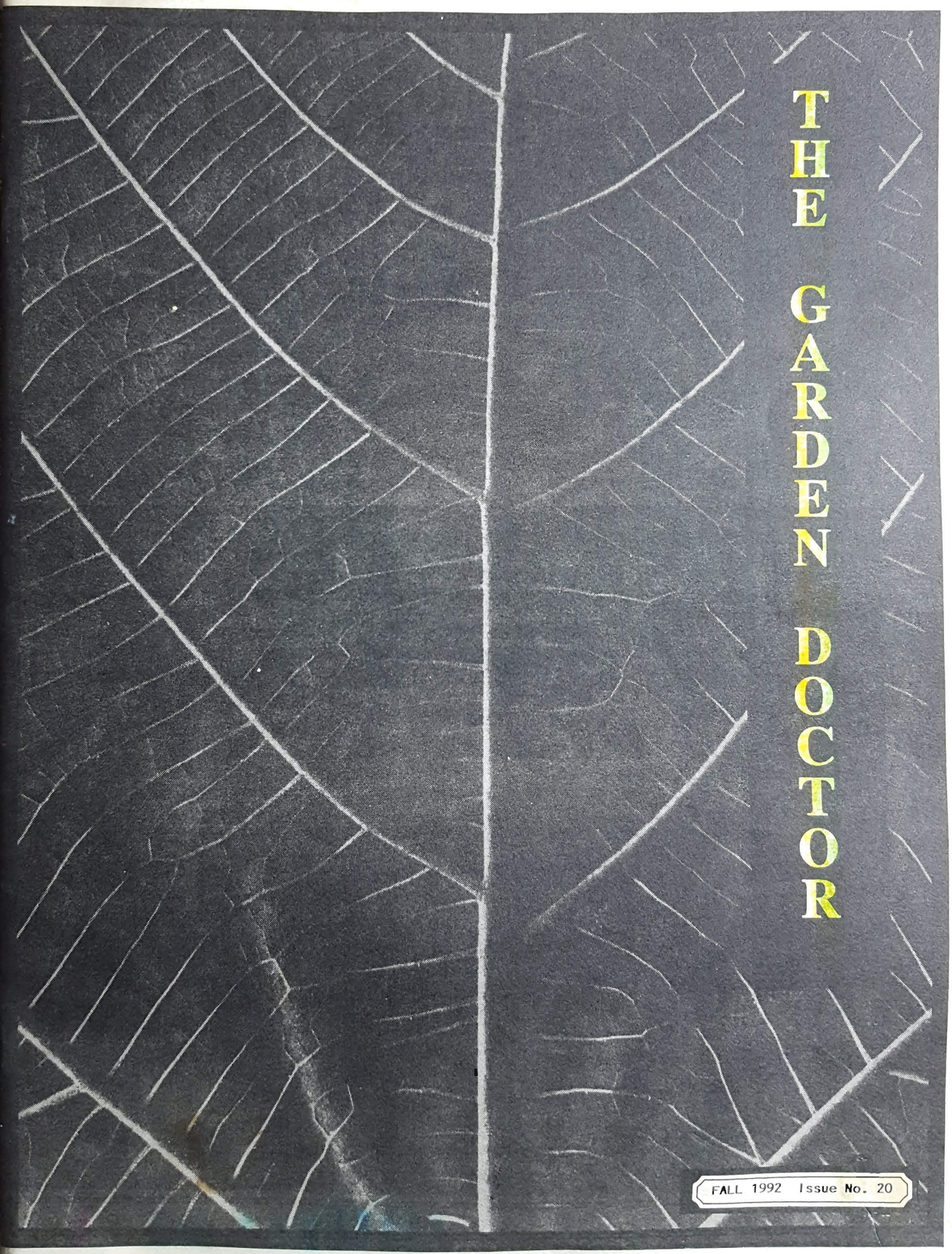

THE GARDEN DOCTOR

FALL 1992 Issue No. 20

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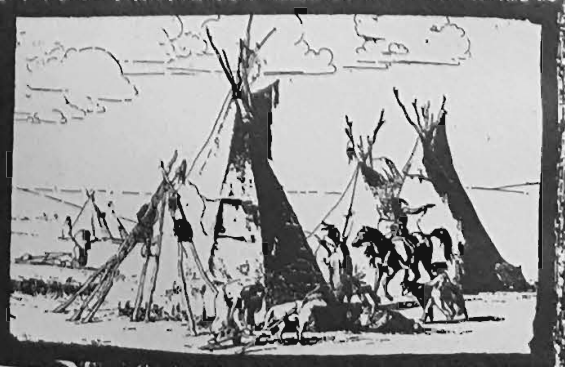
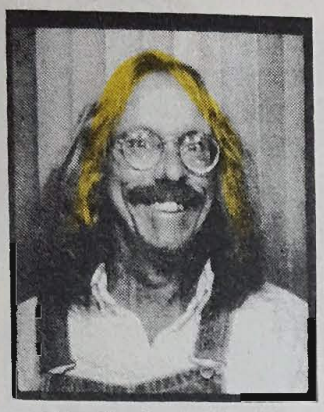




This issue meets my original 5 year commitment to self-publishing an ad-free, handcrafted alternative gardening publication; that, and the fact that barely 1 in 4 readers expiring with the Summer '92 issue renewed their subscriptions nearly resulted in this being the last issue of THE GARDEN DOCTOR. For a few months I was torn between giving up or continuing..it was perhaps the most difficult decision of my life. But I received so many heartwarming, touching supportive letters... Nancy Young, Ann Bingham, Becky Ross, Anne Lathrop, Melinda Menne, Jan Oen, Susan Taylor, Donna Semas and Andy Smith, Lisa Bardwell, Sarah & Bill Kurzenberger & many others renewed up to 2 years early, and/or gave several gift subscriptions! Other folks like Sharon Sheets, Letty Weisbart, Vicki Pollyea, Suzanne Williams and Patti Harris even made financial contributions to me and my "baby". Some of your letters brought tears to my eyes...I was astonished to learn of the affection that some of you hold for this magazine. My deepest gratitude to you all.

But I can't ignore the continuing low renewal rate; clearly, some changes are needed. And while none of my non-renewing readers accepted my invitation to tell me why they were dropping off, several loyal readers gently passed on some suggestions:

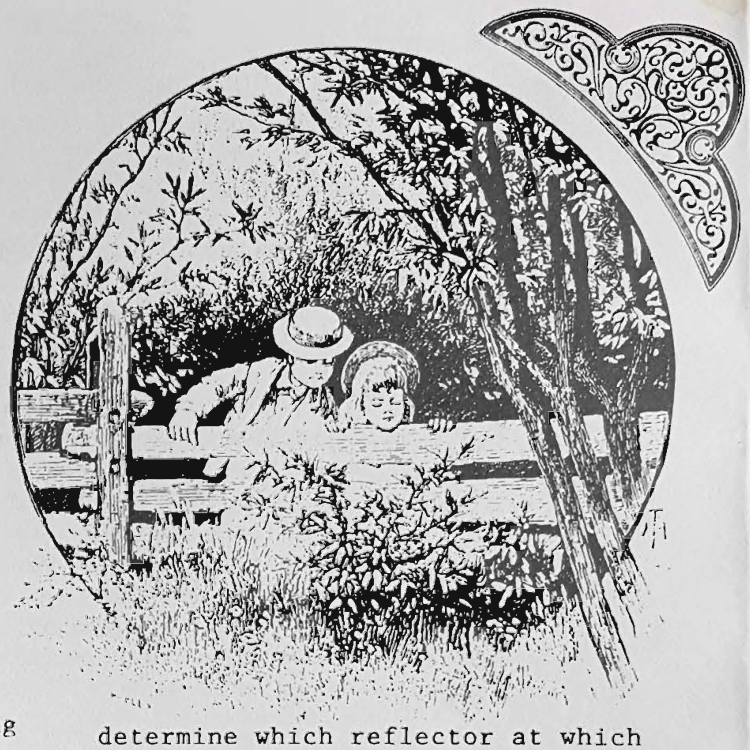
1. Make TGD easier to read and use by reducing the use of tiny type face, and by breaking up large, intimidating blocks of text. I will also start including an Index on the inside front cover.
2. Acknowledge that these are not prosperous times..people's budgets are tight.
3. Focus more on weird plants.
4. Maintain or increase the number of autobiographical pieces. (ie.e "Costa Rica")
5. Maintain my social, philosophical and political commentaries and quotes.
6. Include more <u>useful</u> information (This issue lacks "Good News" & "Bad News"... should I drop the poetry or "Phukinay"? (For only the second time in 5 years, Margaret Head didn't write her column...she's miffed that nobody mentioned her one way or the other. Should she stay on the staff, or should I tell her to go full-time selling her line of festive and innovative 'Mary Kay' products?).
7. Several people bluntly said to quit losing money by subsidizing TGD with my credit cards.

These suggestions helped me to end my either-or dilemma by devising a third alternative that will reduce each reader's annual costs, will give me a feeling of a fresh start (which I sorely need), should put an end to the sabotaging of the prosperity my organic landscaping business generates, will keep TGD alive, and will also free up much-needed time for me to pursue my other dreams, including my new-found obsession (who, ME obsess?) with re-establishing disease-resistant 18th, 19th, and early 20th century sub-tropical "Tea", "China" and "Noisette" roses in my home state of Florida, to begin breeding new varieties of these in the winter of 1993, and to begin sending out book proposals to established publishers on several topics, including a compendium on those rare and beautiful roses, a paperback on my 200+ radical paper airplane designs, and possibly, as many people have suggested, a "Best of The Garden Doctor" hardcover.

This third alternative is to lower the subscription price to an even measlier **$16**, and publish **THE GARDEN DOCTOR** semi-annually; a Spring issue that will also address summer gardening issues, and a Fall issue that will also cover winter gardening. Since both $24 and $16 are divisible by 8,I can easily credit all of you who've already paid the old $24 price.I'd originally hoped that TGD would be "The Beatles" of gardening publications, but I will settle for it being the "Yoko Ono" instead (are you chuckling, Sally?), with its creative energy enjoyed by a tiny but fiercely loyal group of equally alternative people.

John

SHARING SECRETS



Fall is the best time of year to plant garlic, whether you live in the coldest parts of Canada, or in Miami. In cold climate regions, the garlic bulb uses the autumn months to get fully rooted before the ground freezes; this in turn allows for rapid growth and maturation during the following growing season. In mild areas, the cooler months of autumn and winter allow the garlic bulb to grow at its best by avoiding intense heat and/or humidity. In all regions, the garlic is ready for harvest when the foliage whithers and turns yellow, usually late spring in mild areas, mid-summer in snowy winter areas.

If whitefly is a problem in your greenhouse or your winter window garden, try coating a light-colored (white or yellow) plastic detergent bottle with a thin film of vaseline. The insects will likely be drawn to the bottle and get stuck on the coating. When the trap gets gross-looking with dust and whitefly corpses, wash it off with soapy water, dry it, and re-coat it.

Fall is also a good time for gardeners in snowy-winter regions to try planting hardy annuals like dill, calendula, larkspur, Hopi Red Dye amaranth, sunflower, garden peas, mustard and other brassicas, cilantro, arugula (rocket), alyssum and nigella. Work their seeds into the soil just before it is to freeze.

Discarded doors, duct tape, and heavy-duty aluminum foil can be used to easily construct cheap solar reflectors that can aim both light and heat into east, west, or south windows. Just lay the door on the floor, cut a long piece of foil from the roll and tape it lengthwise to the door; be sure all the foil's edges are duct-taped down so that wind cannot tatter it. Finish covering the door by taping a second length of foil to it; be sure to tape down this foil strip on all sides. You can use a stack of cinderblocks, a frame of 2"X4"'s or heavy outdoor furniture to brace the reflector almost horizontally at the base of the window; try different angles to determine which reflector at which time of day can bounce in the greatest amount of solar energy, not only to benefit potted plants, and humans prone to winter depression (**S**easonal **A**ffective **D**isorder) but also to help heat the dwelling. One gallon milk jugs filled with water tinted black with India ink can be lined up along the window sill to soak up the heat for nighttime release.

Those last green tomatoes of the season can be easily pickled by packing them sliced into mason jars, then pouring boiling pickling brine (vinegar, salt, dill, cayenne, a bit of honey or sugar, etc.) over them. Seal, let cool, refrigerate, then serve. Should keep for a few weeks in the fridge.

Use a cheap plastic dishpan in the kitchen sink to capture rinse water and use it to irrigate roses, berry bushes, and other thirsty shrubs.

Those corny TV commercials for "The Weed Popper" aren't lying... if used after a good rain or deep watering, it yanks out dandelions, mallow, thistle, plantain, salsify, and other tap-rooted weeds from a lawn with ease. Look for it at "Ace Hardware" for about $20.

Shovel snow onto perennial and rose gardens to prevent dessication.

A BOOK REVIEW

By

Anne Lathrop

BEHAVING AS IF THE GOD IN ALL LIFE MATTERED
A NEW AGE ECOLOGY
Machaelle Small Wright
Perelandra, 1987

These days, when God is getting shut out of the classroom, and is no longer welcome at graduation ceremonies and other public gatherings, it is very strange to run across a book with a title like the above.

As a matter of fact, it wasn't just the daring presence of God in the title that originally caught my eye. It was also the buzz words "behaving as if." While the possibility of engineering one's own reality has undoubtedly existed for much longer, I have only become personally aware of it over the last decade or so. Actually, it was John and Yoko Lennon who first brought it to my attention.

In 1979 they took out a full page *New York Times* ad. They explained that they were aware that many people were wondering about what they had been doing during their retreat from public view. They went on to say that they had been wishing. And that they had discovered that wishing works, so they had decided to wish for greater and better things in the world. Even so, they said, there were still the occasional irritants in their lives, and no amount of wishing would remove them. The solution they finally hit upon, they said, was the halo. They would simply visualize a halo on the irritating person's head and the person or the irritating factor in the relationship disappeared.

