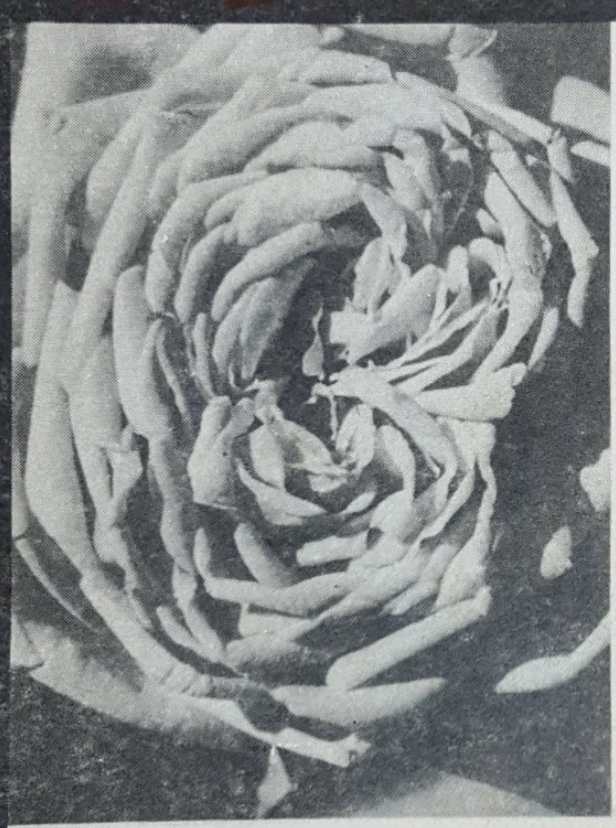
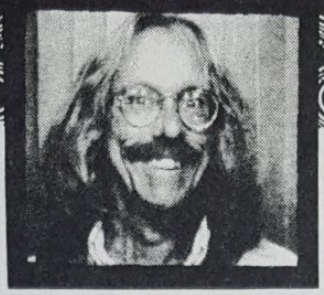
THE GARDEN DOCTOR



LOOking for Something?

INDEX:

above: **STAG BEETLES**
cover photos: Roses, old & new...
upper left-'**La France**' Hybrid Tea 1867
upper right-'**Irene Watts**' China 1894
lower left- '**Anna Pavlova**' HT 1981
lower right- '**Abraham Darby**' English Rose 1985



For the last 4 years I've been a migratory organic landscaper, among other things, and each of those 8 long road trips between Denver and Tampa gave me a few days to relax and introspect while relishing the slow gradations between geographies and climates. Last spring, as Sergeant (the World's Best Dog), and Lovely (the world's fattest cat), plus 3 pet chickens and I headed towards Denver from Tampa in our little white pickup truck, I again savored central Tennessee's verdant panoramas...the green heave of forested mountains dappled with the pinks and whites of dogwoods and redbud trees flanked the highway as I realized anew that my first real taste of serious illness that winter had confirmed for me 2 old "corny" truisms..."When you've got your health, you've got everything." and "You don't know what you've got until you lose it."

I had for 39 years taken for granted my body's ability to rid itself of waste, to sleep restfully and deeply, to be free of pain, and to awaken with energy. But a serious and persistent urinary tract infection took those things from me for months, forcing me to see that they had been unrecognized gifts all along. Without my health, I had little appreciation for life's other gifts. Under the care of an insightful wholistic doctor named Arlene Kellman, my body and mind began to heal, and I slowly came to see that miserable illness itself as a gift, one that woke me up into a larger thankfulness reminiscent of another "corny" saying...."Count your blessings!"

So as the warm Tennessee sunshine poured in through my windshield, I wondered if those truisms might equally apply to the loss of global health... would the thinning ozone layer someday make sunlight a fearful thing that causes widespread crop losses and millions of skin cancers and cataracts? Would those people sadly long for the safe sky only the elderly remembered? Will the skyrocketing extinction rate decimating the world's plants and animals leave people gazing wistfully at pictures of wild animals you and I can still see living today? Will those people long to somehow recover these and other natural gifts we take for granted today?

Here it autumn again already, and I've regained 95% of my previously taken-for-granted health...waking up feeling rested and WELL is sufficient to start each day happy. Having recently turned 40, I'm noticing life's surprises, good and bad, and I can't help but chuckle at some of my own internal changes over the years, like deciding to spend THIS winter in Denver, DELIBERATELY. Or how 10 years ago I ranted against the "slavery" of a mortgage, but now I relish having just refinanced my down to 15 years at 7%. 15 years ago I found huge new internal realms of joy and excitement and freedom via the ritual consumption of "magic" mushrooms, and immersion in a Bohemian community of similarly-crazed avant-garde fellow artists in Ybor City, Florida...now here I am a very domestic, home-owning "plant dweeb" getting his kicks manually cross-pollinating roses and voraciously reading stack after stack of century old books about them. 25 years ago I was incredibly unhappy most of the time, caught in a web of habit, familial sadness and unhealthy thinking, unaware of the many gifts elsewhere in my life...now I wake up daily to a general happiness I could have never even imagined then. But these days I feel that, despite our undeniable trials and tragedies, we are surrounded by precious life gifts needing only to be noticed, then accepted, enjoyed and shared. And isn't our desire to give and take of that universal abundance at the heart of why we garden?

John

"Kookoo Kachoo! Kookoo Kachoo!" The Beatles

GOOD NEWS

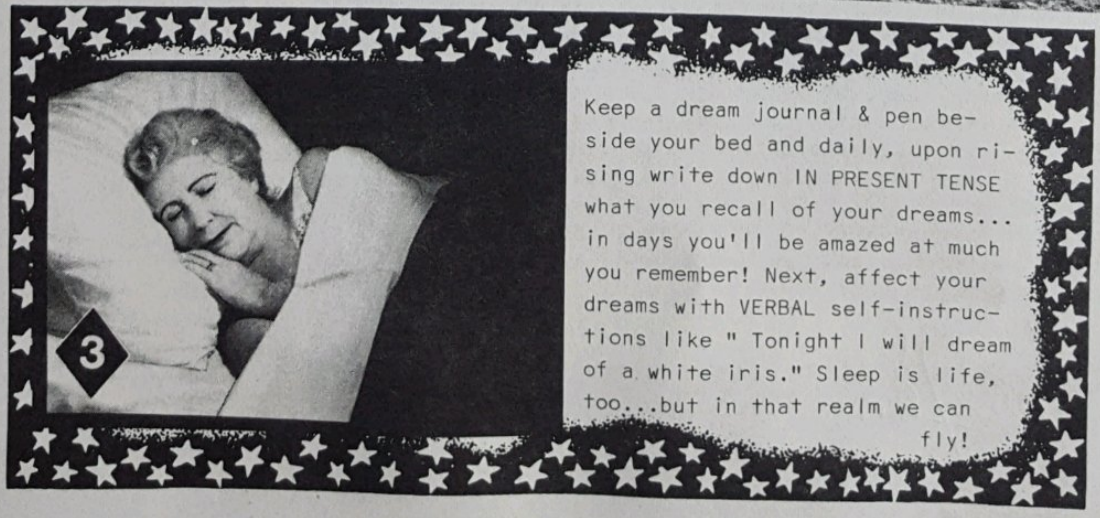
U.S. emissions of sulfur dioxide have dropped by 30% since 1970, resulting in a "statistically significant" drop in acid rainfall at 26 key rainwater collection sites across the country. **William G. Baier, USGS**

Purple grape juice contains the same natural cholesterol-lowering chemical that wine contains. Called 'resveratrol', it is produced by grapes to fight disease, and has been found to be the active ingredient in a good many folk medicines. White grapes and white grape juice contain little resveratrol. **Leroy L. Creasy, Cornell University**

The 'Pantadiplandra brazzeana' plant of Nigeria produces a fruit a bit bigger than a grape that contains 'brazzein'. Brazzein is a lysine-rich protein 2,000 TIMES sweeter than sugar. The stable compound has no aftertaste and a relatively simple molecular structure (52 amino acids), which allows it to survive higher temperatures and wider pH ranges than other natural super-sweet proteins previously discovered. A patent for it is being sought by its discoverers, **Ding Ming and Goran Hellekant of the University of Wisconsin-Madison.**

Five natural chemicals contained in the fragrance of ripe raspberries and strawberries can protect boxed fresh fruit from decay for up to 7 days. One, '2-nonanone', already approved by the USDA as a flavoring agent, is now being patented by that agency for use as a fungicide for soft fruit. The straight-chained hydrocarbon is inexpensive, stable and has low toxicity. **Steven F. Vaughn, Agriculture Department's Bioactive Research, Peoria, Illinois**

"The best mirror is an old friend." George Herbert



Keep a dream journal & pen beside your bed and daily, upon rising write down IN PRESENT TENSE what you recall of your dreams... in days you'll be amazed at much you remember! Next, affect your dreams with VERBAL self-instructions like " Tonight I will dream of a white iris." Sleep is life, too...but in that realm we can fly!

