

Plant Lover's Almanac

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Our weather continues to astound, with ups and downs, but still with almost no snow for many south of the snow belt effects in northeast Ohio. Friends such as Lori Davis from the OSU Entomology Department in Wooster marveled that tulip and daylily leaves were popping up from their underground bulbs only last week during one of our warm spells. These plants are aligning themselves with Punxsutawney Phil – Spring is coming. That is for certain, though how this will actually play out is...all in the details.

Discovery. That is the theme that Ken and Joe Cochran came up with at Secret Arboretum years ago to describe what the arboretum, a special part of Ohio State University is all about. The joy of seeing sweetgum fruits with little snowcaps in the winter, of witch hazels and parrotia blooming in January and February, the upcoming riot of Spring flowers governed in their arrival by a combination of chill factors and heat units. The wonder of discovery is what I was channeling when I wrote of Alexander von Humboldt last month and of Andrea Wulf's book *"The Invention of Nature: Alexander von Humboldt's Discovery of the New World"*.

So, I have embarked on asking plant loving scientists about their moments when discovery literally rocked their worlds of curiosity. Our first tale relates to Isaac Asimov's observation that: *"The most exciting phrase to hear in science, the one that heralds the most discoveries, is not 'Eureka' (I found it) but 'That's funny'..."*



Last season's sweetgum fruits with snowcap toboggans (JC)



*Parrotia flowering last week at Secret Arboretum
(Paul Snyder, with permission)*

It's a Small Small World That We're Living In.

I was talking of such discovery the other day with a friend, Bill Ravlin, the chairman of the Entomology Department at Michigan State University. He returned there (it was where he earned his doctorate) two years ago following a 17 year administrative career as an Associate Director at Ohio State University's Ohio Agricultural Research and Development Center (OARDC) in Wooster. Before that he was a research entomologist at Virginia Tech University. At MSU he is back to directly working with a graduate student, something he missed during his administrative period at OSU. So, the other day, his student excitedly called Bill over to look at some tiny creatures arrayed under the microscope.

The insects were parasites of emerald ash borer (*Agrilus plannipennis* = EAB) eggs. Emerald ash borers, as we keep being reminded of, are a devastating invasive Asian species of our North American ash (*Fraxinus*) species, killing hundreds of millions of trees, including here in northeast Ohio, with very important ecological consequences. So, Bill and his students are studying one of three parasites of the tiny eggs of this insect borer. Tiny, as in smaller than the period at the end of this sentence. So, this parasite of the EAB egg, known as *Oobius agrili*, is also quite small, and the mandibles (mouthparts) of this *Oobius* are smaller yet.

The student wanted Bill to take a look at this incredibly tiny mandibular detail, and Bill, resisting probably a thousand other things on his mind, was drawn in, and drawn in some more. And suddenly realized – “hey, I missed this” during the years without graduate students. There is a lesson here about what drives scientists today, and Humboldt and those he inspired in the 19th century. Sure, studying emerald ash borer parasites is obviously of practical significance. But the pure joy of discovery, the particular morphology of those mandibles, potentially of no direct practical significance and possibly observed by no more than five people on Earth, is also what drives scientists and all that they contribute as scientists, just like Darwin looking under rocks for beetles. The “*that’s so cool*” moment.



Wasp parasite (*Oobius agrili*) laying eggs on emerald ash borer egg (size: egg is the size of a small pencil period at the end of a sentence).
Photo credit. Bill Ravlin, MSU (with permission)

Ad Infinitum. For our second example, let’s go to Kenny Cochran, retired director of Secrest Arboretum. We were standing this past Monday outside the beautiful Schiede Music building on the College of Wooster campus as huge wet snowflakes drifted to the ground. It was a wonderful morning, with Ken and I marveling at the patterns of snow on trees, the globose buds of elm trees, the finery of river birch twigs against the sky, the drooping of white pines laden with snow. I also discovered from Ken that the site of the Music Building was once the area for the home and landscape of Edmund Secrest, the first State Forester for Ohio, a director of the Ohio Agricultural Experiments Station, now OARDC, and the man for whom Secrest Arboretum was eventually named, following his impacts starting in 1908 with his observations of arbor-less fields now covered with thousands of trees.

But back to Ken’s Discovery. Ken’s moment that he mentioned was again about something tiny and, though not parasitic, in this case was predatory. Another example presaged by the 17th century wit of the Seinfeld of his day, Jonathan Swift:

*“So, naturalists observe, a flea
Hath smaller fleas that on him prey;
And these have smaller still to bite ‘em;
And so proceed ad infinitum
Thus every poet, in his kind
Is bit by him that comes behind”.*

With Ken it was over 20 years ago today when our colleague Dave Shetlar, an OSU entomologist extraordinaire, was showing Ken some of the pests he had found on some junipers we were studying. I was excited about two separate fungal diseases, but Dave was regaling Ken with some spruce spider mites he had knocked with a stick to the juniper twigs onto a piece of white paper. And there, happy as could be were some *Stethorus* lady beetle larvae, snarfing up the mites like miniature vacuum cleaners. Though in reality, I suppose this is really an example of Nature – not in a vacuum. What a deal. As Arthur Blickle the palaeobotanist at Ohio University that turned me from a history major to a biology enthusiast in my junior year of college used to say; “*Jim, all these wonders are at your fingertips and feasts for your eyes, every moment of every day, free of charge.*”

Stay tuned in next month for more snapshots of discovery, from OSU’s Dan Herms and how and where he learned of bark beetle feeding preferences to Greg Ina of Davey Tree and the KSU class on remote sensing he took in the 1990 when he realized the potential of the simple remote sensing graphs he was doing and their application potential, a potential that geographers and technologists have transformed today into what we live with constantly with our GPS-driven personal appliances. From OSU’s Compost Extension specialist Fred Michel’s learning of new techniques that show us how microbial communities that once we did not even imagine are revolutionizing our understanding of the real worlds around and within us, to former OARDC director Tom Payne’s reason for winning – the Humboldt Prize!

To close:

“Where do we [scientists] get our ideas, our inspiration for solving problems? It’s the same place a composer gets an idea for a piece of music, or a painter gets an idea for a painting. It comes out of somewhere you don’t know. It’s the same flash of inspiration, and, it’s associated with the same colour – and the same glory, for want of a better word.” - Gerard Evan