It just so happened that I had an infestation of ants in my third floor apartment at the time that I read this ad. They had developed a proprietary attitude, swarming to cover more and more territory with each passing day. I was getting irritated with them. I thought, "Okay, Lennons, let's see how your halo business works." Without further ado, I sought out the head honcho ant and stuck a mental halo on his head. What happened next so shocked and amazed me that it completely changed my life. The ants grouped up, milled around briefly and then headed out in an orderly manner, military style.

Hamburg Parsley (Petroselinum sp.) is an old European vegetable rarely grown in North America. Beneath the usual flavorful leaves grows a long tender taproot much like a parsnip. It may be eaten raw or cooked. Look for its seeds in the more complete seed catalogs that feature heirloom vegetables.

Behold the turtle. He makes progress only when he sticks his neck out.
James Bryant Conant

I had been exposed the the normal run of "visualize your future" stuff, behaving as if you are rich, and you will become rich, etc. which ran like a river through the seventies, but I had never seen such an immediate and startling example of the efficacy of "behaving as if." I just behaved as if I knew how to put a halo on an ant's head, and pouff, they disappeared. And no, they did not return. And I have been wishing successfully ever since. It saves a lot of work.

Since then I have also been on speaking terms with animals and plants. I chatter a lot when I am gardening. I am always telling flowers how beautiful they are, and communicating my amazement to the plants about their whole miracle of becoming. On the long sea voyage I made, I loved communicating with the dolphins, sea birds and whales, and even managed to send postcards to my cat, Capella, along the cat grapevine for the whole duration of the trip. I suppose these tendencies always lay dormant within me, but the Lennon's ad got me conscious of behaving as if plants and animals knew what I were thinking and saying and I "came out."

Then along comes this book. It arrived in the mail during May of this year, sent along by a person who had come out to my place to do a soil test for my organic farm certification. He thought I'd like the book, he said, in the little note, and so he was giving it to me.

He was right. I loved the book and it reminded me of a lot of things I had forgotten. It was like a second shot of Lennon energy combined with a visit to an American style Findhorn Garden. This summer I found myself communicating with garden munching chipmunks, squirrels and rabbits with a new level of awareness. Colorado beetles, deer flies and the low-flying B-52's (carpenter bees) were treated with a great deal more respect and gentility. My garden is pest free and riotously productive.

I ran into a snafu with the Japanese beetles. Instead of communicating with them about our differing objectives, I just unconsciously knee-jerked into my habitual beetlecide campaign—soapsudsy water bucket in hand—when I saw them devouring our grape vines. After committing many dozens to a sudsy nirvana, several thousand brother beetles appeared overnight on our plum tree. I quickly realized the error of my ways and desisted. They apparently weren't convinced that I understood, so they went on to denude all six of the new cherry trees we planted this spring, leaving everything else unharmed. Believe me, next year I'll make a point of establishing a sound communication base with the Japanese beetles when they show up for the season. (continued on page 26)

GREGORY GECS EZ:

You can recycle different sizes of empty water and milk jugs into weights for building up your muscles. Pouring in either sand or water to varying degrees lets you adjust the weight. Beginners can use 1 gallon milk or water jugs; switch to 2 gallon water dispensers as your strength goes up. Yo!

PIT COMPOSTING

by **Dr. Hugh Muss, pHD**

As more and more communities and even states mandate recycling of yard wastes instead of dumping them into landfills where their anaerobic decay releases the potent "Greenhouse Effect" gas methane, a simple and very useful technique uses this waste to improve soil, to conserve water, to increase biological activity in the yard and farm, and to make possible the cultivation of crops in difficult areas. Even the name isn't fancy..."Pit Composting".

You don't need to attend a seminar, or get a degree in soil mechanics, just dig a big ole' hole in the ground, fill it full of anything that will rot till you have a mound of organic debris about 1'-2' higher than the rim of the pit, then cover it all with about 12" of the soil you excavated from the pit. The result is a mound-shaped motherlode of biologically active moisture-retentive, nutrient-rich materials that will slowly become compost, settling as decay advances. (That is why it's a good idea to start out with a MOUND of debris in the pit, else you'd end up with a shallow crater in a year or two....on the other hand, such a shallow crater could serve as a water catchment.

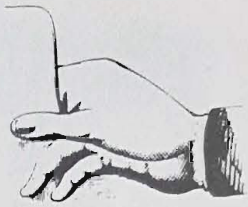
Whereas gardeners usually prefer fine-textured materials for compost making, pit composting relies on large, coarse materials filling the lower 50% of the hole. Why? Well, large diameter limbs, old firewood, bush trimmings and other similar materials will trap air spaces as they accumulate, not only providing drainage but also allowing some air circulation to prevent anaerobic decay. (Anaerobic decay occurs ONLY in the absence of oxygen, and not only releases methane, but also the ill-odors many people wrongly associate with composting). It is large woody yard waste that typically presents the biggest problem for the homeowner who does her or his own tree trimming...on top of this coarse layer goes kitchen waste, garden refuse, used kitty litter, pulled weeds, raked leaves, lawyers, TV evangelists and other sundry and otherwise useless waste products. Since woody materials tie up available nitrogen as they are decayed by bacteria, it's a good idea to throw in an abundance of nitrogen-rich materials to compensate....fresh poultry manure, fish scraps, a few handfuls of feed-grade urea, horse stall sweepings, feed-grade cottonseed meal, alfalfa hay or meal, road kill, etc. For good measure you can put a few handfuls of red wrigglers or other species of earthworm...THEY will be in heaven upon finding themselves in such a smorgasbord, and will pay you back by hastening the breakdown of the pit's contents.

One of the beauties of pit composting is the fact that you can begin growing crops right away by planting them in that top 12" mantle of soil you place atop the mound of waste materials. Heavy feeders like pumpkins, cucusa, vining types of squash, Dopicus farouticus, roses, hibiscus, ginger, bananas and other fast growers can all get a start in that top layer of soil. And for giving them a great habitat rich in organic matter, they pay you back by hastening the decay of those materials via the action of the symbiotic, beneficial class of soil-dwelling fungi known as "Mycorrhiza", which can live ONLY in union with healthy plant roots...the fungus digests the organic material, and the plant roots absorb the released nutrients and thus feed the fungus living in and on them. Everybody's happy!

Pit composting is an excellent tool for gardeners in desert regions, where the soil is not only dry, but also highly alkaline and sometimes loaded with plant-killing sodium. But by pockmarking a large garden area with closely-spaced compost pits, a gardener can create a mini-ecology based on pH-neutral, moisture-retentive soil, for as organic matter decays it releases mild natural acids which steadily but gently correct the high alkalinity. Each pit becomes a fertile, bilogically-active water catchment that can suuport rotating crops. Using this technique, a desert homesteader could create a tree-windbreak to slow dry desert winds while producing fruits like dates or citrus.

Pit-composting can also be employed to make raised beds in wet, low areas or permafrost. Dig it?

readers digested



Dear John,
As usual, I loved your last issue of THE GARDEN DOCTOR and I was pleased and proud to have my poems included. I have planted the seeds and they are growing well. Botanically yours, **Joan Maloof, Quantico, MD**

Dear John...
I just read your Summer 92 editorial and was amazed to learn of your low subscription rate. I think GD is a GREAT magazine and you're doing a wonderful job....You asked what we'd like to see in GD. I sure don't claim to be speaking for anyone else, but as for me, I'd like to see more articles about RARE (or foreign) plants. I can get all I want (and do) about Chrysanthemums and Roses and Poppies in any gardening magazine -- but your publication is unusual and different, and that's the biggest thing you have going for you -- so keep doing unusual and different. GD is the perfect vehicle for articles about "off-the-wall" plants. I loved the article in the recent issue about Botanical Pesticides -- not because I'm into pesticides, but because of the mention of Haematoxylon, Mundulea, Anabasis, Haplophyton, Schoenocaulon and Stemona. What a feast! Made me just want to know MORE about those plants -- where do they grow, who grows them, are they commercially available anywhere, what do they look like, are they annual, perennial, bulb, trees -- or what?? See what I mean? Any chance I get, I'll tell others about GD. Don't give up...the word just needs to be spread further. Thanks. **Judy Blinn, Lafayette,CA.** (Thanks for the ideas, Judy; I hope you like the new center spread you inspired, "Radical Plants". John).

Dear John,
After reading your editorial in the summer issue I have decided to renew for two years to indicate my strong support for your magazine. Also please send a gift subscription to my brother and sister-in law Brian Ross and Jean Coleman....I find the upbeat tone and occasional silliness of TGD to be very refreshing and rejuvenating for me. Wishing you mailboxes of renewals and gift subscriptions! **Becky Ross, Jobstown, NJ** (Thanks much,Becky! John)

John,
Please renew my subscription. Thanks, **Janet Thigpen, Corning, NY** (Thanks Janet...John).

Dear Doctor -
Keep a stiff upper lip! Love ya! **Sue Haffner, Clovis, CA** (Thanks for renewing Sue! John).

Dear John -
Renewal enclosed for more of your creativity. Keep on. I like the variety, humor, useful tidbits. I guess useful is a good word to keep in mind. People like useful info in a magazine. You have some of that already. More pages? Recycled stock? Less 1950's pictorial jokes? I dunno, but I support what you're doing. Keep on, **Stephen Lyman, Sandpoint,ID** (Thanks for the support AND ideas, Stephen.John)

Dear John,
The summer issue of THE GARDEN DOCTOR arrived and gobbled up the better part of the mid day as I read it cover to cover. Thank you so much for illustrating Lunatic Gardening, exactly what it needed! And thank you for sending the subscription off. You are a very generous editor/publisher...I want to offer my condolences. It must be very hard to lose such a good friend, staunch supporter and loyal ally as Renee'. We will all miss her touch....I feel a certain amount of discomfort and grief relative to your struggle with THE GARDEN DOCTOR's dwindling subscription base as well. You ask for comments, so I will make some.....I don't think there is anything you can do to improve the magazine. Each issue is a jewel in its own right and a collector's item. Every page offers something special. Each issue is at least as good as, if not better, than the last...The seeds you send us have a destiny of their own. They also introduce us to things we might not ordinarily experience. Like Thai hot peppers (and a copious several year supply at that!), fenugreek, orach, etc. So, according to my deductions, it is not THE GARDEN DOCTOR which is amiss, but something in the general mental climate of the readership. For instance, without exception, everyone to whom I have offered a gift subscription has a substantially larger income than I do. Yet I don't think one of these people has renewed, not yet. They all profess to love the magazine. I cannot understand this.....Without denying the importance of money, and the inhibition of indebtedness, I would suggest that it isn't so much the financial burden of continuing which is weighing you down, but this feeling of isolation, this questioning of the time and effort expended as more and more readers drop off or fall asleep at the wheel. I just want to encourage you to stick with your vision and to do whatever you have to do to maintain your morale....The rose article was fantastic....And last but not least, I LOVED your eclipse report. What a thriller. It was really descriptive and moving....Enjoy the privilege of being a human seed bearer. PATIENCE. with love, **Anne Lathrop,Lebanon, CT.** (continued on page 24)

HARRY KRISHNA'S
karmic relief
RESOURCE REPORT

BUENA BIOSYSTEMS
P.O. Box 4008
Ventura, CA 93007
ph. (805) 525-2525: Beneficial insects and mites.

HYDRO-GARDENS, INC.
P.O. Box 9707
Colorado Springs, Colorado 80932
1-800-634-6362 for free catalog. A large selection of beneficial insects, microorganisms and traps.

St. Lawrence Nurseries RD 2
Potsdam, NY 13676: Organically grown cold hardy trees, including edible mountain ash.

ANTHONY J. SKITTONE
2271 31st Avenue
San Francisco, CA 94116. ph. (415) 753-3332: Unusual seeds, plants, bulbs.

Heirloom Garden Seeds
P.O. Box 138C
Guerneville, CA 95446: Heirloom vegetable seed plus seeds of 150 herbs. catalog $2

GARDENS OF THE BLUE RIDGE
P.O. Box 10
Pineola, NC 28662: Live plants. Appalachian wildflowers, ferns, orchids, native vines and bog plants. catalog is $2.

STALLINGS NURSERY
910 Encinitas Blvd.
Encinitas, CA 92024
(619) 753-3079: Subtropical and tropical plants.

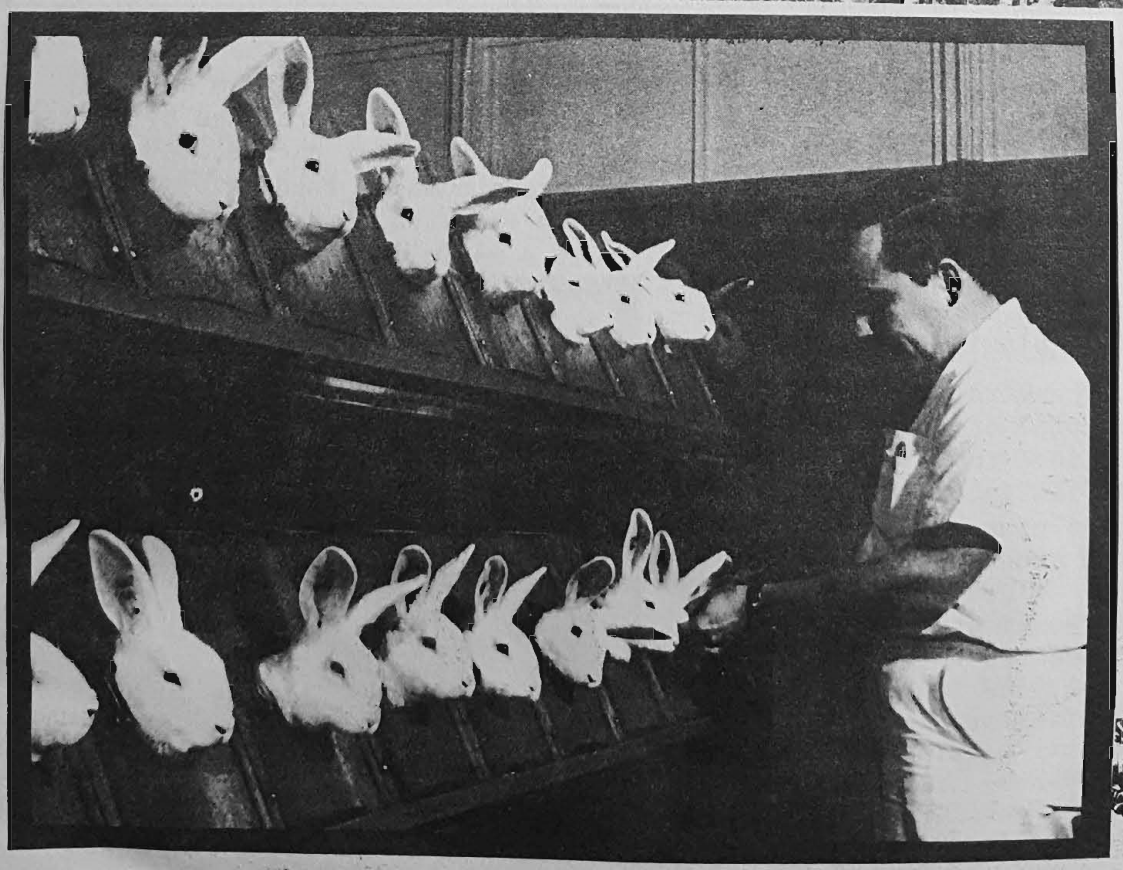
WILDLIFE NURSERIES
P.O. Box 2724
Oshkosh, WI 54903:
Plants and the seeds of species useful in attracting wildlife. $1 for catalog.