COSTA RICA

by

John Starnes

In past issues I've shared my heady experiences in various parts of Costa Rica during my July 1991 botanical tour of that beautiful and friendly tropical country. Before leaving the U.S. I was told repeatedly that I HAD to go to a national preserve called 'Manuel Antonio' on the Pacific coast...I now say the same thing to everyone I meet planning to visit Costa Rica, because the words "tropical paradise" simply don't do justice to this breathtaking jewel. Here's a bit of what I saw there after the 3 hour long bumpy bus ride from the capital city of San Jose.

After passing through remote, humble but immaculate rural villages in the lush mountains due west of San Jose, then through the vast, orderly "pejibaye" palm tree plantations in the hot, humid tropical lowlands, our rickety but predictably punctual national bus soon crossed equally rickety wood and iron bridges spanning muddy jungle rivers...8 foot high alocasias and prehistoric-looking ferns crowded the roadside. Great swaths of colorful wild impatiens were the dominant groundcover, their pinks and reds and whites contrasting wildly against all those shades of green.

Jungle quickly gave way to mangrove on both sides of the road as we approached the seacoast and were treated to dramatic vistas of rocky Pacific beaches to our left. To our right were distant green mountains topped by filmy clouds, the mountains we had passed through earlier. My excitement mounted!

Moments later I was swimming in the warm, prefectly transparent blue-green water of a sea cove nestled in the green curve of the rainforest at Manuel Antonio. Other tourists all up and down the natural white beach were also relishing the tropical sun, the blue blue sky, the inviting waters and the clean air. Snatching my clothes, camera and backpack from the jagged monolith of lava rock I had waded out to, I then hiked down that long white beach which led to a small, jungled mountain jutting out into the sea. Two-foot long iguanas and basilisk lizards sun-

ning on the soft, warm sand scattered as I approached the sudden dark edge of the rainforest...the feeling of prehistory came again as I noticed the pterodactyl-like long-legged birds circling overhead. Then I passed into the jungle as through a heavy curtain, and found myself in a whole new world, dark and damp, a myriad of tree shadows and thin strands of sunlight penetrating the forest canopy far above. I marvelled at huge, mossy tree roots, walked past dark groves of wet, dripping leaves, and heard the odd shrieks of unseen birds and monkeys. Despite my expectations, there were almost no mosquitoes in the still, musky air. The trail took me up a wet slippery hill, the clay soil pockmarked with thousands of little holes, which I soon saw were the homes of swarms of small but brilliantly colored terrestrial crabs, whose lavender pincers and bright orange legs contrasted starkly with their

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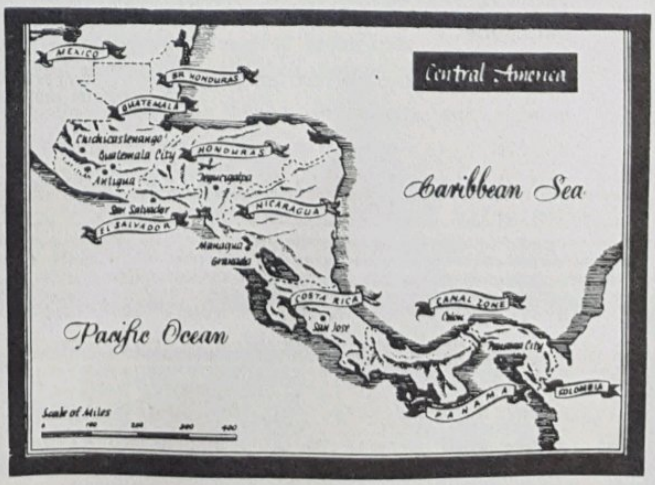
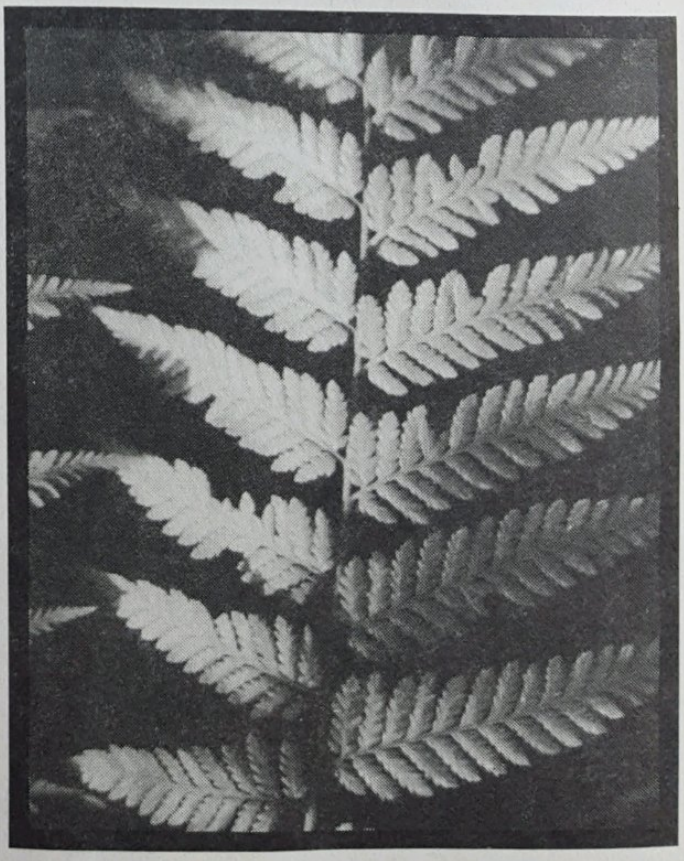


shiny black bodies. I moved, occasionally hearing the ragged screams of monkeys high above me, though not once did I see one. A few times the shadowy trail led me to a sunny opening in the jungle, a cliff hundreds of feet above the Pacific...the view each time offered me a new panorama of sea and jungle and mountain. All this beauty compounded the euphoria of the previous day during which I had been immersed in the magic of a total solar eclipse...I was saturated with positive, expansive emotions.

The trail led me to the opposite side of the mountain where it met the sea...an odd, rhythmic chattering sound echoed out of a rocky inlet just past a great cliff, so I waded through that warm clear water to discover the source. The water got waist deep as I reached the cliff, but directly behind it were shallows huddled against the mountain...they were the source of the odd sound. Centuries of ocean waves had filled this little cove with millions and millions of polished stones about the size of hen's eggs or smaller, and each incoming wave pushed them towards the base of the cliff, then, as it withdrew, sucked them back into the bay, creating that brittle, chattering sound. I gathered several of the stones, as they were beautifully polished, igneous in nature, in shades of greens and browns and reds, many colors and textures per stone. Not one was ordinary looking, so choosing ones to keep became almost arbitrary! I noticed that many were clearly conglomerates, no doubt the result of the vulcanism that helped form the region. So as I waded back past the cliff, I savored the sound of those remarkable stones echoing behind me, feeling the weight of a few of them in my backpack.

Ravaged by thirst and hunger, I followed some signs along the trail and soon found a primitive, open-air "restaurant" where the jungle met a slow-moving river. Loud, distorted Spanish music blared out of totally shot speakers hung on the trunks of nearby trees. I collapsed into a chair by a tiny table set onto the swept soil and slugged down the juice of a green coconut, then sipped a local beer as I studied that river snaking away into the jungle. First I saw what seemed to be giant green kingfishers.Then yellow warblers and green hummingbirds flitted by. I heard something BIG suddenly slip into the water from the riverbank, but saw only great ripples. After eating some delicious ceviche (raw sea bass pickled in lemon juice and cilantro), having decided to set aside my vegetarianism in the decadence of the moment, I walked over to a clearing where iguanas sunned on man-made piles of stone, each roughly conical and about 6 feet high. The great lizards would vanish into crevices in those piles, or into burrows beneath nearby tree roots...I'd hoped to touch one. But since they are eaten by the local folks, they are rightly afraid of humans.

Closeby were great big "cerissa" bushes, so I pigged out on their sweet fruits, each about the size of a black olive, the orange pulp containing an olive-like pit. Satiated, I hiked back towards the bus stop for the long ride "home". The bus arrived, on time as usual, just as darkness and a sudden shower fell. It was a great storm that whipped the trees, and the biggest lightning bolts I've ever seen tore at the night sky all the bumpy way back to San Jose. Tired but happy, I curled up in my seat and savored yet another magical day in what was proving to be my life's most wonderful travel adventure.



Radical Plants

"Eat Hootersville rutabagas!" Lisa Douglas, "Green Acres"

BUFFALO GOURD

**Cucurbita foetidissima* HBK. Also known as buffalo gourd, chilicote, or mock orange. Family: Cucurbitaceae.

Demands for edible oil and protein in arid lands are increasing. Until recently, wild gourds belonging to the squash family, Cucurbitaceae, have been overlooked as a potential source of oil and protein for livestock and humans. Several of these are highly drought-tolerant, particularly the buffalo gourd.* On barren land the buffalo gourd may match the performance of traditional protein and oil sources such as peanuts and sunflowers, which require more water. But little research has been conducted, and the buffalo gourd is not yet commercially cultivated anywhere. Much research, particularly into the nutritional efficiency of the oil and protein, still remains to be done.

