

January 25, 2005

## **Amazing Buds**

After the dramatic leaf colour of the fall, it's easy to think that the trees are now laying barren and dormant, with nothing of interest to grab our attention. Fortunately, for those of us who enjoy winter botanizing, the trees are anything but barren. A closer look quickly shows that they are adorned with buds, tiny jewels that harbour the promise of spring.

Stored within the buds, the tree's entire future lies in waiting. Miniaturized, folded and pressed together like the tiniest and tightest of parachutes, next spring's leaves are biding their time, waiting for their turn to capture sunlight and manufacture food, embryonic stems are anxious to become twigs and branches, and tiny flowers are yearning for their chance to create fertile seeds and assure a new generation of trees. But equally important, the new growth that will emerge from buds in April and May will provide food for legions of insects and small mammals which, in turn, will become fuel for the rest of the food chain. The song of a Baltimore oriole on a May morning is directly linked to the buds of the winter forest.

Although trees can usually be identified by their overall shape and by characteristics of the bark, buds provide a much more reliable means of identification. The starting point for understanding buds is to be able to recognize the twig, the part of the branch where the buds are located. The twig is the section at the end of each branch that constitutes the previous year's growth. A twig's point of origin is marked by a distinctive, ring-like node around the branch and a change in the colour of the bark. Twigs also tend to be smoother and more richly coloured than the rest of the branch.

Buds are formed during the previous summer - not in the early spring as is often thought - and may contain leaves and stems only, flowers only, or both. The large terminal buds, which are located at the end of the twig, usually contain the flowers. Because buds form in the angle between the stem and the stalk of the leaf, both leaves and buds have the same arrangement on the twig.

Bud arrangement is critical information in identifying the species. In opposite arrangement, the buds on the sides of the twig are located directly opposite each other. In alternate arrangement, they are arranged singly at intervals along the twig. Only a few genera of trees and shrubs have opposite buds and leaves. This makes their identification easy. They include honeysuckle, ash, maple, lilac, viburnum, elderberry and dogwood. Just about all of the others are alternate. The following memory aid that I devised - which unintentionally sounds like a rallying call for animals rights - may be helpful in remembering these seven groups: HAM LIVED! Each genera or group corresponds to one letter in the mnemonic; lilac corresponds to LI.

If you take a closer look at a bud, you will notice that it is covered with scales. These structures, which are usually leathery, serve to protect the embryonic leaves and flowers from the elements. The number, shape and arrangement of the bud scales are different for each species of tree. Beneath the scales, you will sometimes find tiny hairs which provide additional protection to the bud's precious cargo.

Below each bud, you will also see a "leaf scar". It marks the location where last summer's leaf was attached. The scar therefore corresponds in shape to the base of the leaf stem. Each species of a tree has its own characteristic leaf scar. Within the leaf scar, look for vein scars which are the points at which the veins from the leaf passed into the twig. You may need a small hand lens to see these.

Let's take a look at the buds of two familiar species, starting with the sugar maple. You may wish to go outside and snip off a section of its shiny, reddish-brown twig to have a visual reference. You will notice that the buds are brown and conical, almost looking like upside down ice-cream cones, minus the ice-cream. The bud at the end of the twig is also much larger than the side buds. You will also notice that each bud is covered by six to eight pairs of scales which are arranged in staggered rows. The midpoint of one scale is centered over the space between two lower scales. The bud is nestled within a pale, V-shaped leaf scar, that contains three vein scars.

The buds of the American beech provide a study in contrast. The tree's long, cigar-shaped buds are arranged alternately, diverging at almost 90 degrees from the twig. They, too, are covered with numerous scales but of a different arrangement. The semicircular leaf scar is located below the bud and usually has six indistinct vein scars.

My favourite winter buds are those of the balsam poplar. When rolled between your fingers, the fragrant, resinous buds exude the smell of spring, a season when the smell of this species is everywhere. Also very attractive are the plump, glossy-red buds of the American basswood; the mealy, sulphur-yellow buds of the bitternut hickory and the large, stout buds of the lilac. The lilacs pre-formed flowers and leaves can be seen by cutting the bud open with a sharp knife.

In the spring, as sap flows upwards from the trees roots, water and minerals are directed to the buds, causing them to swell quite noticeably before they open. With the warm days of late April and May, a new generation of leaves, shoots and flowers will emerge.

Buy yourself a good field guide to the trees and shrubs such as John Farrar's "Trees in Canada" (Fitzhenry & Whiteside, 1995) and start to learn the characteristics of the buds and twigs of the species around your house or cottage. Mark S. Burhnam park on Highway 7 east is a good place to find sugar maple, white ash, yellow birch, ironwood and, especially, American beech. Knowing these finer details of our trees and shrubs opens up a whole new world of beauty and adds immeasurably to any winter outing.

What to watch for this week:

Keep your ears open for the first bird song since last summer and a sure sign of "pre-spring". On mild, sunny January mornings, species such as European starlings, white-breasted nuthatches and black-capped chickadees will occasionally break into song. The birds are reacting to the increased daylight and the approaching breeding season.

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