TWIN PEAKS SEEDS, 1814
Dean Street
Eureka, CA 95501;
Wildflower seed.

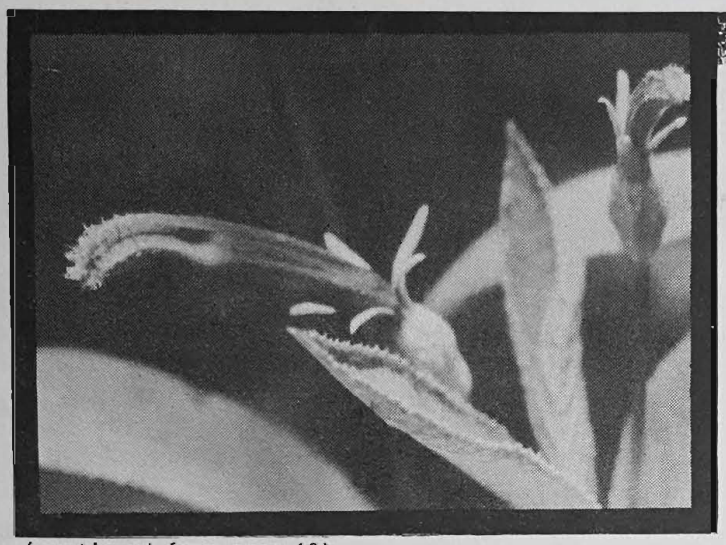
GARDEN IMPORT
P.O. Box 760
Thornhill, Ontario
L37 4A5 Canada
Rare imported bulbs, seeds, plants.

SOUTHERN SEEDS
P.O. Box 2091
Melbourne, FL 32902. Vegetables for the Deep South including unusuals and fruit.

SUNRISE ORIENTAL SEED CO.
P.O. Box 10058
Elmwood, CT 06110. Many varieties.



Was this really necessary to find out if oven cleaner is best not put in one's eyes, or if a person is pregnant, or if ingesting pesticides is harmful?
How does one do this to captive animals for 8 hours each day, then go home to share dinner with one's family?



(continued from page 12)

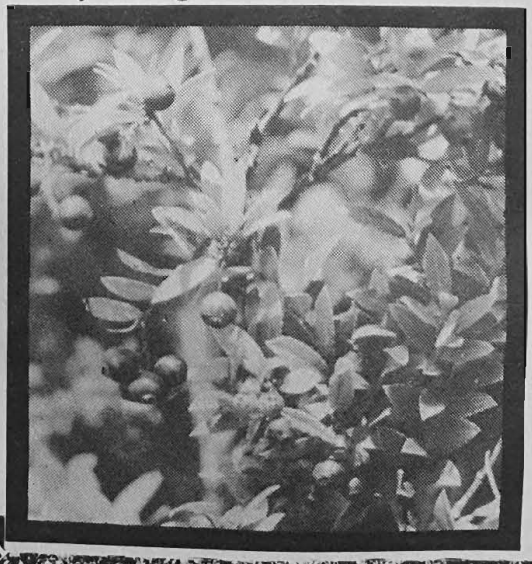
The plant life atop Poas is lush, varied, and often other-wordly. I first hiked off the "official" path towards a far wall of the rim I'd noticed from the viewing deck..it dripped with vegetation like the hanging gardens of Babylon. The clouds that frequently are blown into the jungles support rich green, spongey vast "carpets" of moss; one entire ravine I clambered through on hands and knees was swathed in such thick, inviting moss I lay down in it. Boulders, huge exposed tree roots, and entire fallen trees have all been consumed by the moss, which seemed to be a sphagnum species. Once I reached the far rim, I found a grove of giant blueberry bushes, each 4'-5' tall. I pigged out. (Picture at right).Hiking back down into the cloudforest, I saw that the canopy was comprised mainly of a huge species of fig with tough, thick leaves and rock hard fruits. Many of these had sprouted on each side of the trail I stumbled onto to...each seedling reminded me of a jade plant.

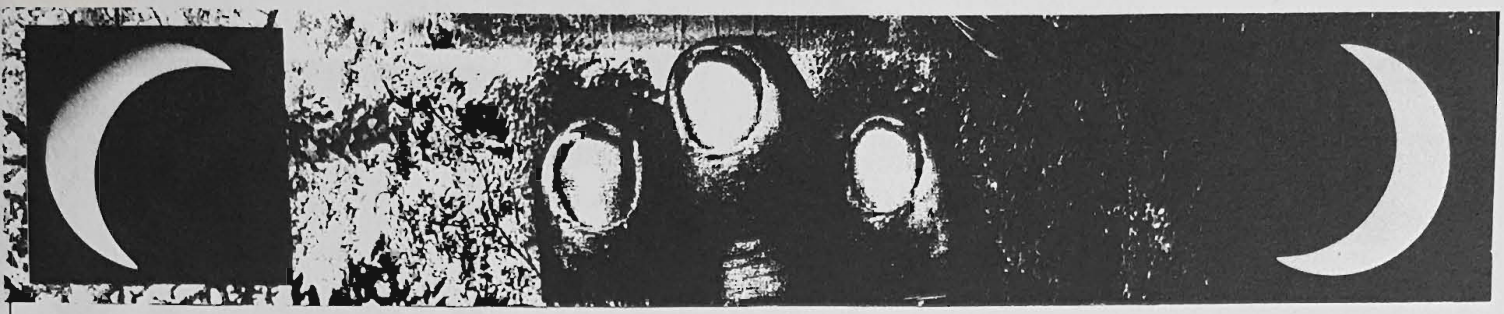
Where sunlight penetrated the tree cover were colorful 6'-8' high stands of what I believe to be a member of the Justicia family. Each plant bore dozens of bright pink, slender, tube-shaped flowers, each about 2" long. (See picture above). I could detect no fragrance. In these sunny areas were also many of what appeared to be a dwarf species of Tibouchina, the lanky, almost leafless bushes sporting bright pink 4-petalled flowers, their petals often bearing droplets condensed from the fog the clouds would pulse down into the jungle. A mysterious yellow legume groundcover grew where sunlight was full.

All along the damp, silent trails I saw tall graceful ferns and even taller plants I believe to be either curcumas or even true gingers; each main stem was tipped with a fat, succulent waxy flower full of nectar. Bromelliads of a great many colors and varieties, large and small, crowded the mossy tree limbs above me and frequently sprouted from decaying, soft logs of huge dimensions that littered the jungle floor.

Once I was surprised to suddenly stumble onto a vast sunny opening in the jungle...it was the rim of an extinct crater, and I was blessed with a panorama overlooking a very large lake. At the far side of the caldera impenetrable jungle clung to the steep crater wall rising up from the clear blue water. Marring the experience was a small group of German tourists using a boom box to blast a martial symphony into the cloudforest, completely drowning out the delicate, haunting songs of hummingbirds I'd occasionally seen.

Later, deeper in the forest, I met a man and woman from America; suddenly we were surrounded by dozens of iridescent purple, black and green hummers feeding on the orange-flowered vines flanking us. Truly a magic moment!





PLANTS AS MEDICINE

By Arlene Kellman, D.O.

When I left a busy internal medicine practice in 1991 to embark on a study of alternative approaches to healing, the reaction from some colleagues and relatives was predictable. The mention of "herbal medicine" conjured up visions of esoteric jungle rituals, snake oil, and wild claims in health food store magazines for products that would cure anything from hangnails to cancer!

Since the use of plants for medicinal purposes is largely outside the realm of standard medical practice in the United States at the present time, this skepticism is understandable. However, what many people do not realize is that some very important pharmaceuticals in use today have their origin in plants. And, less than fifty years ago, botanical preparations were widely used as part of standard medical practice in this country.

Let me give you some examples. Digitalis is the botanical name for Foxglove, a striking ornamental plant which can be found in most flower garden catalogues. In 1785, William Withering first described the therapeutic actions of this plant on the heart as well as its potential toxicity.[1] There is also evidence that the American Indians were using Digitalis as a cardiac stimulant long before this time.[2] Modern physicians now use two preparations of the Foxglove plant to treat congestive heart failure and certain types of cardiac arrhythmias (irregular heartbeats): digoxin, which is extracted from the leaves of *Digitalis lanata* (Wooly or Austrian Foxglove), and digitoxin, which is obtained from the plant *Digitalis purpurea* (Foxglove). To this day, these powerful, widely used medications — which have helped millions of people with cardiac disorders — are extracted from plants.

Colchicine is a valuable drug used as a mainstay in the treatment of gout. It is extracted from various species of *Colchicum*, such as Autumn Crocus (*Colchium autumnale*).

Plants have sometimes been found to be effective in the treatment of malignancies. The plant *Vinca rosea*, a type of periwinkle, is the source for the important compounds vincristine and vinblastine, which are used to treat Hodgkin's disease and some types of leukemia.

The aforementioned preparations are just a few examples of medications which are still extracted directly from plants that are currently prescribed by physicians. These particular medications are quite strong, potentially toxic, and are not substances to be self-prescribed. So please, leave these flowers in the garden!

On the other hand, there is a vast array of other medicinal plants which are quite safe and valuable as home remedies when used properly.

In this era of ecology consciousness and recycling, I find it fascinating that many common garden and roadside weeds have medicinal value. In fact, weed identification books are often good sources of information about the physical characteristics of a variety of medicinal plants. For example, take the familiar garden weed, Common Mallow (*Malva neglecta*). It grows vigorously throughout the United States and Canada, producing flowers ranging in color from white to pink to lavender. As recently as last summer, I spent a number of hours in our home garden uprooting this plant and sending it to the compost pile. Never again — knowing now that the entire plant may be washed, hung upside down to dry, and then used as a tea to soothe sore throats or an inflamed intestinal or urinary tract, or powdered and used in poultices or as a thickening agent in foods. Additionally, there is evidence that regular ingestion of Mallow family plants will stimulate the immune system, enhancing the ability of white blood cells to fight infections. One precaution about gathering Mallow, however — try to pick it in areas free of canine visitors. They like to use its large leaves for "marking."

In everyone's yard can be found the much-maligned but useful medicinal plant, *Taraxacum officinale*, otherwise known as Dandelion. How sad that so much time and money is spent each year pouring toxic chemicals on our lawns to eradicate this potentially valuable ally. In particular, the roots of Dandelion may be tinctured in alcohol or boiled to make a tea, and used as a safe, mild diuretic (increasing excretion of water and waste products in the urine), or as a mild liver stimulant. Roasted Dandelion root also is used by some as a caffeine-free coffee substitute. The entire plant is edible, and the leaves and flowers may be eaten raw in salads or sauteed or steamed and are quite nutritious. Of course, don't pick dandelions for consumption from areas that are known to have been sprayed with chemicals.

The common cooking spice, ginger root (*Zingiber officinale*), is an herb which has been studied scientifically and shown to be effective in the treatment of nausea and vomiting. In 1990, a study at a London hospital showed that in a group of sixty women recovering from major gynecological surgery, symptoms of postoperative nausea were as well controlled with ginger root cap-

Continued on page 11

Plants as medicine

Continued from page 6

sules as with the anti-nausea medication metoclopramide.[3] Ginger has also been shown to be effective in controlling motion sickness, even proving superior to dimenhydrinate (Dramamine) in one study.[4] A major advantage of using ginger root in these cases is that, in contrast to pharmaceutical preparations, it has no known toxicity.

Many other "kitchen herbs" have medicinal value, especially for digestive disorders. These include caraway, cardamom, cayenne, chamomile, cinnamon, fennel, and various mints.

The use of proven herbal remedies for treatment of minor ailments at home can be quite effective and safe with appropriate knowledge. With continued research, perhaps the medical profession in this country will eventually re-embrace — both literally and figuratively — its ROOTS.

Arlene Kellman is a physician who is currently taking an intensive course on the medicinal use of herbs in Albuquerque, New Mexico.

NOTES:

1. Rudolf Fritz Weiss, *Herbal Medicine*. Beaconsfield Publishers, Ltd., Beaconsfield, England, 1988, 126.

2. Virgil J. Vogel, *American Indian Medicine*, 10–11, citing "The Medicine of the American Indian," *Journal of Laboratory and Clinical Medicine*, Vol. XIX, No. 1 (October, 1933), 2, 17–19.

3. M.E. Bone, et al, "Ginger root—a new antiemetic. The effect of ginger root on postoperative nausea and vomiting after major gynaecological surgery." *Anaesthesia*, 1990, Volume 45, 669–671.