The buffalo gourd is a vigorous perennial. It grows wild on wastelands in the deserts of Mexico and the southwestern United States, and produces an abundant crop of fruit containing seed rich in oil and protein. Its large, fleshy, dahlia-like tubers grow as deep as 5 m to obtain and store water. The plant is covered with a dull, wax coating. It produces yellow, hard-shelled, spherical fruit (to 8 cm diameter) containing pulp and flat, white seeds 12 mm long and 7 mm wide. The fruit can be mechanically harvested and the flesh dries so completely in arid environments that the seed inside can be threshed out.

Each fruit of the buffalo gourd contains about 12 grams of seed and, on the basis of 60 fruits to the plant, 1 hectare of plants can produce 2.5 tons of seed. The seed contains 30-35 percent protein and up to 34 percent oil.* These (estimated) yields compare favorably with other oil- and protein-bearing crops such as soybeans and peanuts.

The seeds can be crushed to obtain the edible polyunsaturated oil for food and industrial use. The pulp from undried fruit is used for cattle feed.

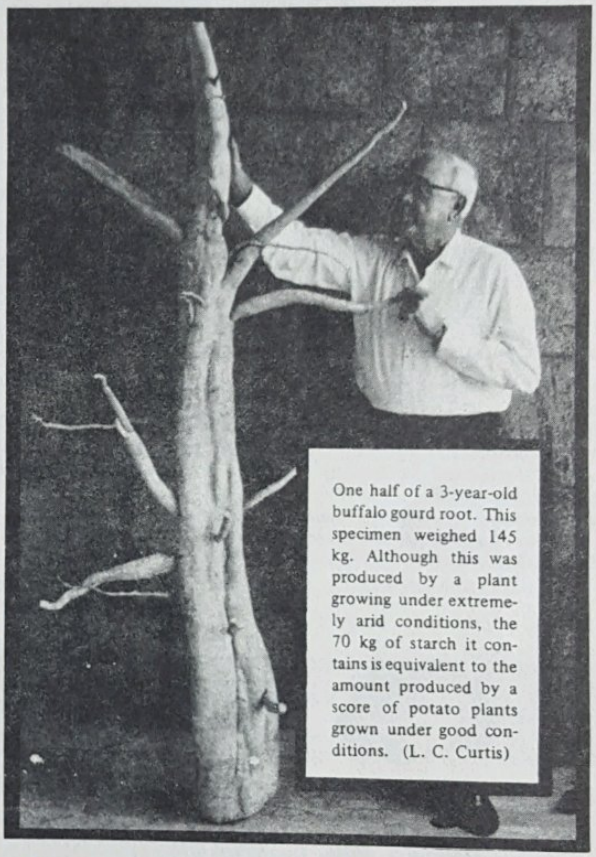
The buffalo gourd's enormous root can weigh as much as 30 kg (70 percent moisture) after just two growing seasons. It is filled with starch and in addition to its other uses buffalo gourd is now becoming recognized as a root crop. The roots (as well as the leaves and fruit) contain bitter-tasting glycosides; however, the starch can be separated from them by soaking in a dilute salt solution.

The plants are long lived; some are reportedly over 40 years old. They are highly resistant to cucumber beetle and squash bug. The plants can be propagated asexually from nodal roots: if the long, running vines are stapled to the soil and watered, a fresh root starts. This cloning process produces new generations rapidly. Within 2 years, thousands of genetically identical offspring can be ready to plant.

The buffalo gourd has been used by North American Indians for centuries. They used the seeds for food and soapy extracts of the fruit pulp and vine for washing clothes and cleaning hides.

One research project on the buffalo gourd, at the Arid Land Agricultural Development Institute in Lebanon, is hybridizing varieties to obtain seeds that produce plants that mature more quickly and give a higher yield. The institute is also working to develop seeds with higher oil and protein content and a purer oil that can be stored without turning rancid. Recently, some of the highest-yielding gourds have been found to be male-sterile, opening vistas of simplified replication.

*Jacks, Hensarling, and Yetsu. 1972. See Selected Readings.



One half of a 3-year-old buffalo gourd root. This specimen weighed 145 kg. Although this was produced by a plant growing under extremely arid conditions, the 70 kg of starch it contains is equivalent to the amount produced by a score of potato plants grown under good conditions. (L. C. Curtis)

LIMITATIONS AND SPECIAL REQUIREMENTS

Buffalo gourds require long periods of warm, dry weather for optimum growth. They are sensitive to frost and intolerant of wet, poorly drained soil.

Great yield differences occur among individual plants: some are essentially barren, some prolific. The size of the fruit varies. Some variations are undoubtedly due to seasonal fluctuations, others are genetic. Some plants have a preponderance of male, some of female flowers.

As already mentioned, it is not known how the oil and the pressed cake containing the protein will compare with other oils and proteins as food for humans and livestock. The possibility that the meal or protein might be inedible must be investigated by extended feeding trials.

Buffalo gourd protein—like other plant proteins—is low in lysine and the sulfur-containing amino acids.

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"In the coming age of feminine society, we'll regain our human dignity, we'll lay some truth and clarity, and bring back nature's beauty." **Yoko Ono** "Woman Power" 1973

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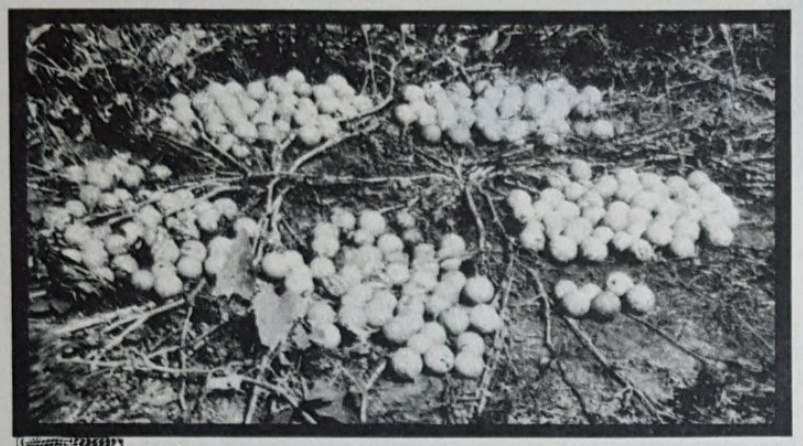

Harvesting these two buffalo gourd plants growing wild near Snyder, Texas, yielded 1.3 kilograms of dry seed, despite arid conditions, lack of care, and lack of agronomic improvement.

Research Contacts and Germ Plasm Supply

The Arid Lands Agricultural Development Program, The Ford Foundation, Beirut, Lebanon

Centro Nacional de Investigacion para el Desarrollo de Zonas Aridas, Saltillo, Coahuila, Mexico (H. Gomez, C.)

Department of Agricultural Biochemistry, University of Arizona, Tucson, Arizona 85721, USA (W. P. Bemis)

L. C. Curtis & Son, Inc., Watkinsville, Georgia 30677, USA (L. C. Curtis)

U.S.D.A., Southern Regional Research Center, P.O. Box 19687, New Orleans, Louisiana 70179, USA (R. J. Jacks)

RESEARCH NEEDS

Experimental plantings, selection, and breeding are needed in many new regions.

The meal has a high phytic acid content, and extensive feeding tests should be undertaken to determine whether excessive saponins or other toxic substances are present.

More information is needed on water requirements and other agronomic parameters.

Selected Readings

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DYSFUNCTIONAL FAMILY GARDENING TIPS !!

1. Ask little Johnny if he wants to help you plant the spring garden, then scream at him and slap him for "planting the radish seeds too deep!"

2. Get drunk, then kick the family dog for walking across the newly mown front lawn. When the kids cry and beg you to stop kicking Fido, scream at them in full view of the neighbors.

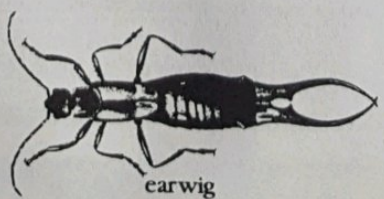
3. Scream at "the wife" to bring you the blankety-blank pruning shears.

4. Pout and whine beside the sweet corn patch throughout the day until your spouse begs to learn WHICH variety he or she SHOULD have planted if they REALLY cared about you.

5. Early one Sunday morning rototill the entire flower garden the kids gave you for Mother's Day because you HATE the way the California poppies are crowding the Sugar Daddy petunias.

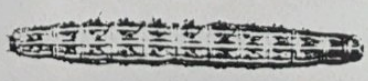
Japanese beetle

armyworm



earwig

leafhopper



fall armyworm

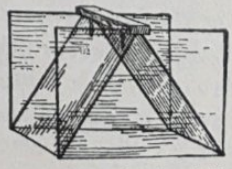
"Life is short...live it up!" Nikita Kruschev

BEYOND FRUGAL!

While our government hasn't (apparently) agreed to enact the fiscal change we supposedly voted in, as a people we are, in increasing numbers, rejecting the Reagan-Bush Era mass hallucination that prosperity can be had via skyrocketing personal, corporate and governmental debt. Purchasing overpriced cars, homes, clothes and even certain foods "for show" and ego-propping has been replaced by sensible frugality, personal financial resourcefulness and saving. Goodwill stores, yard-saling and even strategic dumpster diving are being employed by millions of us as we pay off and re-structure our debts and begin to build up our savings, not in the spirit of self-denial but in the knowledge that ample cash reserves can help us create freedom, security and numerous life options. In the past this column has discussed food self-sufficiency, budgeting, the saving habit, and systematically targeted dumpster-diving at key manufacturing and distribution sites. Today we discuss "Precycling".

