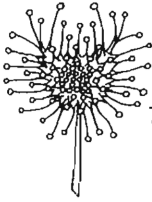


The Savage Garden

"Swelling the Brains of Children"



by
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No, this is not a piece about some new type of food to feed your plants - or encephalitis.

Instead, let me begin by mentioning that the nursery my friend Marilee and I run has received quite a bit of welcomed media attention since we started the business back in 1989. California Carnivores has been featured twice in the New York Times; in magazines as diverse as Entrepreneur, Sunset, and Alaska Airlines; in other papers such as the San Francisco Chronicle, Salt Lake City Tribune, St. Petersburg Times, and so on. The nursery has appeared on CNN, the Travel Network, Ed Home's Gardening in America, and numerous other TV shows: Christopher Reeves, the actor, hosted a segment on our nursery for his cable nature program - a show which we have never even seen. One of the funniest articles appeared in Hungary's Reform! Magazine, where, in an article on "What's New From America", California Carnivores was featured along with Madonna and flavored condoms!

With all this publicity, one would expect voluminous mail and phone calls. Most certainly true. But what surprised me the most was the response we received from one article in particular. It appeared a couple of years ago in 3-2-1 Contact, a colorful little science magazine geared to the younger set. We received over *one thousand* letters from that singular piece - and the inquiries just keep on coming.

It practically drove Marilee and I to nervous breakdowns, as almost every one demanded a personal response, a feat we could not afford. Most of the letters were creatively funny, with pop-up flytraps, hundreds of comical illustrations, lots of "burps" and "gulps", inquiries as to parent-eating plants. A couple of parents wrote asking for children-eating plants. A few were downright sad: "My brother poured turpentine on my flytrap. Will it live?", "My mother won't let me have a carnivorous plant, won't you please write her...?", "My mom says we're to pore [sic] to have another mouth to feed."

For a few years Marilee and I did the classroom circuit, hauling our plants to schools around Northern California, giving lectures and demonstrations (plant autopsies were most popular) and helping teachers set up terrariums. School buses came by the dozens. We finally found it too overwhelming and had to put on the brakes. Nowadays we lend plants to teachers to take to their schools, but the teacher are on their own. We offer discounts to teachers who wish to buy plants for their classrooms. A really sad fact is that most schools these days simply don't fund such projects anymore. Most of the teachers buy the plants with their own personal monies.

To most carnivorous plant growers, the idea of having 50 or 60 hyperactive, often screaming children running around their greenhouse is enough to bring on a stroke. I must admit that we have had no real damage to any of our plants that I can think of. Toddlers have caused the only true damage. I recall the numbness I felt when one

little girl crushed my first flowering *Disa* Orchid - but at least it wasn't a carnivore! Aside from the occasional pebble in a *Nepenthes* pitcher, or a missing magnifying glass, kids, as a rule, show the utmost respect and awe for these plants. To the kids, these plants are utterly cool.

And they are utterly cool because they look so weird and eat things! Since some of the plants almost seem to have faces and appear to "react", kids will sometimes project their own self-consciousness into the plants, and name them like pets. Adults do this too. I have seen children panic-stricken over the ill-health of a beloved carnivore.

All this grossness and strangeness make carnivorous plants an ideal attention-getting tool in the process of helping kids think. As a learning tool, they are surprisingly diversified. When a kid grows or studies carnivorous plants, it offers tidbits of education on subjects like biology, botany, evolution, astronomy, climatology, entomology, and so on. It can also teach responsibility, art, history, design, carpentry, and photography. CP can introduce children to travel, to botanical gardens, to Charles Darwin, to maps, and to politics.

Let's take a quick whirlwind tour through some of the things I have found helpful in using CP as tools in education.

The obvious is most often the only way carnivorous plants are introduced in a classroom. A paragraph or two in a plain, old biology textbook, mentioning that there are indeed plants which catch and eat insects and small animals for food, apparently to supplement the lack of minerals in the soil where they grow. But since CP are in most ways similar to all flowering plants, they can certainly be used to teach plant reproduction, and a flowering venus flytrap will, in most cases, elicit much more interest in children than, say, a tulip. Plant reproduction is certainly a less embarrassing subject matter than animal reproduction! And a study of one can lead to the other.

How exactly does a bee enter a *Sarracenia* flower - and why? What is the importance of cross-pollination? Why do venus flytraps send their flowers so far away from the traps? Are the insects CP eat different than the insects that pollinate the flowers? How about examining the diverse flower structures of differing CP? Why, for instance, are *Pinguicula* flowers long and tubular, with spurs? Why are some plants male, some female, and others bisexual?

Watching a seed pod mature and finally release its seed can excite children tremendously, especially if it is something like a cape sundew, an easy and prolific plant. All the technical jargon describing the parts of a just-germinating seed will be a lot more interesting if that seedling grows up to eat flies.