4. Daniel B. Mowrey, *The Scientific Validation of Herbal Medicine*. Cormorant Books, 1986, 198–199.

Some suggested references for further reading on the topic of medicinal plants:

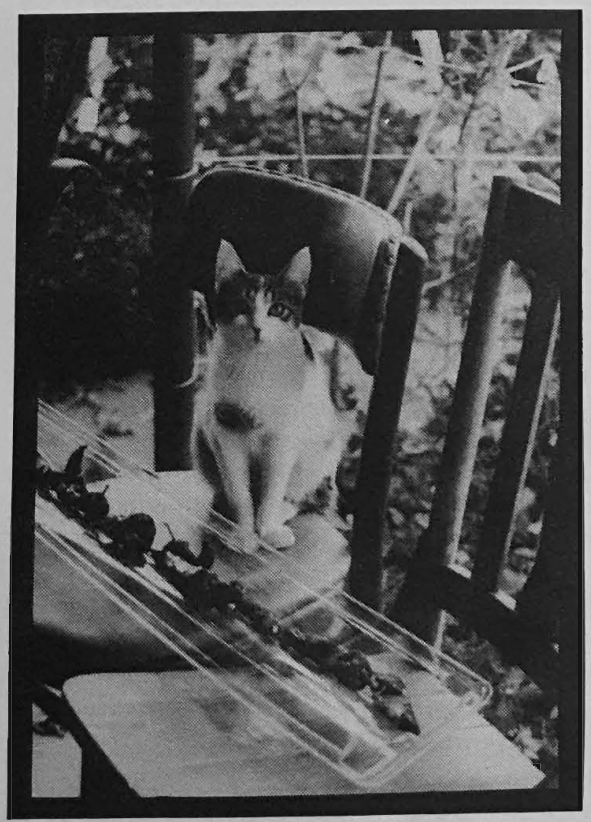
Kowalchik, Claire, and Hylton, William H. (editors). *Rodale's Illustrated Encyclopedia of Herbs*. Rodale Press: Emmaus, PA, 1987.

Moore, Michael. *Medicinal Plants of the Desert and Canyon West*. Museum of New Mexico Press: Santa Fe, NM, 1989.

Moore, Michael. *Medicinal Plants of the Mountain West*. Museum of New Mexico Press: Santa Fe, NM, 1979.

Theiss, Barbara and Peter. *The Family Herbal*. Healing Arts Press: Rochester, VT, 1989. ●

Arlene Kellman is a doctor of osteopathy who is certified in internal medicine. She recently completed a 5 month course in the clinical uses of medicinal plants and will soon be relocating to Longmont, Colorado to open a private practise and to transform her new house and yard into an urban permacultural homestead.



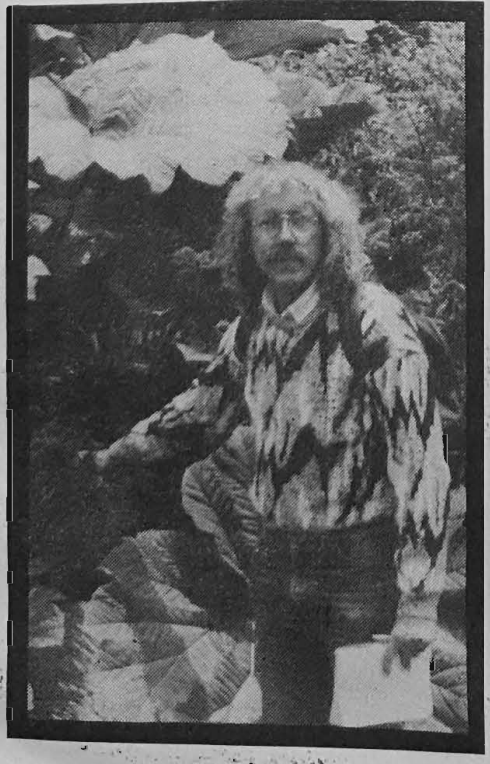
Even though we humans call cats "carnivores", they DO need plant tissue in their diets; in the wild, when they eat their plant-eating prey, they prefer the stomach and intestines AND THEIR CONTENTS. But modern pet food contains grains instead of leafy matter. We've all seen cats chewing on grass, and those that live in condos and apartments, or who get housebound during hard winters, instinctively graze on our (often toxic) houseplants. In the photo to the left, Lovely (the world's most mischievous cat) is guarding a tray of drying hot peppers. But she prefers sprouted wheatberries, ryegrass, whole oats or barley, or fieldcorn or popcorn growing in a big clay drainage saucer half-filled with sand or soil; another ½ inch of soil atop the ¼ cup of seeds you sprinkle atop the soil in the clay saucer provides them with a sprouting medium...set the "kitty farm" in a sunny south window and keep damp (not soggy) till the shoots appear and reach 3"-4". If kitty is not allowed on the window sill, give her the farm daily. If kept damp, it will produce for several weeks. When it does expire, just plant a new crop using a new kind of seed for variety (even bird seed mix will work, giving kitty millet and sunflower sprouts to eat). It costs little time and just pennies to give more health and happiness to your feline companion.

Who's gonna pay attention to your dreams, who's gonna plug your ears when you scream? The Cars, Drive

COSTA RICA

part IV
by
John Starnes

Towering beside the capital city of San Jose is the huge volcano Poas. On July 14, 1991, I picked up a bus from a green parrot-and-orchid-filled Park of Mercy near downtown for an exhilirating journey to the summit. As our bus crawled up the green sloping flanks of the active volcano, I first saw lush but orderly coffee groves, which soon gave way to grazing land, then higher up came quilt-like expanses of multi-acre commercial flower nurseries. On each side of the narrow, hairpin dirt road were great stands of ferns, bromelliads, thickets of Tarzan-style vines, and many plants I could only guess as to their identity. As we gained altitude the air grew thinner and cooler, but the jungles were even thicker. Tiny villages clung to the steep flank...even the humblest of the huts (which were constructed of discarded lumber and corrugated steel) boasted neat, sumptuous flower gardens of huge New Guinea impatiens, dahlias, gladiolus, hydrangeas and what appeared to be Florida's "Cracker Rose" (Archduke Charles, 1837, a China rose). The whole bumpy ride up I enjoyed an energetic conversation with a delightful woman named Maria, visiting with her mate from Quebec. At the peak, we tumbled out of the bus into the thin, cold air, and she photographed me next to one of the many huge "Sombrerro" plants (Gunnera species?) which crowded the path leading to the crater's rim.

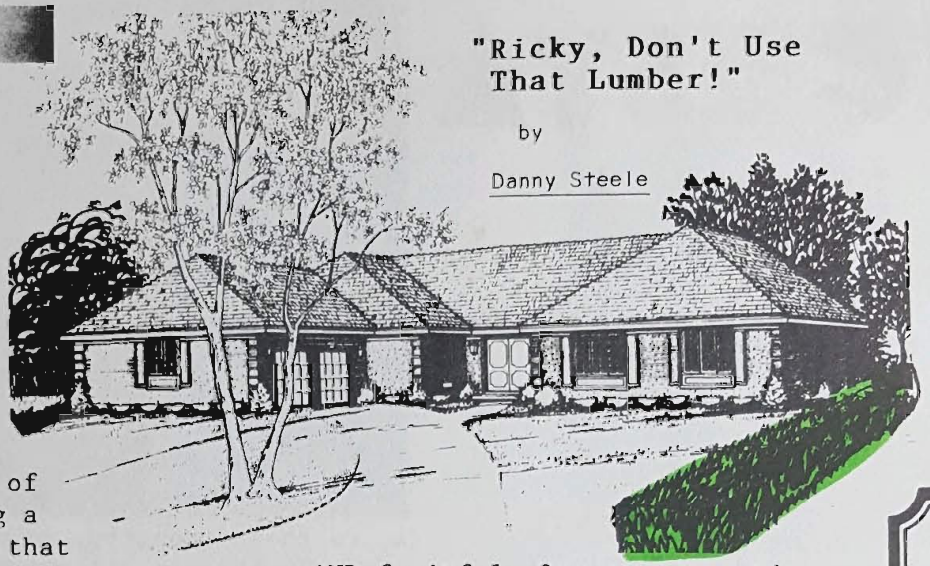


As we approached the mile-wide crater, I was nearly blown away by the awe-inspiring vista, AND by the hurricane-force winds shooting vertically up from the throat of Poas. I felt dwarfed by the scale of it all...about ½ mile down and into the main crater was a steaming lake, with a tiny smoking crater poking up above the milky-yellow water. A whiff of sulphur now and again rode the non-stop roaring wind that nearly blew away both my glasses and camera when I leaned over the rim. Poas' last eruption 30 years prior had been violent, sending vast flows of ash and lava down one flank and consuming a village and its people...3 decades of erosion has not dulled signs of its great destructive force, for the landslides looked fresh, with few trees re-colonizing the torn rock and soil. I was intrigued by a few streaks of brilliant red minerals that seemed to span a few hundred yards across the grey inner walls of the crater. Many of us had some trepidation about being here, for just prior to our visit Poas had been closed to the public for weeks due to sudden, large flucuations in the caldera, which often precedes major eruptions. But it had been decided it was safe. (continued)

"Ricky, Don't Use That Lumber!"

by

Danny Steele



.... to build a fence, that is. Who knows if an old growth forest was destroyed to provide those gleaming redwood and cedar planks? Besides, wooden fences are generally expensive and require periodic upkeep or even replacement. And unless they are used to support fruiting vines, they add no productivity to one's yard.

But if you had a change of heart, you'd consider growing a "fence" from low-care shrubs that bear edible fruits or at least decorative flowers. Now that yard of yours, it's the only one you own, and you might use it if you feel better when you get home and discover hundreds of berries just waiting to be picked and eaten. Intrigued? Wonder what bushes to grow? Hey, I just begun.

In regions with cold and/or snowy winters there is a wide choice of shrubs. For security use thorny shrubs like Hawthorne, Rugosa roses, Damask or Gallica or Eglanteria (Sweet Briar) roses. All of these give you first late spring blooms, then vitamin C-rich fruits each Fall. And their thorny branches are a hemophiliac burglar's nightmare.

Non-thorny shrubs for a cold-climate hedge-fence include lilacs, quince, plum, Rose-of-Sharon (Hibiscus syriacus), Highbush Blueberry (Vaccinum corymbosum), Siberian cherry, chokecherry, fruit-bearing viburnums like the species 'Opulus', 'Trilobum', and 'Prunifolium', or Spicebush (Lindera benzoin) whose fragrant leaves and berries were used by American colonialists for teas and as a spice. I have a friend in town; he's heard the names of all these, but never thought of using them for a living fence until a few years ago...now his yard is so lush, it looks like the hanging gardens of Babylon, sister!

For a very large living fence that is also a windbreak, plant saplings of apple, plum, pear, cherry, peach, apricot, nectarine, or nut trees about 6 feet apart. Late in the winter or very early spring, cut them back severely to just 3' or 4' so they will branch out from the base. In a few years they will mesh together, and topping them by 1/3 every 3 years will keep the windbreak both dense AND fruitful. On wet properties, willows, swamp maples and pussy willows can be used in the same way.

In mild-winter areas where even frost is rare one can use yucca, opuntia or cereus cactus, or the shorter, thornier citrus like lemons or sour orange if security is desired. All of these make fragrant blossoms (yucca blooms can be boiled and eaten) and healthful fruit. If you can find it, the thorny China rose "Archduke Charles" makes a dense, thorny hedge that blooms year round.

Non-thorny plants include hibiscus,feijoa guava,eugenia (Surinam cherry), certain old "Tea" roses, or "Silverthorn" (Eleagnus pungens) which has NO thorns. Kumquats and calamondins are relatively thornless citrus that are naturally bushy and low-growing. It is also possible to use severe prunings every 3 years to force loquats (Japanese plum) to grow as bushes.

Before planting your fence, get the soil into shape by working in plenty of organic matter like black cow manure or alfalfa horse cubes in, along with ample dolomite if your soil is acid, or feed-grade cottonseed meal if it's too alkaline. Shrubs purchased in 1-gallon pots ($3-$4) are fine; space them 3'-6' apart, plant them deeply, then mulch each side of the fence with 8" of hay. Water deeply weekly for a month & trimesterly.

"I love California, I practically grew up in Phoenix". Dan Quayle

GUAR

Guar* is a leguminous herb resembling the soybean plant to which it is related. With sufficient research support it could become a top-ranking agricultural crop in many tropical and subtropical countries of the world.

Its potential lies in the gum in its seeds. Guar gum has 5-8 times the thickening power of starch. It is used as a filter aid in the mining industry; as a thickener in cosmetics, hand lotions, and creams; and as a strengthening agent in paper. It is also used to thicken and stabilize salad dressings, bakery products, and ice cream. The demand for this valuable gum in industry is constantly increasing.

The gum is extracted from the seed's endosperm. It is primarily a galactomannan polysaccharide, and has high viscosity at low concentrations and over a wide range of acidities. Some 25,000 tons are already produced annually in the United States, but the demand exceeds the supply. One half goes to the paper industry; one third to the making of ice cream, desserts, cheese preparations, reconstituted tobacco, cosmetics, and pharmaceuticals; and the rest to the oil industry where it is used to stabilize drilling muds.

Guar also holds great promise for supplying protein required in the human diet. Guar seed contains about 34 percent protein, 23 percent gum, and 40 percent oil. It has been grown for food in India since ancient times. Young pods are eaten like stringbeans, or they may be dried, salted, or fried in oil.

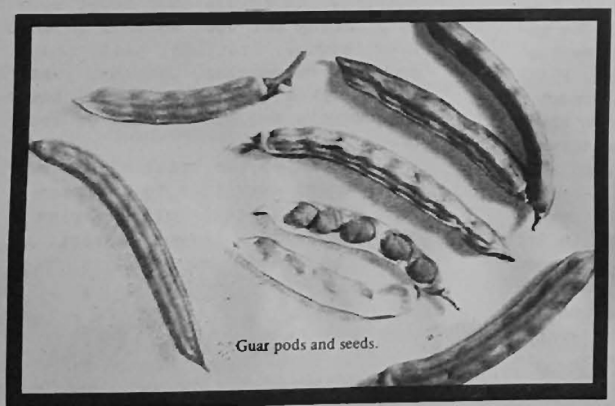
The cake that remains after removing the gum is also rich in protein; both the seed and cake contain a balance of amino acids that complements the amino acid deficiencies in corn protein, wheat protein, and rice protein. Bread has been enriched with 8 percent guar protein in experiments without adversely affecting flavor. But, regrettably, guar protein is not used for human consumption. Guar seedcake (mixed with the hulls) is used only as cattle feed.