A contraction of "Pre-Recycling", precycling is simply making arrangements to intercept a desired commodity BEFORE it is wasted or damaged by being tossed into a commercial dumpster. For example, many gardeners and permaculturists lust after a greenhouse, a truly pricey item. But many, if not most, companies that install and/or replace residential windows discard the "old", often perfectly good windows they pull. Why? Many wealthier homeowners are now replacing "old-fashioned" double-pane and Thermopane window units with triple-glazed ones, or simply more "fashionable" double-pane argon-filled ones. Since recyclers won't take these windows, the installer usually smashes them into his dumpster. But a phone call to the owner offering to trade organic produce or surplus eggs in exchange for his having his workers set the window units aside for you to pick up weekly can result in one quickly having dozens of the double-paned glass units vital for a greenhouse in a harsh winter area. Since many businesses are on a pay-as-you-go basis regarding the emptying of their dumpster, they appreciate "precyclers" continually keeping their dumpster from filling up! Everybody benefits, including the global environment, because a resource that would have ended up in a landfill instead is used to save energy and to grow organic plants and crops. Crops? Yes, because these double-paned windows can be assembled into cube-shaped coldframes just by positioning 4 of the same size into a box shape and holding them together with a strip of duct tape down each corner (which will also act as a seal to keep in heat). A fifth window laid across the top of the cube completes the coldframe. Take the top off on hot days to keep from cooking the plants, then replace it at sundown to trap daytime heat... during bitterly cold weather, place a fat candle inside, replace the lid, and cover the coldframe with a thick blanket and thus grow, in midwinter, cold hardy crops like tat soi, kale, and feticus. Or use these instant coldframes to "force" rose bushes into early bloom, to start veggie seedlings extra early each spring, or even as solar-powered food-drying "ovens".

Sit down with the Yellow Pages one day and free associate...want better dooors for your house, or interior doors to make solar reflectors with?...look up some door installers. Want free insulation?...find a local manufacturer or distributor. Want free organic fertilizer and/or chicken food and/or tempeh base?...find a local tofu maker and pick up their soon-to-be-discarded okara. You get the idea..think of what you want, then who would be likely to throw it away,then use "precycling" techniques to get it. It is one more powerful tool for people who have decided to work to live, not vice versa, and thus use their imaginations to secure life's goodies while enjoying the freedom to structure their lives to discover and meet their inner needs.



Glass forcing-hill.

The **SHRIKE** (Lanius sp.) is native to North America but uncommon. Both the **Loggerhead** and the **Northern** shrike have black masks, large white wing patches contrasting with dark wings, heavy hooked beaks, pale underbodies and gray upperbodies.

Shrikes are valuable predatory birds, eating a great many insects and rodents, which they often impale on barbed wire or thorns. They may hover over their prey or suddenly pounce on them. Shrikes perch on tree tops or telephone wires, usually alone, with their tails held almost horizontally. They fly in a low and undulating manner, and lay 4-6 eggs in bulky nests hidden in small trees or thorn bushes. Their songs are unmusical, being shrill cries and rattles. 7"-8" in length.

"BOOKS REVIEWED" by Dolly Llama

Have I got two great books for you! First, **"Landscaping with Antique Roses"** by Liz Druitt & G. Michael Shoup, The Taunton Press, 1992, is an excellent primer with all the basics on the various classes of antique roses and where each grows best. Accurate color photographs compliment the succinct descriptions & suggested landscape uses. Useful to neophytes AND experts!

"The One-Straw Revolution (An Introduction to Natural Farming)" by Masanobu Fukuoka, 1978 was, and is, germinal to the permaculture movement. This wise old Japanese farmer has, over the years, developed a gentle-to-the-earth low work, low input method of gardening and farming that produces yields comparable to Japan's most productive modern farms. He employs no machines, no tilling, no pre-made compost, no chemicals, and almost no weeding in his "semi-wild" approach to agriculture, preferring instead to simply scatter seeds into freshly cut back weeds. Favoring complex polycultural ecologies, he encourages other grasses to grow in his rice fields. His area of Japan, however, has a benign, warm and rainy climate, so his exact methods may not be applicable everywhere in North America. But Mr. Masanobu offers much insight into the modern way of living and farming, and gently offers thought-provoking alternatives elegant in their simplicity.

If we continue to waste our resources like there's no tomorrow, there won't be. Joanne Woodward

BAD NEWS

Autopsies of harbor seals that survived the Exxon Valdez oil spill reveal that the concentrations of hydrocarbon breakdown products in their bile was 7 to 12 times higher than that of non-oiled seals elsewhere in the Gulf of Alaska. Elevated levels were also found in the blubber, milk and mammary tissue of seals caught in the oil spill. Worse, brain lesions resembling those in humans who die from glue-sniffing were found in these animals, especially in their thalamus regions of the brain. Since the thalamus is essentially a relay center for nerve impulses, these lesions could cause sensory confusion in the seals as they swim and dive, possibly resulting in drowning. **Karen K. Laing, U.S. Fish and Wildlife Service in Anchorage, Alaska**

Blood levels of DDT (and its long-lived breakdown product DDE) tend to be higher in women who develop breast cancer than in those who who not. DDE levels were, on average,35% higher in women with cancer. According to Mary S. Wolff of Mount Sinai School of Medicine in New York City, women with only 19 parts per billion of DDE have **4 times** the cancer risk of women with 2 parts per billion. 14,290 women in the New York Area participated in the study from 1985 to 1991. **Science News April 24, 1993**

Chlorinated drinking water often contains complex toxic chemicals that form subsequently to the injection of the chlorine itself... bromodichloromethane, chloroform, bromoform, or chlorodibromomethane are typical. Researchers at the National Institute of Environmental Health Sciences at Research Triangle Park in North Carolina fed these compounds to hundreds of mice and rats (poor things) over a 2 year period. In addition to kidney and liver toxicity, the rodents also showed great increases in cancer rates. Kidney and colorectal cancer usually affects less than 1% of rats, but nearly 33% of those animals drinking water containing the above compounds developed kidney cancer. Precancerous and malignant colorectal tumors appeared in from 25% to 90% of animals in groups fed those compounds, collectively referred to as trihalomethanes (THMs). Clorinated drinking water has also been implicated in increased risks of human bladder and rectal cancer. **Science News May 29, 1993**

In 1991, approximately 51 percent of the fruits, 32 percent of the vegetables, and 40 percent of the grains and grain products produced in the U.S. contained pesticide residues. **FDA**

Since the 1940's, over 600 insect species have developed resistance to pesticides, resulting in $1.4 billion in crop losses annually in the U.S. **Nature, June 3, 1993**

H. Maelor Davies and fellow researchers at Calgene, Inc. in Davis, California have created transgenic canola and wall cress plants by inserting the genes of the California Bay plant to force the plants to produce laurates used in shampoos. **Science July 3, 1993**

Nitrogen in 100 parts of leaves of—

Maple	0.98 per cent
Plane	0.89 ,,
Horse-chestnut	0.54 ,,
Acacia (Robinia)	1.05 ,,
Lime	0.96 ,,
Service	0.88 ,,
Ash	0.84 ,,
Oak	0.80 ,,
Hazel	0.65 ,,
Plum	1.08 ,,
Poplar	0.98 ,,
Willow	1.28 ,,
Birch	0.52 ,,
Elm	0.74 ,,
Alder	1.36 ,,
Fir	0.57 ,,
Catalpa	0.70 ,,
Average	0.87 per cent

Product Examined.	Nitrogen per cent. In Original Plant.	Nitrogen per cent. In the Decomposed Organic Matter.	Nitrogen per cent. Increase of Nitrogen.	Authority.
Meadow hay	1.62	4.42	2.80	Kostylcheff
Clover	2.00	5.28	3.28	,,
Maize plant	1.88	4.50	2.62	,,
Cereal straw	1.27	2.10	0.83	,,
Dogwood leaves	1.30	4.70	3.40	Mayer
Oak leaves	0.80	4.70	3.90	Truffaut
Heath	0.20	5.10	4.90	,,

Selected Constituents in 100 of Vegetable Substance

Description of Plant.	Water.	Nitrogen.	Phosphoric Acid.	Potash.
	per cent.	per cent.	per cent.	per cent.
Heath	20	0.9	0.10	0.40
Fern	16	2.4	0.45	2.40
Furze	16	2.5	0.23	0.80
Horsetail	14	1.8	0.41	2.70
Rushes	18	1.1	0.12	0.43
Moss	25	1.0	0.16	0.29
Leaves of Beech	15	0.8	0.24	2.58
,, Oak	15	0.8	0.34	2.02
,, Fir	17½	0.5	0.20	0.54
,, Pine	13½	0.8	0.10	0.46
,, Spruce	12½	0.9	0.20	1.60

"CREATING A POSITIVE FUTURE WITH PERMACULTURE"

by Sandy Cruz

Problems, problems, problems! In the past few years, we humans have begun to realize the enormous problems we have created-- environmental, economic, social, spiritual -- virtually everywhere we look! Although these huge problems can seem overwhelming at times, they are actually composed of many, many smaller problems. And so we can begin to resolve them using many small solutions. Welcome to the world of Permaculture -- a system of ethics, principles and strategies that all of us can apply wherever we are to solve small, local problems. As soon as enough of us are working in this direction, the big, seemingly insurmountable problems will begin to abate.