Evolution Although it may be easy to "imagine" how a *Heliamphora* leaf may have "evolved" from a gradual rolling-up of a more typical leaf, is this really the way it happened? CP can offer beautiful illustrations of theories of evolution. Are venus flytrap flowers far away from their traps because their ancestors who caught and ate most of their pollinators died out? A case study of Darwin can lead to a study of evolution itself, from creationism to catastrophism to gradualism - and now it looks like we're going back to catastrophism! Older kids might enjoy Darwin's books, or Velikovsky's Earth in Upheaval, or Sir Fred Hoyle's Evolution from Space as a panorama of theories. All the unanswered questions in theories of evolution can be found in CP.

The Scientific Method As a young adult, I was beautifully introduced to this

philosophy when I read Darwin's Insectivorous Plants, a surprisingly easy-to-comprehend book. Darwin's experiments on *Drosera*, for instance, amply demonstrate the scientific method of experiment and observation.

By exploring how and when carnivorous plants were discovered, a bit of history can be learned. For instance, who were those wealthy Victorians who hired ships and botanists to bring back exotic *Nepenthes* for their newly invented glasshouses? Reading Burbidge's Gardens of the Sun taught me as much about imperialism as it did about collecting *Nepenthes*. Browsing through old Gardeners Chronicles from the 1800s will make our ancestors come alive.

Geography This is an excellent subject to be covered in a study of CP. By mapping out the habitat ranges of various species, kids can sit down with world maps and take a global tour. Would any of us - deprived of our interest in CP - know or care where Mt. Kinabalu, Sulawesi, New Jersey, Cape Town or Queensland existed on a map?

Natural History What do bogs have to do with the Ice Ages? How do they differ from fens and marshes? How did geological changes in America possibly affect the spread of *Sarracenia*? How did *Nepenthes* spread from Borneo to Madagascar? What is continental drift, and how did it affect the evolution of CP?

Climate *Drosophyllum* grows in a Mediterranean climate. What is a "Mediterranean" climate? Or temperate, sub-tropical, or tropical climates? Do any CP grow in the arctic circle?

Astronomy Growing CP can give young people their first conceptualization of our earth's axis of rotation and revolution around the sun. Kids start paying attention to the changing seasons, the equinoxes, and the length of the daylight period. Why is it winter in the northern hemisphere when it is summer in the southern? Why do some plants go dormant?

Travel We have known several families who have added a side trip to see *Sarracenia* in the wild when visiting places like Disneyworld, or have gone on trips to Michigan, the Cascades, or the New Jersey pine barrens to hunt out CP. Many state and national parks are home to CP. Most major cities have botanical gardens.

Scientific Tools Use a microscope to study CP.

Computers Certainly one of the most popular things on the Internet these days are CP! The CP electronic-mail discussion group has over 500 subscribers from 30 different countries. Where else can a child satisfy her curiosity about *Pinguicula ramosa* by conversing with someone who lives near the wild plants in Japan?

A fun introduction to computer networking can be had by learning how to connect to the Carnivorous Plant Database on the World Wide Web at "http://www.hpl.hp.com/bot/cp_home". This resource has over 600 color pictures of CP along with information about all known types of CP.

(For further information about both these resources contact Rick Walker at his computer address: "walker@opus.hpl.hp.com", or at his mail address inside the front cover of this newsletter.)

Pen-pals Children can communicate with others around the country or around the world who grow these strange plants, sharing information, seeds and plants.

Economics We know of at least one school in the midwest where a class grew, propagated and sold *Drosera capensis*, actually setting up a small business, learning about production, sales, profit & losses, and so on. Their profits were used to set up a CP display for their school.

Politics How are political viewpoints influential in the survival of CP in the wild? What was the Wetland Reclamation Act of the mid-1800s in the U.S.? What are the laws pertaining to trade of CP?

Art and Photography We have had classes visit our nursery not to study the biology of CP, but to draw them and photograph them. Geoff Wong, an award-winning CP grower in Northern California, has built several ingenious mechanical models of CP that have toured children's museums for displays and shows.

Carpentry Help kids build a small greenhouse or display case to house a CP collection.

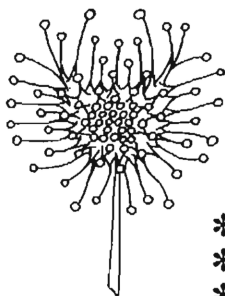
Biochemistry Order a tissue culture kit from a biological supply company and learn about in-vitro propagation of plants. Or combine this with computers and check out the slide-show tutorial: "CP Tissue Culture in the Home Kitchen" found on the CP WEB page.

Medicine Research the uses of CP as herbal remedies by aboriginal peoples.

Entomology Study insect life associated with CP. What do they eat? What insects eat CP? Kids can culture fruit flies to feed their plants.

I can go on and on, but I must force myself to stop! There are some children in the nursery, and they've brought bugs to feed the plants. Time to swell some brains with education!

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