The plant grows best in semiarid areas and tolerates moderate salinity. It is robust, bushy, and normally grows 1-2 m tall. The crop matures within 3-5 months after planting. On the main stem and branches it bears leathery pods containing up to 10 seeds.

An annual crop, it is easily planted, cultivated, and harvested by existing agricultural machinery. Guar seeds do not shatter; an ordinary grain combine or soybean harvester can be used.

The guar plant is drought tolerant, performing well in areas having 400-900 mm of rainfall. When moisture is short, growth stops until moisture again becomes available.

**Cyanopsis tetragonoloba* (L.) Taub. Also known as *C. psoralioides* DC., cluster bean. Family: Leguminosae.



Guar pods and seeds.

Radical

BROSIMUM ALIC

Wherever it grows in quantity, *Brosi* feed, especially during dry seasons its natural range, little attention has tree could be an important forage feed shortages in dry seasons.

Native to southern Mexico and *alicastrum* is also fairly common Although indigenous to moist forest Guatemala, Belize, and the Yucatan stock during drier months.

Cattle appear to enjoy the leaves as pig feed. The fruit's sweet perica humans. The seeds taste somewhat and roasted. They are also reduced t make tortillas, or are baked with the Mayans for making their native

The trees can be tapped and t chicle or drunk like cow's milk. "cow-tree" of Venezuela (made f potable, milk-like latex.

Brosimum alicastrum wood is sometimes used for construction an

The commercial value of chic development of logging camps in t foliage is still used as fodder for archaeologists). At each camp, tree that the animals can browse the eagerly. Groves of large *Brosimum* livestock feed equal to the best past

LIMITATIONS AND SPEC

Brosimum alicastrum trees grow to a diameter of 1 m. If managed for small tree, but expert tree climbe mature, unmanaged trees.

Special thanks to Judy Bl
for inspiring "Radical Pl

ASTRUM

*imum alicastrum** is much used as stock when other forage is scarce. Yet, outside been given to its economic potential. The source for any tropical area that suffers

to much of Central America, *Brosimum* in western Jamaica and western Cuba. ts, it is extremely tolerant of drought. In peninsula it is often the principal feed for

and branch tips; the abundant fruit serves rp and its chestnut-like seeds are eaten by t like potatoes and are eaten raw, boiled, o a meal that is mixed with maize meal to green plantain. The seeds are gathered by bread when stocks of maize run low.

he free-flowing, milky latex mixed with A related species, *Brosimum utile*, is the amous by Humboldt) which furnishes a

white, dense, hard, and fine grained. It is d carpentry in Yucatan.

le (the basis of chewing gum) spurred the Yucatan forests. *Brosimum alicastrum* the mules that carry the *chicleros* (and s are felled and the branches lopped off so leaves, nuts, and twigs, which they eat *alicastrum* trees are considered a source of tures.

IAL REQUIREMENTS

heights of 20-30 m; the trunk may attain fodder, the plant can be maintained as a s are required to lop off the branches of

inn of Lafayette, California
ants". John.

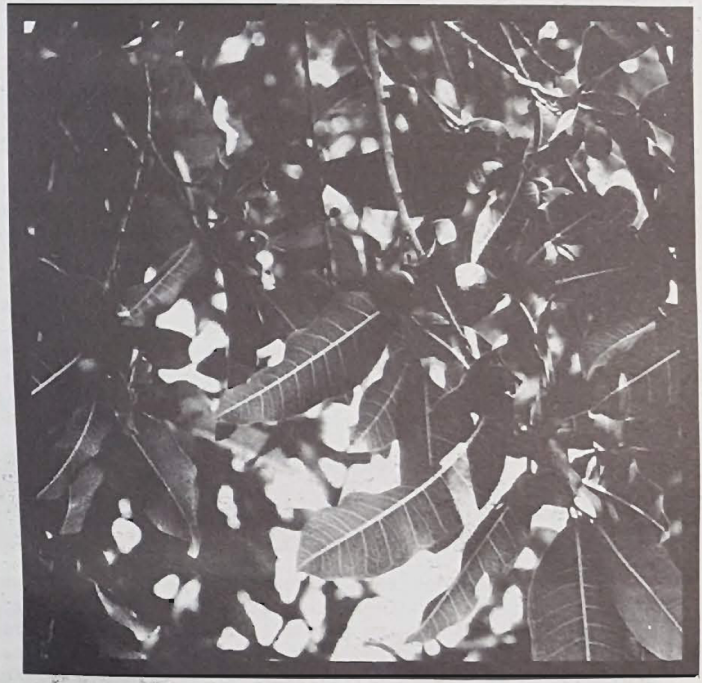
RESEARCH NEEDS

The cultural requirements of *Brosimum alicastrum* and its adaptability to new regions need testing. Reportedly, the tree can be grown from seeds, cuttings, or air layers. Experiments are needed to determine whether the trees can be closely planted and regularly coppiced. The fodder yield of coppiced trees should be determined and compared with that of other drought-tolerant fodder plants.

Seeds and leaves should be studied to determine the nutritional basis for their feed and food values.

There are three named varieties in Mexico. These and other types should be collected and evaluated as feed and food sources.

Because *Brosimum alicastrum* is related to *Artocarpus communis*, the breadfruit of the Pacific Islands, and because fermented breadfruit paste has a remarkably long shelf life, a study of the fermentation and storage behavior of *Brosimum alicastrum* seeds and fruit pericarp could be of great importance.



Leaves and pods of *Brosimum alicastrum* provide good-quality, year-round, livestock feed, which is a valuable resource during dry seasons. (F. J. Cárdenas Patrón)

**Brosimum alicastrum* Sw. Also known as ramon, capomo, etc. Family: Moraceae.

"There's nothing in your past so valuable that it should bankrupt your future." John Dufresne

The earth is completing yet another loop around our parent star, so human gardeners and farmers in the Northern Hemisphere once again find themselves presented with tasks and opportunities, which vary from one climatic region to another.

Plants in the more temperate areas are preparing for winter by ripening seeds, blooming one last time, slowing growth, enlarging tubers, shedding their leaves, and lowering internal levels of nitrogen and moisture as they begin to go dormant (or die, in the case of annuals). Now is a good time to dig up, divide, and re-plant perennial flowers like iris, daylilies, and poppies, along with perennial food plants like rhubarb, Egyptian multiplying onions, horseradish, asparagus, sunchokes and berry bushes. Dig up patches of bulbs more than 3 or 4 years old, divide them, and re-plant the biggest healthiest ones. The little bulbs can be planted elsewhere in the yard where they'll reach blooming size in a year ot two....tulips, daffodils, crocus, grape hyacinths, Dutch hyacinths, fritillarias and alliums all prefer to be thinned.

Fall is a good time to feed your (hopefully small) lawn so that it can enter winter unstressed and ready to thicken and green up next spring. Soybean meal is good because it's slow-acting and won't trigger tender new growth just prior to winter...buy it at feedstores. Dried manure or Ringer Lawn Restore is good, too, and should be given to all your soil...feed the veggie garden, flower beds AND the lawn. Fall is also a good time to apply a grass seed blend to a monocultural (one species) lawn...try to combine perennial ryes, "Ephraim" crested wheatgrass and spreading fescues. Dutch White Clover seed mixed in will help make the lawn greener AND self-fertilizing due to it's ability to convert atmospheric nitrogen to a form the lawn can use. Water each day for two weeks till shoots appear, then cut back to a deep watering every fifth day to encourage deep roots.

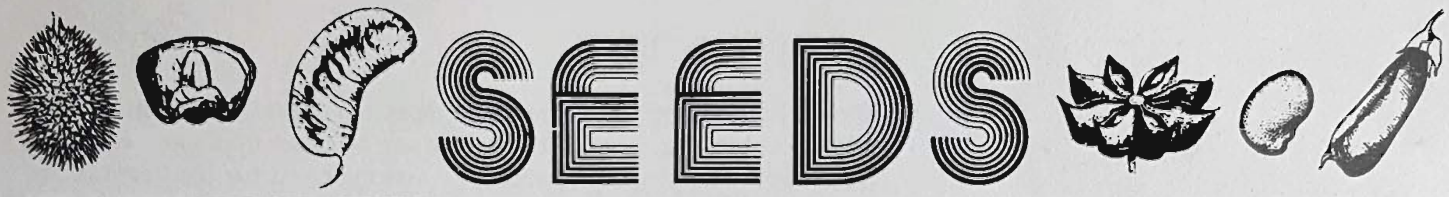
Grass seed can also be applied late in the fall or even early winter so it can lie dormant beneath snow cover...it will germinate the next spring when temperatures rise.

Many people in snowy climate regions like to cover their vegetable gardens with a layer of raked up leaves, a soil nutrient like kelp meal or compost or manure, then turn all it AND crop residues under so that it can slowly "mellow" during the winter months.

Autumn is also a good time in these colder areas to plant or divide woody plants, like fruit trees, shade trees, etc. If dividing heirloom roses (Damask, Gallica, etc.) look for plantlets 12" from the parent, dig them up, prune off the limbs leaving just 8"-10" of stems and plant the division deep...keep them well-watered for 2 weeks.

Growth never stops in mild regions like peninsular Florida or southern California, so gardeners there can feed their soil, cut back overgrown flowering perennials like pentas, allamandas, China roses or ruellias. As things cool down, begin planting the cool weather annuals like lettuce, broccoli, peas, snapdragons, calendulas, pansies, peas and snowpeas, cabbage, stocks, beets and carrots and other leafy or root crops.

Poised on the brink of winter and leaning away from the warming sun, our tiny frail world carries us all towards a larger harvest.



On the blank side of your seed packet with 1 **rusty-red cinammon bark tea fingerprint** write: "**Purple Coneflower** (Echinacea purpurea)" Composite family, native to North American plains, used by Indians to treat snakebite and insect stings. Root extracts sold early in 20th century by pharmaceutical companies as anti-infective. Active compound **caffeic acid glycoside** facilitates the body's healing po-ers and is concentrated most in roots, somewhat in expiring flowers. The tea causes a delightful tingle in the gums, tongue and mouth. Start the seeds in early spring where they are to grow a few weeks before last frost...keep damp. Tolerates drought once established. Best in full sun. Grow as weak winter annual in subtropical areas.

On the blank side of your seed packet with 2 **rusty-red cinammon bark tea fingerprints** write: "**Mystery Japanese Squash** (Cucurbita mixta or C. moschata)". This frost tender annual produces a dark green hard rind winter squash shaped like a flattened, ridge-less acorn squash. The walls are somewhat thin but are dense, meaty, flavorful, and dark orange. Like all squash, grow it in full sun. Sow the seeds 1½" deep in rich, composty soil kept damp till the sprouts appear. When the plants are 8" tall, mulch the whole area with 8" of hay to keep the soil damp and cool. The vigorous vines can be grown up a trellis, or in between rows of corn as a lower tier "mulching" crop. Newly unfolded young leaves edible in stirfry.

On the blank side of your seed packet with 3 **rusty-red cinammon bark tea fingerprints** write: "**Malva sylvestris**". Native to Europe, this relative of the hollyhock, hibiscus, cotton, and okra produces for months on end many dozens of the 1" diameter 5-petalled flowers, each a rich pinky lavender with maroon-purple stripes.Shade, drought, and frost tolerant, it prefers full sun, rich, mulched soil, and warm weather. It can reach 3'-4' in height, and may be cut back by 2/3's when it begins setting seed for a second phase of growth and bloom. Sow the seeds where they are to grow ¼" deep in full sun and keep damp. Plant in winter in subtropical areas, early spring in areas with cold winters, where it freely self-sows. Good in big pots.

ALWAYS store your seeds in the meat or produce drawer of your refrigerator, NOT a kitchen or garage shelf...Cool temperatures and stable humidity will keep seeds viable for many years.

Imagination

DO WE not all understand, when we are reading a great story or a beautiful poem, that we have jumped up behind a genius, as it were, and that he is taking us for a ride on his winged horse, Imagination? And do we not also understand that if we ourselves had not a great imagination in our souls we could never enjoy that magic ride?

"Somebody has said that a child takes up a twig and calls it a king, and it is true that the imagination of a child is a supreme and wonderful thing. A child knows better than all the grown-ups in the world that this beautiful and romantic earth is not the real thing, that there is in fact a much more beautiful and much more romantic world all about us if we have eyes to see it and imagination to enter into it."

Each Fall, gardeners in many climatic regions notice sudden infestations of white mildew and other fungi on their lawn, or on the leaves of crepe myrtle, turnips, sunchokes, hesperis matronalis, lilac, squash, roses, shade trees and many other plants. But this natural annual cycle is usually harmless, for the fungi are simply opportunistically colonizing weakened leaves slowly dying with the onset of winter dormancy. Some rose gardeners prefer to reduce autumn mildew with an old-fashioned soap spray, which alkalinizes leaves.

Soap Spray: Dissolve 3-6 tblspns. Ivory Soap Flakes in 1 gal. hot water; spray.

In the wild, dogs (like cats) ingest plant matter indirectly by eating their plant-eating prey's stomach and intestines and their contents. Dogs are also somewhat omnivorous, frequently eating grass, fruits, etc. Aside from the nutritional benefits of eating plant tissue, the fiber it contains offers dogs another plus: decreased transit time for consumed food, thus allowing for quicker elimination of toxic body wastes AND the discharge of worms dislodged by rapid bowel movements.