Permaculture is the art/science of creating a sustainable lifestyle through applied ecology: we create systems that take on a life of their own by integrating people, animals, plants and structures into symbiotic relationships. We design these systems to serve human needs efficiently, thereby freeing up more of the planet for the benefit of wild animals and plants. By imitating Nature to create stable, resilient ecologies, new inputs (such as boring maintenance work) and unused outputs (which would otherwise become pollution) are minimized.

The term "permaculture", coined by Bill Mollison and David Holmgren of Australia, is a contraction of the words "permanent culture" and permanent agriculture." Its first principle is Ethics: Care of the Earth and Care of People. Everything else follows from that.

Basic permaculture principles are global in nature -- they can be applied anywhere on earth. In addition to the basic principles, there are specific permaculture strategies for each climate. And even within the same climate, each individual site is unique. This makes permaculture design a highly creative and exciting process.

Permaculture systems can be consructed on any scale -- apartments, suburbs, farms, communities, entire cities or bioregions; and in any climate -- tropical, desert, temperate, alpine or maritime.

The integration of people into these symbiotic systems in homes, gardens and communities restores our proper relationship to Nature and to each other. Permaculture thus affords us a means to heal our spiritual and social problems as well as our environmental and economic difficulties.

In order to demonstrate that permaculture principles can be applied successfully under the most extreme conditions, I have been setting up a permaculture system at 9200 feet in the Rocky Mountains. Steep and eroded slopes, winds often exceeding 100 m.p.h., temperatures down to 40 degrees below zero, and extremely short growing seasons are a great challenge in evolving a site that can supply its own energy needs and provide fresh, vibrant food throughout the year with a minimum of work and waste. At HAPI (High Altitude Permaculture Institute) we teach classes and residential workshops. We also provide permaculture resources such as books, journals, tapes and videos. Our goal is to help people develop plans for sustainable living in their homes, offices and communities, and to support their work towards implementation.

So, find out more about permaculture, and cure yourself of the apocalyptic blues!

Bibliography:

Introduction to Permaculture by Bill Mollison & Reny Mia Slay, Tagari Publications
Permaculture: A Designer's Manual by Bill Mollison, Tagari Publications

*These books and other resources are available through: HAPI, Box 238, Ward, Colorado 80481 (303) 459-3494

"An object seen in isolation from the whole is not the real thing." **Masanobu Fukuoka**

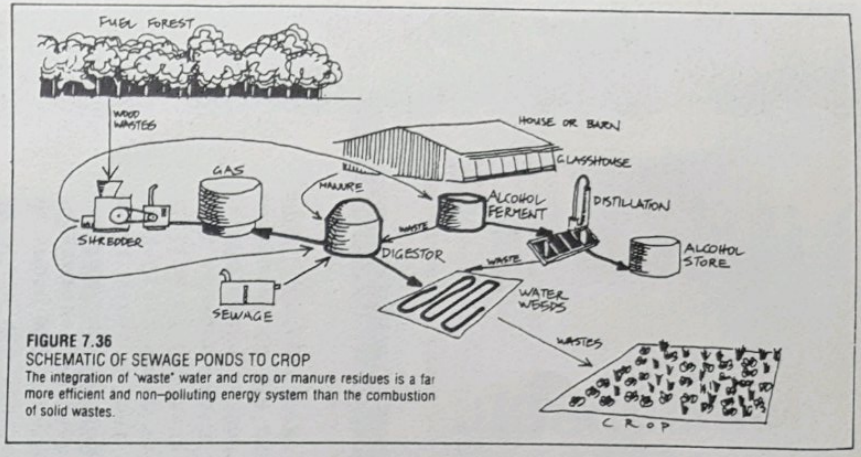


FIGURE 7.36
SCHEMATIC OF SEWAGE PONDS TO CROP
The integration of "waste" water and crop or manure residues is a far more efficient and non-polluting energy system than the combustion of solid wastes.

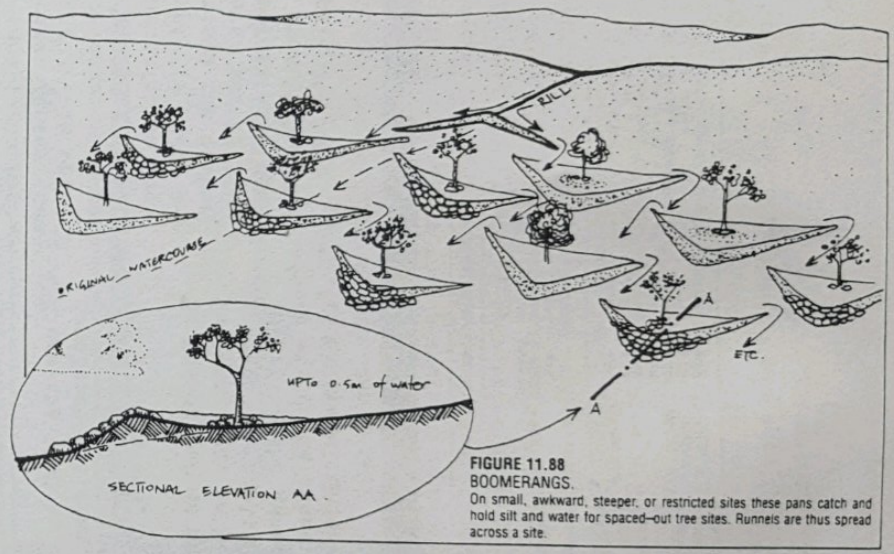


FIGURE 11.88
BOOMERANGS.
On small, awkward, steeper, or restricted sites these pans catch and hold silt and water for spaced-out tree sites. Runnels are thus spread across a site.

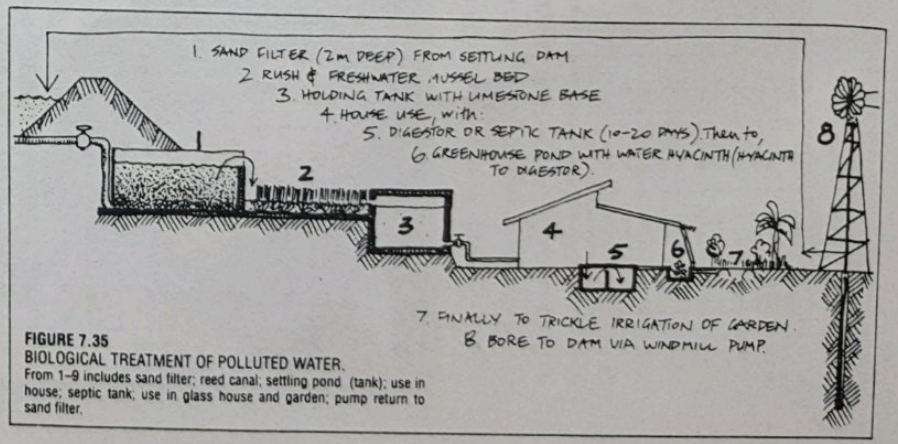


FIGURE 7.35
BIOLOGICAL TREATMENT OF POLLUTED WATER.
From 1–9 includes sand filter; reed canal; settling pond (tank); use in house; septic tank; use in glass house and garden; pump return to sand filter.

illustrations from **Introduction to Permaculture**

LIKE A VEGAN

BY **The Donna**

I cherish eating well and lavishly, so that each day is a holiday. And as a vegetarian I live to tell others of the benefits of not eating the dead flesh our bodies seem ill-equipped to utilize. And I encourage each of you organic gardeners to express yourself now that saving the planet is, at last, in vogue. But I'm also a self-indulgent material girl relishing the groove of wanting and needing so I can then indulge in satiation. So Papa don't preach to me or try to rescue me... it's crazy for you to even try. But lately I've been a borderline vegan, finding it hard to justify my love of butter and cheese and eggs after learning more of the health and environmental consequences of eating them. Look into veganism and you'll also open your heart to the suffering of hundreds of millions of captive animals treated like food-producing machines. You'll know of the environmental degradation that results from feeding crops to animals, then eating THEM, rather than healthfully enjoying natural fruits, vegetables and grains directly. Since many of us eat largely from our own quiet gardens already, we can elect to try a vegan diet free of all animal products for one year to feel better, lower our cholesterol, lose that gross fat on our bodies, and to lighten the load that 5 BILLION of us are to that beautiful blue and green lucky star we are ridng through space on together. Read on!

