiasm as works of art, with pieces often displayed by those wealthy enough to afford them.

When the pulp is removed from a leaf, an intricate series of veins is revealed. The major vein splits into smaller and smaller veins that spread out to the edges of the leaf, similar to a topographical view of a river and its smaller tributaries or the veins within our bodies. This lacy effect can happen naturally by fermentation or by some insects or larvae. However, during the natural process there are often blemishes or vein sections that have been eaten away. The result is very fragile and rarely complete. Today, a very few people have been able to develop a hand etching process that can preserve the inner structure of leaves. Multiple techniques have been



developed and one that works on a particular leaf might not work on another. The gorgeous colors are lost and turn to a muddy brown. Permanent dyes are added to replicate the natural colors as closely as possible. These brightly hued, intricately etched leaves are artfully arranged in a shadow box, turning a perishable item into a beautifully durable work of art.

Hopefully now, when you are cooling off under a shade tree or admiring the brilliant colors of Autumn, you will have a little more insight into the complex design of leaves and their value as art. If you want another way to preserve a memory of a special autumn or are looking for a unique work of art, visit Earth's Treasures. Come in and marvel at how detailed and individualized the inside of a leaf can be. Earth's Treasures is located at 25 N. Willson and can be reached via phone at (406) 586-3451 or via www.EarthsTreasuresMT.com.

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