Unfortunately, most modern dog food is grain or soy based, and so is very low in fiber...some brands even brag of "reduced volume" of stools. But male dogs, in particular, can suffer health problems from a low fiber diet. Why? Male dogs have two anal glands which express a fluid each time the dog passes a LARGE DIAMETER stool. A low-fiber diet results in many male dogs having these glands becoming impacted, then infected, resulting in body-wide systemic ill effects.

So offer your dog a wide array of fruits and veggies. At left and right is Sergeant. THE WORLD'S BEST DOG, who not only grazes on bean and valerian leaves in the garden, but also vehemently requests raw carrots, turnips, daikon, snap and snow peas, winter squash, apples, and most of all, sweet potatoes. His stools are HUGE and he's very healthy. So treat your canine companion to what he needs right from your own organic garden.

Floridata

by

Sally Hassy

Hi, ya'll. Here 'tis goin' on November, time to plant a classic Fla-da winter vegetable garden of frost tolerant, heat hatin' leafy crops like chard, kale, cabbage, broccoli, Brussel's Sprouts, mustard, bok choi, collards, lettuce, cilantro, arugula (hear that,Ruta?), spinach, and others, plus root crops like carrots, turnips, radishes, garlic, scallions, kolrahbi, beets and potatoes, plus the true peas (snow peas, sugar snap peas, and English peas.

Now that things are cooling off, you can begin by first putting down a light sprinkling (say 5 lbs. per 100 square feet) of dolomite, seein's how Florida soil tends towards acidity while bein' low in both magnesium and calcium. Then broadcast feed-grade cottonseed meal all over the garden (about 25 lbs. per 100 square feet) and the same amount of either soybean meal, alfalfa pellets, or fresh poultry or horse poop (or pig or pigeon or sheep or zebra, whatever you can get the most of for free...feedstores sell the bags of seed meals for about $8 per 50 lb. bag. To provide the micronutrients often missin' from our sandy soil, sprinkle either kelp meal or "Alaska Fish Emulsion", the latter at a strength of 1 gallon emulsion to 5 gallons water. If you've been making compost all summer, put that all over the garden too.

Water the newly-fed garden site deeply, say for 4 hours if you are using an oscillating sprinkler, or 1-2 hours if you are using a roundy-round type sprinkler. Then, using a long handled shovel, turn the soil upside down, one shovelful at a time, starting at the back left corner and working forward till you reach the front of the garden; then move to the right 10"-12" and start at the back and move forward again. Repeat till you have turned all the soil in the garden, so that all the nutrients, plus last summer's crop waste and mulch is all inverted beneath each shovelful of soil.

Then cover the ENTIRE garden with a 12" thick fluffy layer of "coastal hay" from a feedstore...a bale of coastal hay, when torn apart and scattered thickly on the garden, will cover about 64 square feet. Use a hard, coarse spray of water from the hose to settle the fluffy hay down to about a 6" thickness...I like to put my thumb over the end of the hose and run the water full blast to get that powerful spray.

Drink a lemonade, then use both your hands to "part" the damp hay to expose a 4" wide band of soil where your row of veggies is to be. (Just imagine a barber using two combs to part someone's hair. Drag your finger in the soil to make a trench ½" deep (1" for peas) and lightly sprinkle in your seeds... cover them with a layer of soil 4 times the seed's widest width. You should then water EACH AND EVERY DAY FOR TWO WEEKS to insure germination...water every 5 days after that. Thin the seedlings when they get big enough, and hope for cool weather. Feed the garden in 4 weeks with either more fish emulsion or Ringer Lawn Restore, then dust the garden with Bacillus thuringiensis (BT,Dipel, Thuricide) to control cutworms and armyworms. Bye ya'll!

persian catnip

(Nepeta mussinii)

This delightfully aromatic perennial herb is too often overlooked by gardeners seeking a drought tolerant reliable groundcover. Whereas "regular" catnip (Nepeta cataria) is a rangy 3'-4' high weedy-looking plant capable of producing 68 kagillion invasive seeds per plant per season, Persian catnip is a charmingly lush 6"-10" prostrate groundcover topped almost continually with short spikes of fragrant purplish-blue flowers that honeybees love; the spring display is especially dramatic, nearly obscuring the underlying layer of aromatic, deeply indented pale green oval leaves, each about 1" long. It reseeds itself only lightly and spreads slowly by self-division; full sun is best.

Persian catnip grows better if it is cut back HARD when the spring display begins to fade, then again in late summer when the second display also slows down in anticipation of autumn. Unlike regular catnip, this herb's heady fragrance is STRONGLY reminiscent of fresh lavender, and the dried leaves and flowers hold their scent well and so make for fine sachets, teas, and potpourris. Dried flower spikes work well with arrangements of everlastings and grasses.As with all dried herbs, Persian catnip holds its scent and color best if dried slowly in the shade where sunlight cannot drive out the essential oils or bleach the delicate pigments.

Being a hardy perennial, it does best in areas with somewhat snowy winters, or at least where there is a period of the sustained colder temperatures that create the period of dormancy that hardy perennials require. Look for young plants in spring at nurseries.

Henry's Seven Pages

Henry meets a woman
and she flips through his fingers,
he pretending she Braille;
likening her nuances to gardenias on French mornings.
And the way sidewalks smell after rain
is how he know summer.

A man passes warm into his hungry arms,
he pretending he Braille,
noting his strength, his scent.
A falling star cuts the sky
the first time they kiss.

And Henry keeps a diary.
Five pages filled with Braille-nights
when no words, only tongue, parted his lips.
One page, he see
in park an old woman sleeping in the rain,
she a wet curl on the ground amidst litter.....
Henry then knew he knew sad.

Last page
Henry see woman, no, a young girl, take her own flower,
she pretending she Braille,
eyes clenched tight and gasping,
thinking she alone,
displacing only air in the rose garden.
(but behind bush Henry see her
as he trembling with pleasure,
pretending he, too, Braille!)

John Starnes

SEEING WHITE HAWK

Search the sky for angels;
but your back must whisper love
songs to the earth.

Joan Maloof

AND NOW, FOR SOMETHING COMPLETELY DIFFERENT

by Richard Rew

You, the Gentle Reader, are already acquainted with the wit and wisdom of your editor, John Starnes.

Alas, only a privileged few of us have had the opportunity to talk with the man in person.

My first impression of John was that of a pleasant and youthful person, neither tall nor plump, but with remarkable sense of humor, and a rare intellect.

John turns out to have many, and far-ranging interests, befitting a person whose I.Q. exceeds his weight (in pounds).

One of John's totally non-botanical interests is Aerodynamic Origami (or to give it its technically precise Latin name: Paper Airplanes).

About now, those of you who are not members of the 8-½" x 11" Special Interest Group, are asking yourself: "I thought I was reading a biography, a Human Interest Story (like the National Enquirer), So what's all this KID Stuff!" Worry not. This should promise pain and gore enough even for the most jaded reader, including paper cuts, glued-shut eyelashes, mis-stapled thumbs, and paper-clips in the soup.

Starnes' yard, in Denver, is easy to find in the summertime. His is the only jungle on the block. The small house is difficult to see from the street, being completely screened-off by a green wall of tall flowering plants. I considered unfolding and deploying my 2" machete, when I discovered that the sidewalk was still passable. Following the contented clucking sounds of uncooked chickens, through the green-dappled gloom, I encountered the author himself, sitting in a lawn chair, cutting, folding and stapling something.

Whatever paper thing that he had been stapling, it wasn't just another hand-colored, off-color, informative, humorous copy of THE GARDEN DOCTOR. He tossed it into the air. The contraption zipped past my left ear, then turned right, performed an Immelman, and glided to a gentle landing next to his pond. It actually flew.

You have seen the parabolic arc followed by ballistic objects like rocks, wadded-up newspapers and paper darts (folded by mere kids).

You can readily appreciate the difference between ballistics and controlled aerobatics.

It takes a true artist to create (and a methodical and persevering experimentalist to understand) the subtle adjustments required for reliable control of a real aircraft in miniature. Your editor is a little of both.

John showed me (and my wife Frances) his aeronautical room. The ceiling was festooned with a collection of his original creations, hanging from a suspended string with clothespins. Most of them flew well enough indoors, but not outdoors, and he sought further improvements.

In order to improve the breed, Starnes stooped to ask aeronautical advice from a known science junkie.

Neither short nor plump, this scrawny, graying old vegetarian bibliophile keeps his assumed I.Q. at exactly 98.6 (measured on a good day, with a stiff tailwind).

My major contribution was to loan all my books on paper aircraft design and construction to John.Then I built him a few favorites of my own design. John learns fast. The rest is history.

Starnes is now the most prolific paper airplane designer I have ever met.

With a little encouragement (translation: write him some letters) from his loyal readers, he might publish his designs, for the benefit of those of you who would like to pre-cycle some of your used-up paper before you recycle it.

WARNING:

Acquiring any new hobby will stretch your brain, and expand your level of awareness. You will become more creative. You will spend very little money on paper airplanes, but you will spend a great deal of your spare time mastering the knowledge and many new skills needed. You will learn a lot about the physics of lightweight structures, inertia, balance, and center-of-gravity, and about the metaphysics of invisible airflows.

You will start to talk learnedly about lift-to-drag ratios, Reynolds numbers, aspect ratios, control moment arms, dihedral and canard configurations. (continued next page)

Suddenly, you will begin to appreciate the problems and the compromises made by aeronautical engineers, starting even before the Wright brothers.

Any fear of flying that you might once have harbored will evaporate with the understanding of how it all works.

Some people will think of your new hobby as "kid stuff". If they can't grow with you, then you will outgrow them. Surprisingly, you will find others with similar interests, in the most unlikely places (like here).

In the best tradition of science, when you are the first to create something totally new, pass it on. Others will expand on your ideas, and you will expand on their ideas. Positive Feedback encourages creativity.

A quote:

Throughout history, poverty is the normal condition of man. Advances which permit this norm to be exceeded--here and there, now and then--are the work of an extremely small minority, frequently despised, often condemned, and almost always opposed by all right-thinking people. Whenever this tiny minority is kept from creating, or (as sometimes happens) is driven out of a society, the people then slip back into abject poverty.

This is known as "bad luck".

Robert A. Heinlein in his book "Time Enough for Love", 1973.

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Richard Rew is an electrical engineer for the Public Service Company of Colrado, and is also a longtime resident of Denver. His hobbies include experimental physics.

"THERE THEY GROW AGAIN!" *by Rhonda Reagan*

Well, just the other day I was telling my mate Clancy that...uh, well..uhh..I don't recall. Oh yes, I said to him "There you go again, hand-pulling that evil empire of weeds when just the other day I told you that mulching the entire perennial flower garden with upside-down used carpet would make ours a shining garden atop a hill, a beacon of hope for all those weary souls using herbicides in their futile war for freedom from thistle, dollarweed, quackgrass or Bermudagrass.

Just be sure to get the kind of carpet with artificial "jute" backing, not the natural kind, which would quickly rot. Dig out all the perennial flowers and set them aside, then dig a trough about 6" wide AND deep all around the outline of the flower bed to tuck the edge of the carpet into, then broadcast your favorite organic soil food all over the bed, RIGHT ON TOP OF THE WEEDS, unless you wish to dig them out. Lay the old carpet upside down on the bed, use a steak knife or carpet knife to cut it to fit, then push all the edges into the trough. Then, cut out 10"-12" circles out of the carpet about every 20", excavate the soil there and re-plant your posies. Now cover the carpeted bed with 4"-6" of your favorite mulch, and water the new bed deeply to settle it in. NO weed can grow up through carpet!!

The demagogues and nay-sayers pooh-pooh this policy, but MAKE MY DAY and try it! Recycling old carpet can promise that your garden's best days have yet to come! Even Clancy's astrologer agrees!

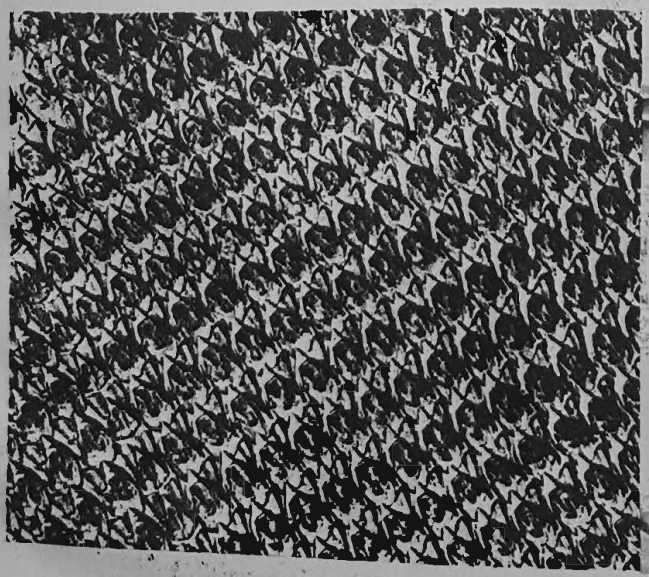
(Thanks, Anne, for your kind, insightful letter, for giving so many gift subscriptions, for penning those great articles for THE GARDEN DOCTOR, and for taking your payment in the form of annual subscriptions which you in turn give away to help promote this publication. Your letter touched the very heart of my frustrations with keeping THE GARDEN DOCTOR alive. Sincerely, John).

Dear Dr. John,
I wasn't going to renew because money is tight but then I realized that if I didn't renew - "THE GARDEN DOCTOR" might not be there later - so to hopefully prevent that loss here is my renewal & also a couple of gift subscriptions will be on the way as soon as my Christmas Club check arrives - Hang in there - you've got a great publication. Sincerely, **Hot Pepper Dave, (a.k.a. David Carey), Fort Atkinson, WI** (I appreciate very much your support, Dave, when your own prosperity is waning for a bit. John)

Dear John:
I am writing in response to your editorial request in issue 19. We had decided not to renew our one year trial subscription, but we are impressed enough by your sincerity and effort to extend another year. We like your emphasis on distributing interesting seeds, planetary healing and especially the gardening articles. We believe your quotes and references to feminism and homosexualism are unnecessarily confrontational and detract from your positive, upbeat goal. The Floridata articles are not of much value to us. While your current article on roses was interesting, I wondered what hardy roses were available for the more temperate climates. I also wonder whether the filler like the bird pictures on the inside back cover and the "longitudinal sections of the ovaries of Primula japonica" are worth the paper they consume.