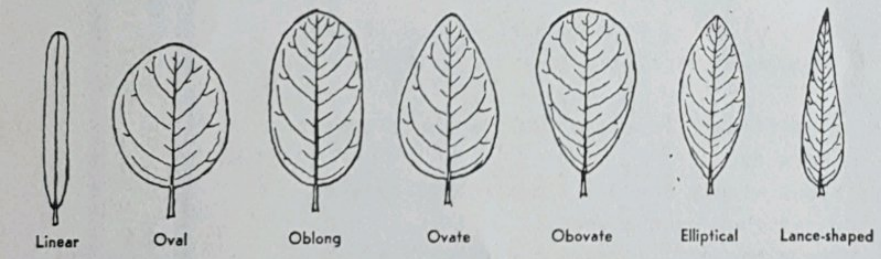
1. The average American man has a 50% chance of dying from a heart attack if he eats meat. The risk drops to 15% if he eats no meat, and to just 4% if he eats no animal products (veganism).
2. 99% of non-vegetarian mothers have "significant" levels of DDT in their breast milk, while just 8% of vegetarian mothers do.
3. Women who eat butter and cheese 2-4 times weekly are 3.2 times MORE likely to contract breast cancer than those who eat them once a week.
4. In California, America's fruit and veggie basket, it takes 5,214 gallons of water to produce 1 pound of cow flesh (beef) but only 23 gallons to grow 1 pound of tomatoes.
5. The only man to win the "Ironman Triathlon" more than twice was vegetarian Dave Scott, who won it 6 TIMES!
6. In 1991 from 63% to 86% of dairy milk tested in the U.S. contained the sulfa drugs, tetracyclines and other antibiotics fed or injected into cows to force them to continue producing the vast amounts of surplus milk that the government buys up using YOUR tax dollars to subsidize the powerful dairy industry.
7. Dairy foods contain $5\frac{1}{2}$ times more pesticides than plant foods due to the concentrating effects of feeding crops to livestock, and also due to the pesticide dips each animal is subjected to.
8. In 1991 the "Physicians Committee for Responsible Medicine" announced the "New Four Food Groups"....Fruits, Vegetables, Whole Grains and Legumes. Fish, poultry and other meats, and other animal products are considered "optional" foods not essential for human health.
9. The following human diseases can be "commonly prevented, consistently improved, and sometimes cured by observing a low-fat diet free from animal products": Arthritis, Breast Cancer, Constipation, Diverticulosis, Heart Disease, Hypoglycemia, Kidney Disease, Osteoporosis, Prostate Cancer, Strokes, Asthma, Colon Cancer, Diabetes, Gallstones, Hypertension, Impotence, Obesity, Peptic Ulcers, Salmonellosis, Trichinosis
10. It takes 78 calories of fossil fuel energy to produce 1 calorie of beef protein, but only 2 fossil fuel calories to produce 1 calorie of soy protein.

Facts drawn mainly from "Realities for the 90's", EarthSave Foundation

Regarding the rose: "To me the meanest flower that blows can give Thoughts that do often lie too deep for tears." Wordsworth

GREGORY PECS EZ:

Hey guys and gals, here's a way every gardener can use to help achieve the narrow waist crucial to a foxy, healthy-looking well-proportioned torso. Just take a long-handled rake or garden shovel and lay it horizontally across your shoulders and against the back of your neck. Then sling your arms forward across the handle till you feel like a big capital "T". Spread your feet to shoulder width, then bend your knees slightly to help keep your hips motionless. Rotate your ENTIRE upper body (arms, shoulders, torso) back and forth BRISKLY, keeping your hips motionless. This workout isolates the "oblique" abdominal muscles that girdle the lower torso, giving you that tiny waist look AND contributing to athletic agility. Yo!



HYACINTH BEAN

Dolichos lablab (Leguminosae)

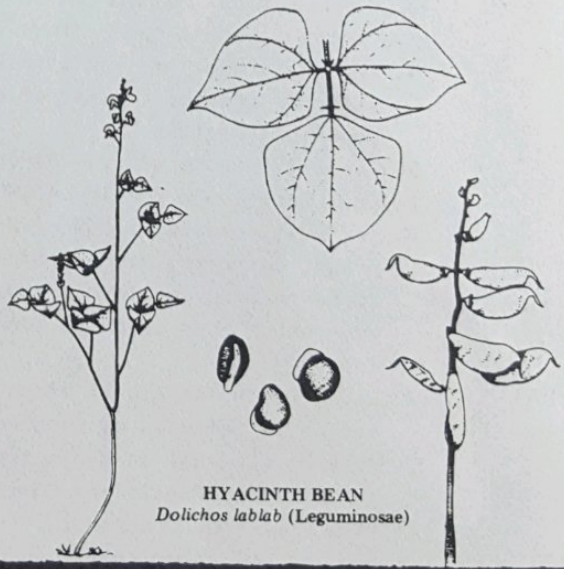
Central Africa

Edible parts: Young pods and seeds. Excellent in soups.

Nutrition: The hyacinth bean is high in calories, protein, carbohydrates, fiber, phosphorus, iron and the B complex of vitamins. The young pods are high in potassium and vitamin A.

Propagation: By seed. Plant in the spring and grown on poles as with lima beans.

This is a very attractive vine with sweet smelling flowers and is frequently grown as an ornamental on a trellis. In Sarasota the vine flowers in the fall and produces seed throughout the winter, unless there is a hard freeze. There are many varieties with differing colored seeds. A purple podded variety is frequently grown as an ornamental.



HYACINTH BEAN
Dolichos lablab (Leguminosae)

TABLE 3.4
IMPETUS TO DESIGN

PERMACULTURE	MOST PRESENT–DAY DESIGN
STIMULATED BY: A perceived social problem.	STIMULATED BY: A drive to erect monuments or make money.
SUBJECT TO: Values of energy conservation, self–reliance, and harmonious human occupancy.	SUBJECT TO: Economic (as cash) considerations and the desire for profit.
MEDIATED BY: Consideration of long–term biosocial factors.	MEDIATED BY: Purely functional values for short–term cost and material factors.
ACHIEVED BY: Research and consultation with clients, or assisting people to gain an education in design.	ACHIEVED BY: External funding, little consultation, little client/people education.
REFINED BY: Allowing space, finance, and feedback to adjust activity, and allowing for new or overlooked needs as they occur.	REFINED BY: Selling off and not taking responsibility for the results.
LEADING TO: A dynamic and healthy area inhabited by people with the power and understanding to make necessary changes.	LEADING TO: A dislocated populatio, powerless to effect change easily. Hence, dependency and anxiety.

RESULTS

THE STABILITY OF DYNAMIC LOCAL ADJUSTMENT.

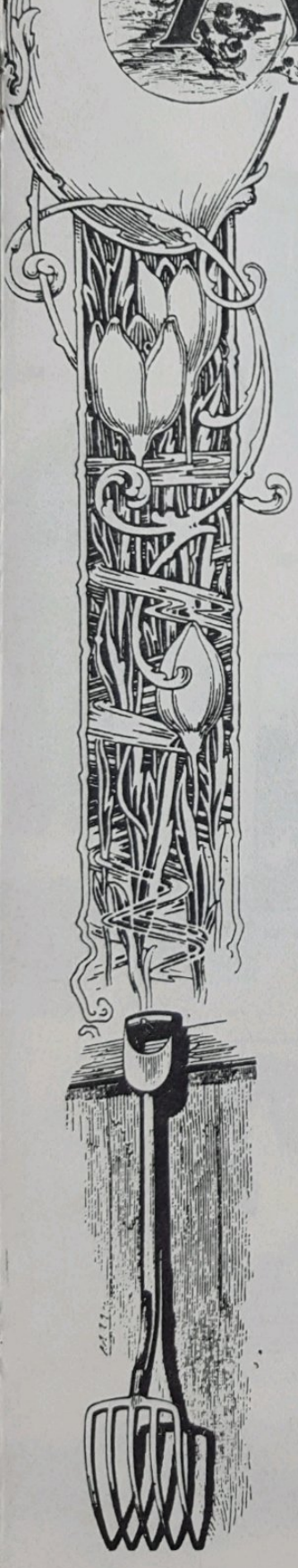
THE INSTABILITY OF PERCEIVED INDIVIDUAL POWERLESSNESS.

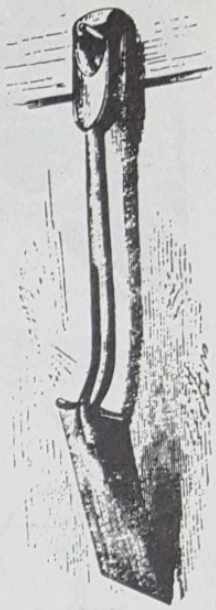
Flash Card

Keep a large, framed black-and-white portrait
of Phil Silvers in your car.
Keep it on the seat beside you.
If someone is rude to you
on the highway,
pull up beside them and hold up the picture
of Phil Silvers.
Then drive away.

(watch their face in your rear view mirror)

"NYUCK, NYUCK, NYUCK!" Curly Howard





Autumn comes to our Northern Hemisphere as the earth leans away from the sun in daylight hours during this portion of its long, oval journey around our yellow star. As daylength shortens, each climate zone experiences unique changes... gardeners there thus are given regional, seasonal chores and opportunities.

