

## Editor's Corner

### Botanizing on the Right Side of the Brain

I discovered how the left and right sides of the brain are responsible for different kinds of thinking through a book called *Drawing on the Right Side of the Brain* by Betty Edwards. Edwards introduces would-be artists to the work of scientists who worked on the “split brain experiments” on patients who had the connective tissue – the corpus callosum – severed that allows the two hemispheres of the brain to communicate with each other. They found that the dominant left hemisphere is responsible for linear, logical thinking, and is the place where our language skills are kept. The speechless right brain holds information on spatial relations, shapes, and creative, intuitive thought.

As Paul Simon mentioned in his song *Think Too Much* – “They say the left side of the brain dominates the right” – most humans are ruled by their left brain, and the left brain is a crummy artist. It likes to name the parts you are drawing, but it has no sense of the distance between lines or where a nose is, say, in relation to lips or a forehead. Through exercises in her book, Edwards retrains her readers to be aware of and allow the right brain to come out to do what it does best. The bossy left brain will tell you that this is a stupid waste of time, but with practice and persistence, anyone can reproduce an image they see with accuracy.

Reading this, I realized that right brain function had a lot to do with how I identify plants, and perhaps even one of the reasons I am attracted to field botany. As an amateur field botanist, I started out using the *Audubon* field guides, the ones with colour photographs. I enjoyed turning the pages and looking at the pictures over and over as a pastime. I found when I was botanizing I knew the name of many flowering plants as soon as I saw them because the pictures stayed in my memory.

In the early days of my field botany career, I was introduced to *Peterson's*<sup>1</sup>, again a reference that relies heavily on shape and colour to identify flowers. Its drawback, however, was that it left you hanging when confronted with a plant before or after flowering. *Newcomb's*<sup>2</sup> filled this gap if you use the simple three-part key and skipped the first part that describes the flower. Then when you go to the next step where the key is expanded, you just examine every combination of the last two digits, flip to the illustration and see if it matches up. The keys provided in *Newcomb's* – and pretty much

every other reference, are descriptive: they rely on the left side of the brain, the keeper of language and not of shape, to help with identification.

Most people find the genus *Salix* quite daunting – for me I find that looking at the leaf shape and overall growth form makes their identification effortless compared to internalizing the botanical terms necessary to accurately key them out. And I was heartened to read the words of the master *Salix* taxonomist George Argus:

We all identify objects we know, inanimate as well as animate, by instantaneously integrating a large number of characters. If you were asked how do you know that it is such-and-such it may be difficult to say, and you may list a few of the obvious features, but in reality your brain has integrated many characters and allowed for variability in the process. A taxonomic key is just for someone who doesn't know the species. Keys cannot allow for all the variability that occurs in nature so even after arriving at an identification it is necessary to compare it with correctly identified material<sup>3</sup>.

I began asking the botanists around me whether they relied more on pictures or keys to identify flowers. I posed the question to Sarah Mainguy on our AGM field trip to Inglis Falls this year. “Oh, you mean GISS”, she said. “General impression, size and shape. I think it's an airforce term they use to identify planes in flight.” After discussion, I think Sarah figured she used both sides of her brain to botanize. But there are some things about keys, she points out, that are unequivocal: for example, species in the genus ash (*Fraxinus*) most certainly have opposite branchlets and could never be mistaken for, say a hickory, (*Carya*) with alternate branching habits if that characteristic is used, even though both have compound leaves. But it is general impression, size and shape, I realized, that allows us to do roadside botany at 100 km/hour.

I ran into John Semple one Saturday and we stopped to chat about things botanical. I wasn't canvassing for information on the left/right brain botanizing, but John offered up the information without prompting. He used the word “gestalt” in reference to IDing plants. “What do you mean, gestalt?”, I interrupted. Gestalt is one of those words I remember cropping up in the parlance of the hip thirty years ago, and the meaning I had eked out without actually asking was “essence”. Gestalt is another, more

elegant way of describing right brain botanizing – identifying by the image of a plant as opposed to the description. “It’s fine if you’re dealing with a flora of a few hundred plants” John said, “but when you’re dealing with a flora of thousands of species, you have to use a key. It is also possible that what seems to be gestalt is also the instantaneous processing of internalized keys. Having said that, John Morton and I always agree that the fastest way to ID a plant is to look at illustrations first!!

The literal meaning of the German word “gestalt” is “shape”. The left brain has elbowed its way once again into the domain of the shy right hemisphere through those who have produced a body of work *describing* and *analyzing* how this kind of thinking works. All of this can be found by googling the word. They use some images to *illustrate* the different processes involved in shape and image recognition, but what is most impressive is how little information it takes for the right brain to make sense of the image so that the left brain can name it.

In the end, I think both sides of the brain share the task of naming plants. Certainly this is the case for genera that are split out on relatively tiny – even microscopic differences. I have made my peace with learning and using keys for the reward of knowing the plant’s name. But now that I know how it works, I enjoy observing how my right brain identifies not only plants, but other shapes and patterns on the landscape, passing on the information for my left brain to translate to others.

I picked up another book that I am about thirty years behind in reading, an early translation of quantum mechanics for the rest of us: *The Dancing Wu Li Masters: An Overview of the New Physics* by Gary Zukav. The new physics as started in motion by Einstein early in the last century is a departure from the classical Newtonian physics that dominated science for three hundred years that is a linear, rational, left brain approach to describing natural phenomena. More recently this has taken form in fractal geometry, which is able to explain the non-linear patterns of growth in sunflower disc florets, for example, and chaos theory that attempts to describe ecosystem-level phenomena and severe weather systems. Zukav states:

The subjective experience of wonder is a message to the rational mind that the object of wonder is being perceived and understood in ways other than the rational. The next time you are awed by something, let the feeling flow

freely through you and do not try to “understand” it. You will find that you *do understand*, but in a way that you will not be able to put into words. You are perceiving intuitively through your right hemisphere. It has not atrophied from lack of use, but our skill in listening to it has been dulled by three centuries of neglect.

Botanizing allows us to use both or either side of our brain to name plants. But when we use our right hemisphere, when we can identify a plant through some component of its two or three dimensional manifestation, we become connected to that part of ourselves that makes intuitive leaps, that can do creative problem solving, and that thinks outside the box. As Einstein said, “I never came upon any of my discoveries through the process of rational thinking”. This is the part of ourselves that experiences awe and wonder. This is the process that drives quantum mechanics and chaos theory. It has rescued natural processes from the sterile mechanistic model, explaining what field botanists already see – the enchantment of nature. ❀

Cheryl Hendrickson, Editor



White flower of *Viola striata* (Pale Violet) in hand - CJH

<sup>1</sup> Peterson, Roger Tory and Margaret McKenny (1968) *A Field Guide to Wildflowers: Northeastern and North-central North America*. Boston: Houghton and Mifflin.

<sup>2</sup> Newcomb, Lawrence (1977). *Newcomb's Wildflower Guide*. Toronto: Little, Brown and Company.

<sup>3</sup> Argus, George 1992. *Salix in Ontario II. Field Botanists of Ontario Workshop on Willow Identification*. Unpublished.