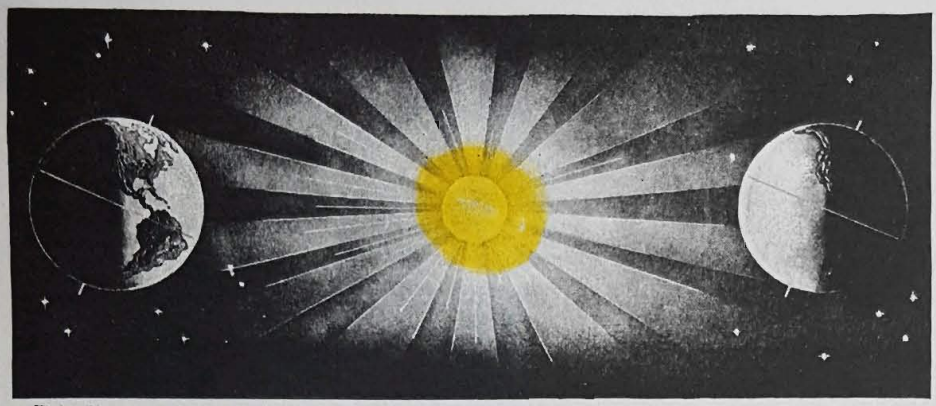
The Costa Rica articles have been interesting. I would like to read more plant detective articles - like your Florida rose article - with application to temperate climates. I don't know that these thoughts are particularly coherent or helpful. Here's our check for another year. **Jim & Cyndde DeWeese Butler, Ohio** (Thanks to you both for renewing despite some misgivings, and thanks too for your analysis of THE GARDEN DOCTOR...I occasionally wonder if people DO see the illustrations of plant and animal as filler, or as I intend, as identification guides. Florida gardeners are almost universally ignored by gardening publications..."Floridata" is my attempt to address that longstanding oversight... I think you'll enjoy the first installment about hardy roses that appears in this issue, for I also collect them in my Denver yard for their fragrance, form, and historical value. I'm glad you like the Costa Rica series, for I plan several more installments. Lastly, I sometimes mention controversial social issues because, to me, the same gentleness of spirit that inspires us to garden organically, to try to save remaining wild animals and plants, and to try to reverse global ecological damage is also a fine motivation for working to spare the (roughly) 51% of the human population that is female, the (roughly) 40% of the U.S. population that is non-Anglo, and the (roughly) 10% that is Gay from the brutality and degradation that stems from being deemed second class humans. But if I am estranging my readers rather than stimulating them, perhaps I'd best leave those issues to "Harper's" and "Ms." Thanks again for the input. John).

Dear John-
I felt so sad for you reading over your editorial in the summer issue of TGD....I devour every word of it as soon as it comes in the mail.I especially enjoy reading your editorials....I really like what you're doing and I'd say don't change a thing about it. I'm going to sign up for another 2 years. I would love for TGD to be a "perennial feature" of my life for years to come.too. **Melinda Menne, Grangeville, ID** (Thanks Melinda, for your YEARS of generous, soulful support. John.)



432

Slugs and snails grind their food with their strap-like tongue, the surface of which is covered with regular rows of teeth, which grate the food to shreds. Fig. 432 shows the highly magnified surface of the tongue of the garden snail (*Helix pomatia*).

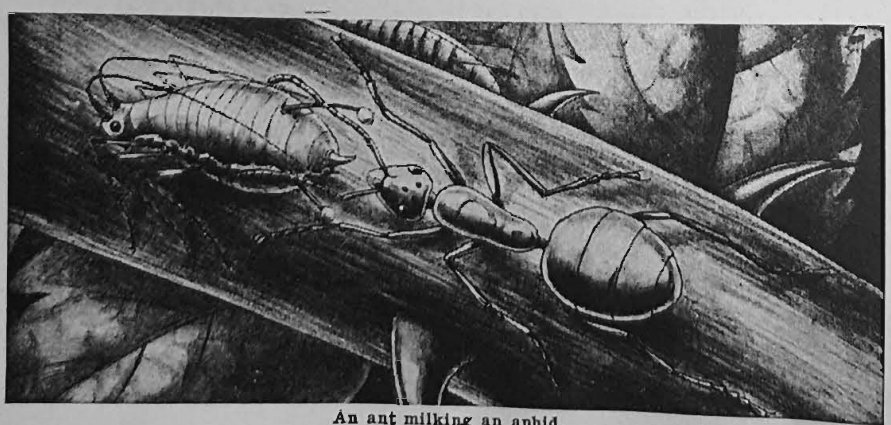


This diagram shows, on the left, the Western Hemisphere in summer daylight, and on the right the same hemisphere in the darkness of a winter night.

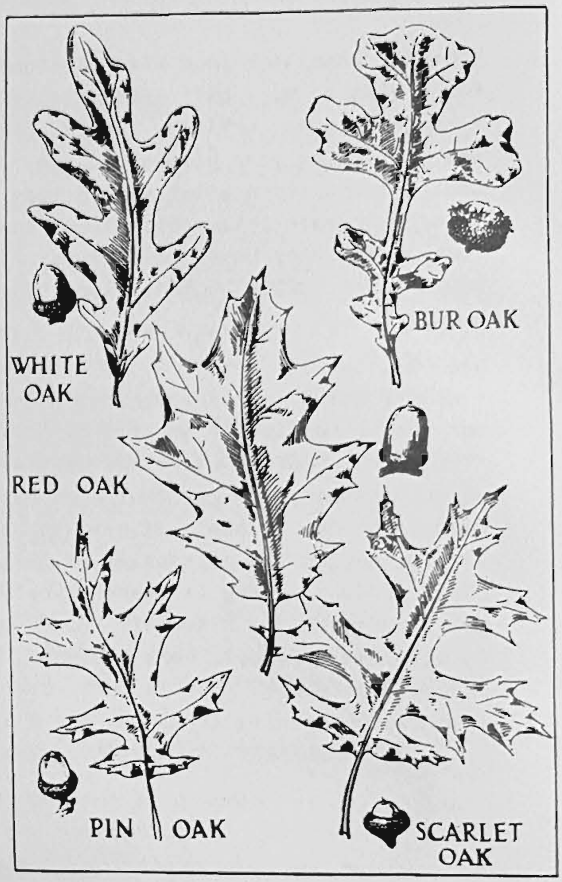
The natural sciences are systematized examinations of the amazing universe we are born into.

FIG. 83. Common Pitcher-Plant (*Sarracenia purpurea*).

At the right one of the pitcher-like leaves is shown in cross-section.

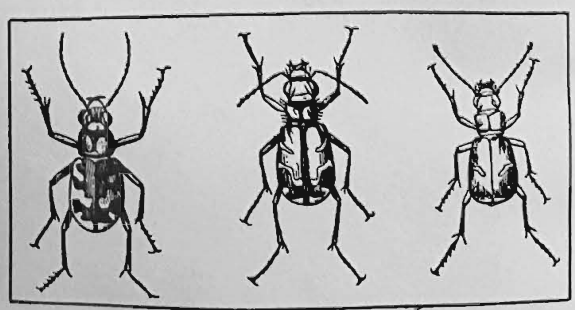


An ant milking an aphid.



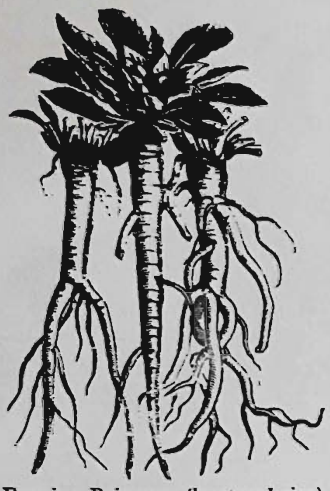
TIGER BEETLE
Manticora maxillosa

TIGER BEETLE, the popular name for many brilliantly colored beetles of the family *Cicindelidæ*. The name "tiger" suggests the predaceous habits of the larvæ. In sandy places or in well-trodden paths they construct vertical burrows. Here they lie, with their heads near the entrance, ready to seize any passing insect. A pair of forward-curving hooks on the abdomen helps the larva to maintain its hold on the walls of the burrow. Adult beetles of the more



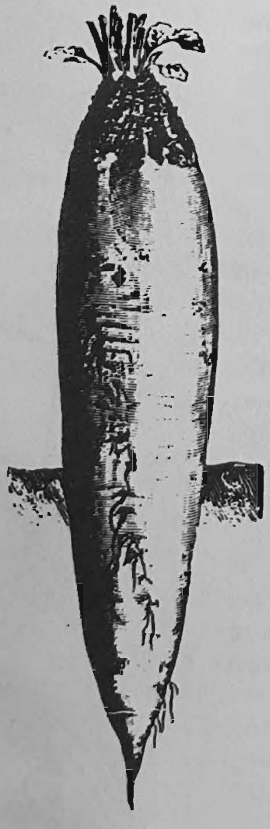
TIGER BEETLES (*Cicindela*)
C. generosa *C. tranquebarica* *C. purpurea*

common species are metallic green, blue or brown in color, often with small light spots on the elytra. They are long-legged, agile insects. When disturbed, they fly a short distance and alight facing the source of disturbance.



Evening Primrose (½ natural size).

The roots of the Evening Primrose (Oenothera biennis) may be dug in Fall or Spring and served steamed or boiled.



Sugar beet roots may be chilled, sliced, and served raw as a natural candy.

And the snakes. When our little six year old came for his summer vacation in June, he brought a new fear with him. Snakes. He was terrified. Off and on over the course of his visit, I talked with him about the snakes who live here, how his fear had nothing to do with the reality of *their* existence, but related perhaps to something else. In the end I had so rhapsodized about the beauty of snakes and their *raison d'être* that the snakes forgot to be afraid of me. Three times in succession, walking barefoot, I stepped right on a sunning snake. They caught on. I'm dangerous and to be feared! They decided that there is safety in numbers and built a snake housing development in a rock wall far removed from the house. Snakes of several different varieties now live in this one area which we have dubbed Snake City.

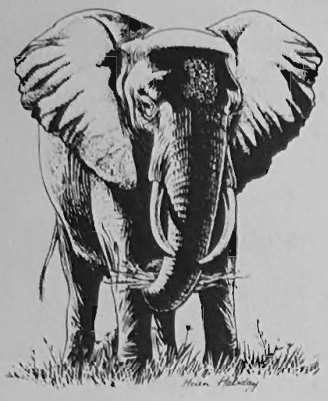
I haven't said much about what the book is actually about, only about its effect on me. This is partly out of laziness, or due to the letter writer me who wants to talk about what's happenin' in my life. But more important, it would be very risky to attempt to define the contents of the book. I will go so far as to say that I think it will be more readily understood and accepted by a female reader (whether housed in male or female body) than a male. It is a book about diffused consciousness and about relatedness. It is also autobiographical. It is also a story greater than fiction. And a manual for life's journey. And a rather thrilling tale of victory over circumstances. It spells out a compelling example of reaping meaning and benefit from some of life's more difficult beginnings.

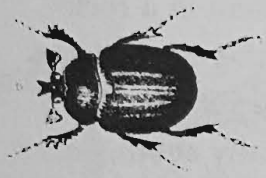
It is a book about marriage, and relationship. And gardening practices. And, naturally, with God right there in the title, it is an absorbing story of one woman's courage in striking out against the institutionalized God personified for us in most religions. It is a book that will raise questions about the way we view life. It offers suggestions for living life more fully, for looking at life from a different perspective. It even gives exercises for entering into a different state of consciousness. But most of all the book is interactive. It shatters boundaries and takes us beyond them. It is a life altering book and I strongly recommend reading it.

I doubt very much that it is available in bookstores. I ordered additional copies by writing to the author, c/o Perelandra, Box 3603, Warrenton, VA 22186. The cover price is $9.95. $1.80 covers shipping and postage. Do yourself a favor and buy the book. If it doesn't appeal to you, it makes a nice gift. That's how it first came into my hands.

A Short Dance

by Roger J. Wendell



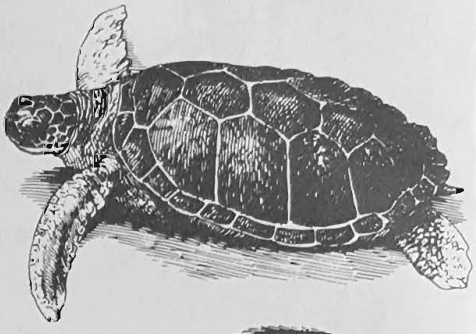


wolf

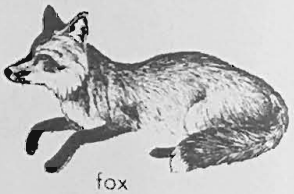
Imagine holding your hands in front of your chest—as if to illustrate a length or distance. Between these hands our lives flash like the ephemeral dance of a mayfly. One hand indicates our beginning, while the other signals the end—the space in between may be all we ever have. If you're like me you may not know exactly who to thank for this short dance, nevertheless, it's good to be here.

Besides just "being here now," what else is important? Well, other life, that's what. All life. That includes every lichen, redwood, beaver, bear, and bobcat. Each has as much "right" to be here as me or anyone else. Life's choreography is a display as rich and varied as anything we could ever invent or imagine. Like the turning, whirling dance of Shiva, each living being has a magical presence that is wondrously hypnotic. Yet, our modern, artificial existence blinds us to the real beauty of life. Bankrupt idealogies and social systems separate us ever further from the wonder of this, our organic heritage. For me, the complexity and vibrancy of living things is a collection of verse as sacred as any Bible or Veda. From the ashes of burnt stars rose this wonderfully indescribable phenomenon that has graced our planet for over three billion years. Unmolested, life's breathtaking diversity, beauty, and abundance reigned for a thousand million generations.