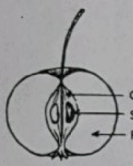
In temperate areas where winter snows are common, the fall is "harvest time"...fruits and vegetables and grains are dried or canned or blanched and frozen. After the first hard freeze 2 feet of hay is placed on beds of carrots, turnips, beets, sunchokes, leeks and other root crops to insulate the soil and keep it from freezing, allowing for mid-winter harvests. Organic nutrients like manure, compost, soybean meal, cottonseed meal, kelp meal or Ringer Lawn Restore are applied to lawns, perennials beds and food gardens to insure healthy spring growth...many food gardeners also prefer to then turn their soil to incorporate those nutrients and crop wastes down deep, and to allow winter freezes and thaws to "mellow" the soil. This is the best time to plant bulbs like tulips, garlic, daffodils and sunchokes (a rhizome, really). A trough heater can be sunk into fishponds to keep them from freezing. 1" X 2" 's can be cut and nailed into frames, then covered with poly-film stretched tightly and stapled into place...inserted into window wells, these cheap "storm windows" will create another dead air space to keep your home warmer with less energy usage...this will also make your interior sills warmer, all the better for indoor winter plant culture. Discarded interior doors can be covered on one side with heavy-duty aluminum foil using duct tape; the resulting solar reflector can then be placed horizontally at the base of east, south (best) and west windows and held in place with a 2" X 4" frame or saw horse. These cheap reflectors will capture the sunlight and warmth usually wasted on exterior walls and/or the ground and bounce it up and into those windows, dramatically increasing warmth and light levels, both good for house plants and the human psyche in January! This will also help gardeners who start seedlings on bright window sills each February and March. Thriving plants indoors will help purify the air while reminding one of the spring and summer to come.

Gardeners in subtropical areas like southern Arizona, Florida and southern California use the winter months to grow frost-hardy, heat-sensitive crops like the Brassicas and root and leafy crops, plus annual flowers like snapdragons, calendulas and pansies. For them autumn is a good time to remulch and feed the soil, to trim back overgrown hibiscus and other rapid growing flowering plants, and to begin chilling tulip and daffodil bulbs in their fridge to later "force" in the garden.

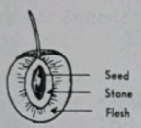
Autumn can remind us all everywhere that our brief lives are being measured by these timeless planetary rhythms.

I believe a leaf of grass is no less than the journey-work of the stars.
Walt Whitman 1819-1892

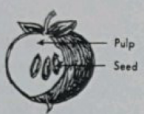
Millipede.



POME
(Wild Crab Apple)



DRUPE
(Cherry)



BERRY
(Persimmon)

SAMARA
(Slippery Elm)

DOUBLE SAMARA
(Sugar Maple)

SAMARA
(White Ash)

CAPSULES
(Mountain Laurel & Willow)

LEGUME
(Common Locust)

ACORN
(Red Oak)

NUT WITH DEHISCENT HUSK
(Shagbark Hickory)

NUTLET
(Hornbeam)

CONE
(Hemlock)

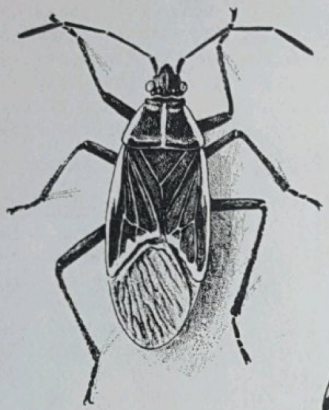
AGGREGATE OF SAMARAS
(Tulip Tree)

STROBILE: WINGED NUTLET
(Grey Birch)

MULTIPLE FRUIT OF SMALL DRUPES
(Red Mulberry)

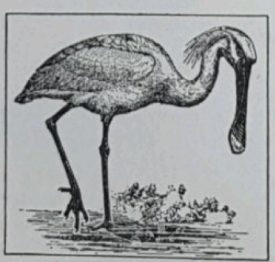
AGGREGATE OF FOLLICLES
(Magnolia)

TYPES OF FRUITS



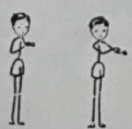
Boxelder bug.

RUGOSA OR JAPANESE ROSE
Rosa rugosa

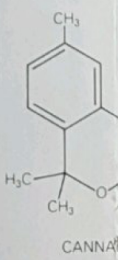


EUROPEAN SPOONBILL

GARFISH



5 6-7



Brown ga

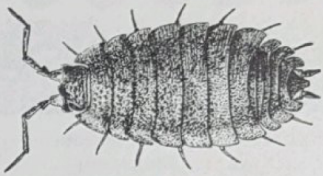
CANNA

dace

stone-fly adult

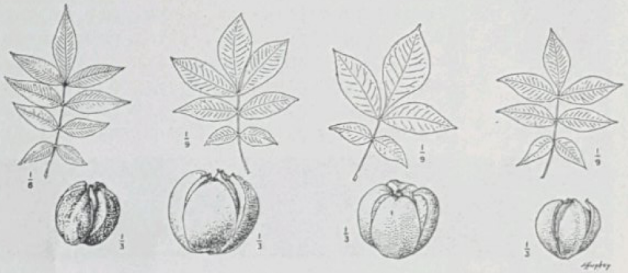
terranean fruit fly.

Leafhopper.

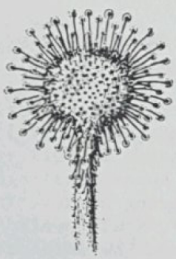


Sowbug, or pillbug.

Slug.

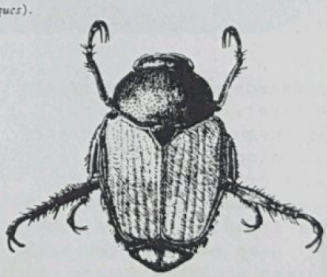


Mockernut hickory. Shellbark hickory. Shagbark hickory. Red hickory.

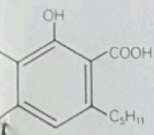


Blade of Leaf of Sundew. (Somewhat magnified.)

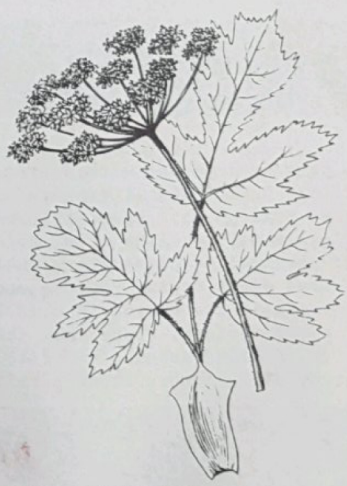
rter snake (*Thamnophis eques*).



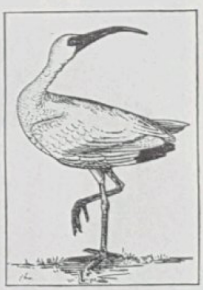
Japanese beetle.



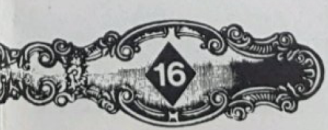
NOLIC ACID



Cow *parsnip*, Heracleum lanatum



WHITE IBIS



8

9-10

On your seed packet with **1 green bindweed-juice fingerprint** write: "NIGELLA" (Nigella damascena). Native to the Mediterranean, this annual flower bears lacy, fringed, unusual blooms in pastel shades of blue, pink or white. The balloon-like papery pods that follow contain edible black seeds that remind some folks of cantelope, or more often, grape Kool-Aid. In cold-winter areas, plant your seeds ¼" deep in full sun when frost danger ends...in your area, Nigella will then self-sow. In subtropical areas grow it as a winter annual. A related species, N. sativa, produces seeds used in Africa as a pepper substitute. The plants get from 12"-18" tall & wide.

On your seed packet with **2 green bindweed-juice fingerprints** write: "AMARANTH" (mixed cultivars of the species 'A. hypochondriacus' and 'A. cruentus'). This 6'-12' tall colorful annual is related to pigweed, and as a North American native it was once the staple grain of ancient Amerindian civilizations. In cold climate regions plant the seeds in full sun in spring just before frost danger ends...in subtropical areas grow amaranth as a late winter or early spring annual. The leaves may be cooked as a "green", the main stalk peeled and boiled, or the big seed heads harvested when the seeds drop.

On your seed packet with **3 green bindweed-juice fingerprints** write: "LAVATERA" (Lavatera trimestris). Also known as "Tree Mallow" this beautiful Mediterranean native is related to other mallows like okra, cotton, hibiscus, hollyhock and the marshmallow plant whose roots once provided the source of that sweet treat. Sow the seeds where they are to grow in full sun in the spring in cold winter areas, winter in subtropical regions. Plant them about ¼" deep and keep the soil moist. Easily reaching 4' tall, lavatera produces dozens of satiny pink flowers whose petals are edible in salads.

The seeds in this issue have been pre-chilled for you to enhance their germination. And remember: ALWAYS store all your seed packets in your refrigerator (freezer...NOT!) to help insure their continued viability.