Until now. Now, with a sadness so deep and profound that it defies description, I am forced to witness the desecration of the very evolutionary fabric that binds us all. Nature, on every corner of the globe, is being crushed by the asphalt glacier of human greed and ignorance. All of us have watched it. Our techno-industrial society's relentless conquest of the natural world is taking its toll. From shopping malls and housing tracts, to patchwork clear-cuts and strip mines, our globe's fragile network of ecosystems is being severed forever. The ecological losses that have occurred over the last decade alone read like a wartime bodycount. More than just numbers, imagine what it really means to lose an eagle, a forest, or an entire species. Gone, lost forever. And with it too our own sense of freedom and aliveness—the very essence of our being.



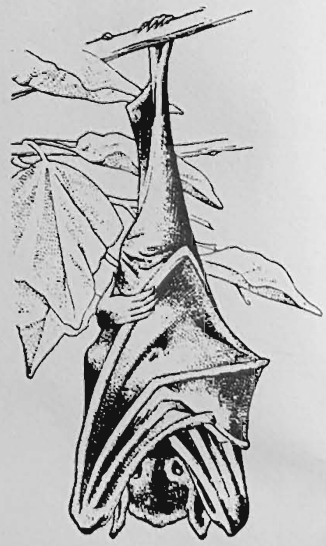
Every whale, elk, and snail darter has a right to compete for its existence free of artificial interference. Our cultural ethic must be to preserve and protect—not to pillage and pilfer at greed's whim. It's an outrage that our collective consciousness, as a species, allows us to degrade any life, let alone sweep it aside with cavalier abandon for sport or profit. The dance of life is too special, too sacred, to be debased and destroyed by such arrogance.



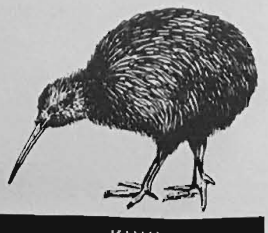
fox

These are desperate times. Do we console and comfort ourselves with technological hallucinations and imagery while organic evolution is killed? Or do we act before the close of hands at the end of our own short lives?

Compromise, platitudes, and promises mean nothing to living organisms and beauty. The answer is much deeper. Immerse yourself in nature and you will emerge with the vision necessary to guard that most sacred of dances. Touch the heart of wilderness and you will know the universe, you will know life, and you will know the answer.



Sleeping Bat.



KIWI

Cold Climate Antique Roses

What follows are extracts from Joan Franson's comprehensive article "WHAT ARE OLD GARDEN, SPECIES AND SHRUB ROSES?" Joan is a consulting rosarian, rose judge, and has served as past President of The Denver Rose Society....

"...**Alba** roses are noted for their grey-green foliage which offsets so well the white, pink and pale blushcolors of this type. One of my favorites is 'Celestial' with its cool pink perfection blooms looking as if they belong on an ice cream cake. Prune thin stems severely and shorten long stems by 1/3 of their length (after blooming).

More than a drink or an island in the Indian Ocean, **Bourbon** also is a type of rose whose transluscent beauty is breathtaking. The cupped blooms of lavendered rose 'La Reine Victoria' and its sport in blushed warm ivory for 'Mme. Pierre Oger', repeat all summer. These may be pruned as for Hybrid Teas.

As you can tell from the name, **Centifolia** means one hundred 'leaves' and refers to the petals of this rose. (see 19th century drawing above). It happily bubbles up into several centers as it displays its 'quartered' form. 'Fantin-Latour', featured on the cover of **Classic Roses** by Peter Beales, is a full-sized pink and 'De Meaux' is the size of today's miniature roses in slightly deeper pink. For both Centifolias and Mosses, shorten current season's growth by 1/3 after blooming.

The most exciting happening of all occurred when the Centifolias "sported" (mutated into) the **Moss** roses. Ah, perfection. The sticky, elongated glands along the backs of the sepals and the peduncles are resinous scented. These ferny, frilly extensions add even more beauty to this bevy of blooms - one of the reddest of the few red mosses is 'Henry Martin'; 'General Kleber' is fantastic in deep pink and there is not one thing common about the exquisite 'Common Moss' ('Old Pink Moss' or 'Communis').

The peak of perfection of the **Damask** roses must rest in 'Mme. Hardy' - hundreds of small, pure white petals scalloped about the green pippin eye are guarded by the slightly larger outer row of petals. Remove twiggy growth after flowering and shorten long canes by 1/3 before the growing season starts the next year.

The widespread distribution of **Gallica** roses (Europe, Western Asia, and North America) may be due partly to its cultivation as a medicinal plant and also to the fact that it both spreads by stolons (underground stems) and by producing many viable seeds. Gallicas tolerate drought and wide ranges of pH and temperature extremes. Because of the ease with which this type of rose "sports" color patterns of stripes,, dots and marbling, they are often called the 'mad' Gallicas. Often grown here (in Denver) with all its reddish pink dots and marbling on dark maroon petals is the classic 'Alain Blanchard'. Gallicas bloom in pinks, purples, mauves and maroons but not white. Compact varieties may be pruned more severely. After blooming, remove some flowering stems to encourage basal growth..."

Except for the Bourbons, all these roses bloom only in late spring. All roses enjoy monthly feedings of Fish Emulsion. Use dolomite on acid soil, compost on sweet.

PHUKINAP!

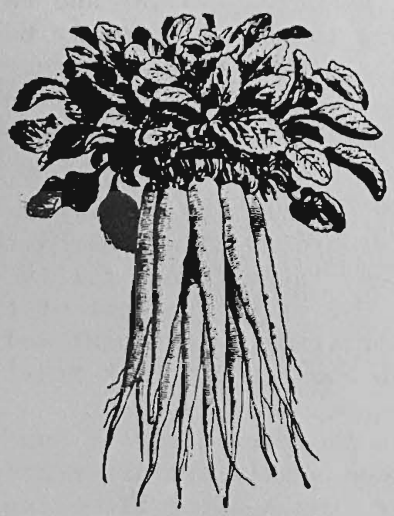
The Pentagon has requested $1.6 BILLION to AIR CONDITION the hangars that house the Stealth Bomber. **Daniel Chiras in "Lessons From Nature"** (Island Press, 1992

Within minutes of a drought-stricken plant beginning to wilt, there is a 1,000 percent increase in levels of a natural hormone called abscisic acid (ABA). This surge in turn causes a cascading series of chemical changes that impart extra resistance to drought and pathogens. **Science News 8-11-1990**

Growing in Tombstone, Arizona is a "Lady Banks" rose tree that has a 40 inch thick trunk that supports a 9 foot high canopy covering an area of 5,380 feet. A framework of 68 posts and several thousand feet of iron pipes supports the rose, which was started as a cutting brought from Scotland in 1884. **Guiness Book of World Records**

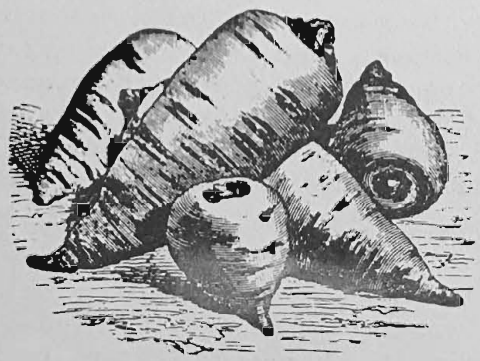
"The urine of pregnant women, for example, contains estrone and estriol, which are also found in palm trees and willows." **Professor Antonio Lima de Faria, Institute of Molecular Cytogenetics, Lund, Sweden.**

"It isn't pollution that's harming the environment. It's the impurities in our air and water that are doing it." **Vice-President Dan Quayle**



Rampion (⅓ natural size).

RAMPION.
This biennial member of the Campanula Family is native to Europe produces firm, crips white roots about 2" X ½" which are best if harvested in the Fall in their second season.



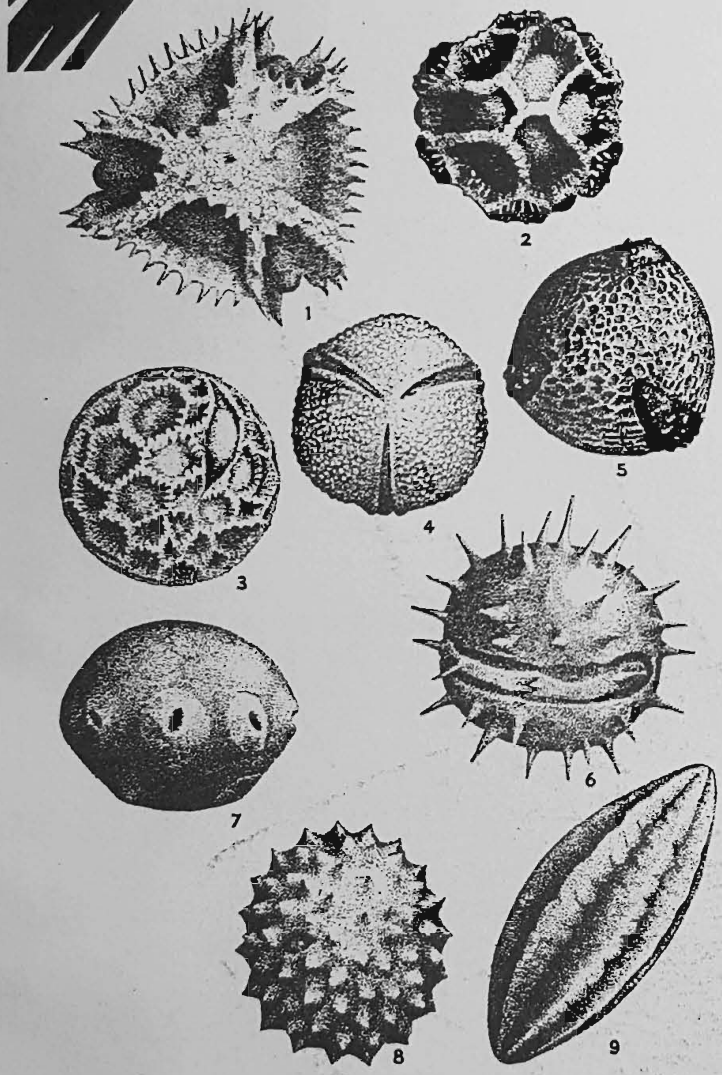
Turnip-rooted Chervil (½ natural size).

TURNIP-ROOTED CHERVIL.
This biennial member of the Carrot Family is native to southern Europe. Sow in early spring, or in the fall for spring germination. Ready for harvest in its second season late in the Fall.

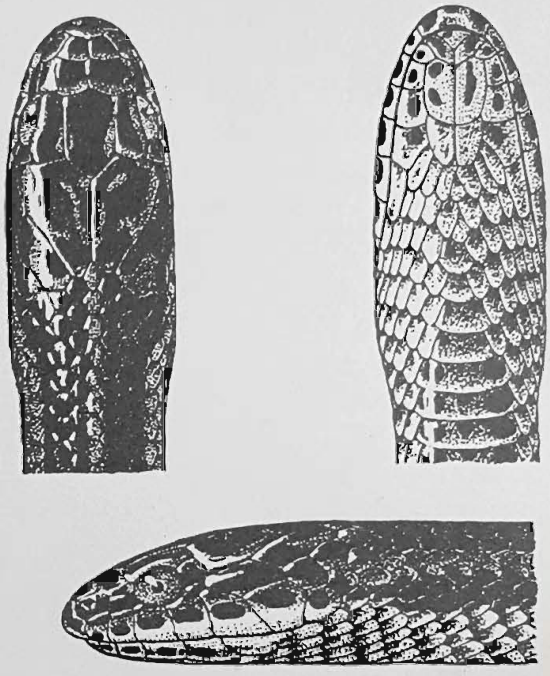
"...my roses..."
Chance, The Gardener

Common Celeriac, or Turnip-rooted Celery (⅛ natural size).

CELERIAC.
This relative of celery has the same needs but instead of stalks gives us a swollen root cluster with a mild celery-like flavor, raw or cooked. Give it full sun and rich moist soil.

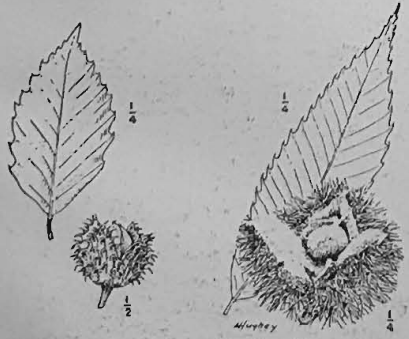


—Pollen grains of various forms and markings. 1. *Tragopogon pratensis* (Oyster plant); 2. *Stokesi laevis* (Stokes aster); 3. *Polygonum chinense* (Knotweed); 4. *Fagus grandifolia* (Beech); 5. *Salix fragilis* (Willow); 6. *Nymphaea advena* (Water lily); 7. *Juglans nigra* (Black walnut); 8. *Ambrosia trifida* (Great ragweed); 9. *Ephedra glauca* (Joint pine).

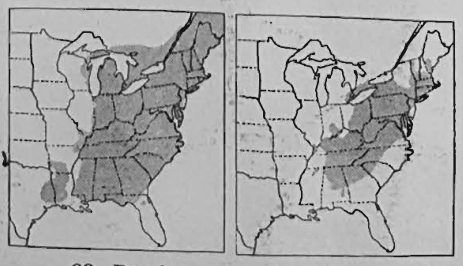


Rainbow snake (*Abastor erythrogrammus*).

Sassafras (Sassafras variifolium)



89. Beech. 90. Chestnut.



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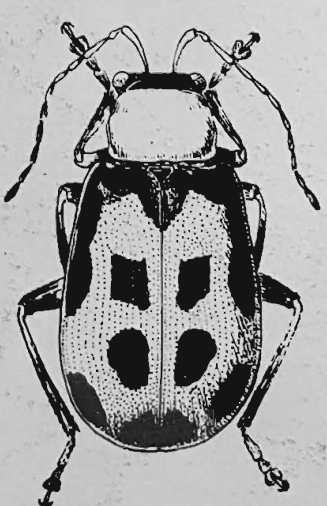

Bean leaf beetle.

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