READERS DIGESTED

Dear John,
Happy spring into summer! Here is a check for a gift subscription for Debbie Barba. It is a late birthday gift (or a very early one, depending on how you look at it). Roses are doing well- each has bloomed- Ragged Robin most fragrant of the three- All in all, the yard is thriving. Picked a dozen red tomatoes last Sunday, & have 5 of the 10 fruit trees in the ground- will get 2 more in tomorrow. Am glad we got to spend a little time together while you were here. Hope your life is in full blossom! **Susan Taylor, Tampa, FL**

John-
Please note my new address. Thanks for hanging in there, I'm a devoted fan!
Sheila Lyons, Corvallis, Oregon

"I enjoyed the Burt the Bird story!"
Maggie Brandt, Eminence, Kentucky

Dear John:
Enclosed is my U.S. money order so that I might effect a renewal of my subscription with your VERY FINE publication.John- you are a very special person. One day I hope to be lucky enough to make your acquaintance. Yours sincerely, **Frank Phillet, Edmonton, Alberta, Canada**

Dear John,
Thanks for the TLC in planning our landscape. We LOVE it! **Anne O'Connor, Lutz,FL**

Dear John-
Thanks for your nice message and info on my 'Cecile Brunner' sweetheart rose. Yes I would like a copy of your article on this rose. My Floribunda roses stay covered with blooms, the other roses are doing well and all foliage flourishing. Hope all is well with you, and again thanks for your interest. **Flonny Grant Tampa, Florida**

Dear John-
...I only hope that the few gift subscriptions I have given over the years have been fruitful & multiplied a bit...best of luck to you & your VERY special publication. **Susan Bardwell, Denver, CO**

Dear John,
Sorry I've not renewed earlier. School's a little hectic. I planted a few of the Thai peppers you sent. Got a great crop from just a few plants in a couple of pots. Excellent peppers. Thanks, **Mike Holland, Carrboro, NC**

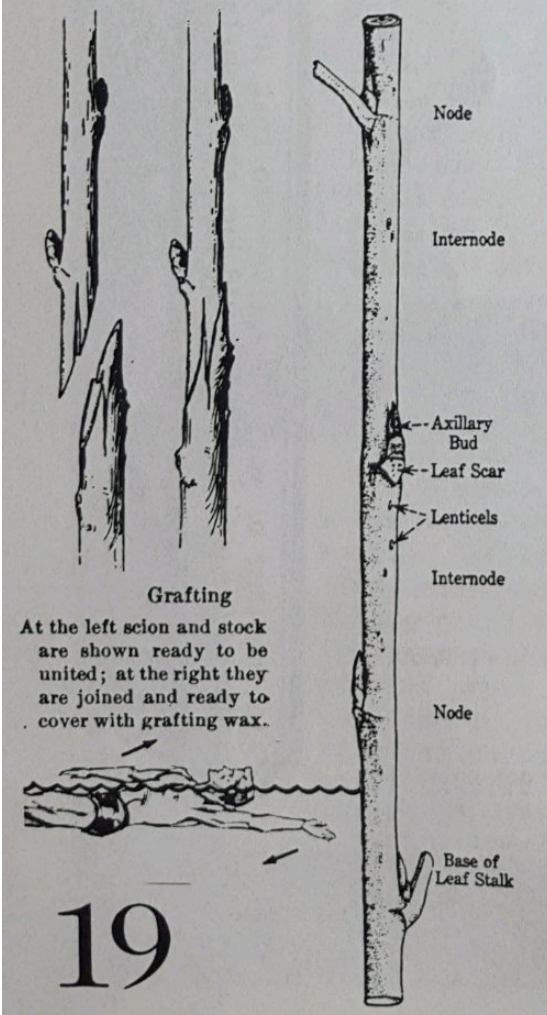
Dear John, Here is my renewal. For awhile I was unsure, to or not. However, your article on "Burt" the bird was so well written, so interesting and on such a much more positive note than the previous issues, that I decided to continue. You see, I do believe in a Supreme God and feel him everyday in the wonders of his creation. Humans are the only thing out of sinc. In the animal and plant kingdom you don't see "Gays" or "free loaders". Its a case of you are what you are and if you don't do what you need to live, then you die- simple, huh. I think heaven will be all the things we love so here- It will be like earth only better. Hang in there John, You've got a lot going for you! **Sherry Pendleton, Jackson, MS.** (John replies: "Thanks much, Sherry, for deciding to renew AND for your supportive comments. I'm glad you've found joy in your faith, but I tend to see reality as being a bit more complex...for instance, the animal kingdom displays much "Gay" sexual behavior...birds, fish, higher mammals, insects etc. And while I share your disdain for lazy "free-loaders" I was dismayed that you would lump them in the same sentence with "Gays". Most of the Gay people I know (myself included) are focused and productive people. I hope heaven turns out to be all you hope for! John).

Dear John,
Yes, I went for the bait and renewed for another year. Would love to give some gift subscriptions but unfortunately all the people I know are dull as dishwater and could not possibly appreciate your publication. Love your stuff and thanks for the "Cracker Rose" article. Best Regards, **Gloria Root, Pasco Gardens, Lutz, FL**

John,
Enjoy your articles and would not only like to renew our own subscription but include one for the following friend Lynn Elliott. She's known as one of the greatest green thumbs in Gig Harbor, WA.Thanks, **Steve Geary, Diana Geary, Tacoma, WA**

In the time of your life,live---so that in that wondrous time you shall not add to the misery & sorrow of the world,but shall smile to the infinite variety and mystery of it all.

William Saroyan
1908-1981



Grafting

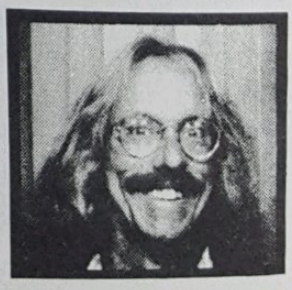
At the left scion and stock are shown ready to be united; at the right they are joined and ready to cover with grafting wax.

CLASSIFIED ADVERTISEMENTS

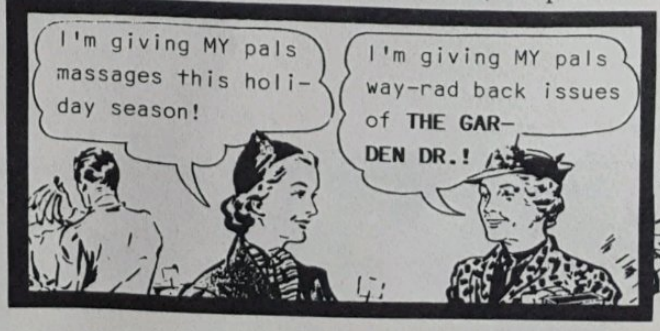
In response to many readers' comments and requests, THE GARDEN DOCTOR will now accept ads for ecologically and ethically sound products and services related to the health and well-being of ourselves, our gardens, our animal companions and our planet. Rates are **50¢ per word** (including address numbers) payable to **THE GARDEN DOCTOR** 1684 Willow St., Denver, CO 80220 Deadlines: Feb. 1 & Aug. 1

"**GIVE YOURSELF A REAL TREAT!** Take a soothing, relaxing Swedish Massage. I specialize in foot massages and I do neuromuscular (deep tissue) bodywork as well. I use essential oils (aromatherapy) in my practice, too. I am a certified, licensed and experienced massage therapist located in SE Denver, but will travel with my table (I charge extra). Gift certificates are available. Phone for an appointment with me, **Bernadette Sonefeld at (303) 779-0439**

In response to many requests, back issues of **THE GARDEN DOCTOR** are now for sale. Most are missing the seed packets. Issues missing 4 or more pages are also on sale at a sharp discount, and are followed by an "inc." in the listings below. Here's your chance to build up your collection of Garden Dr.'s AND to contribute to its financial solvency. Got a friend you want to weird out? Surprise them this holiday season with a boatload of back issues of **THE GARDEN DOCTOR**, the world's only hand-colored organic gardening publication! Pick yours out TODAY from the list below (prices include the 98¢ mailing cost per issue) and send off your order NOW! (how's THAT for a pushy Ronco-style ad?):



December 1989 (inc.)- $3.98
June 1990 (inc.) - $3.98
June 1990, 2 issues - $5.98
September 1990 (inc.) $3.98
December 1990 plenty- $5.98
December 1991 plenty- $5.98
Fall 1992 plenty- $5.98
Spring 1993 a few - $7.98 (complete w/ seeds!)



June '89 - $5.98
Sept. 89 - $5.98
Sept. 90 - $5.98
Sept. 91 - $5.98
June 91 - $5.98

BERGAMOT TEA: Related to Bee Balm, and also used by the American Indians and early colonists, as tea. A tea with a "wild taste."

BETONY TEA: Worlidge wrote back in 1676—"The leaves of Chinese tea are a counterfeit of our English Betony, but far inferior to it."

Few, if any, herbal plants have been more praised than Betony. Antonius Musa physician to Emperor Augustus, held Betony in such high repute he wrote a long treatise devoted to this tea. Culpepper concluded that since the Emperor did not keep fools about him, Betony surely must be a worthy tea.

Betony is an excellent tea for daily use when Oriental teas must be avoided. The flavor somewhat resembles Oriental black tea. A bit of dried orange peel, or Clove, may be added.

BIRCH BARK TEA: A balsamic reminder of Indians, traders and old-time woodsmen. Add honey to sweeten.

The leaves of this tree are also used in tea, according to The Sylva Americana, 1822: "The leaves and bark, when bruised, diffuse a very sweet odor, and as they retain this property when dried and carefully preserved, they afford an agreeable infusion, with the addition of a little sugar and cream."

BLUE MOUNTAIN TEA: Martha Flint states in her book—A Garden of Simples: "On the Allegheny slopes "tea" is discriminated as "store-tea" and "yerb-tea." In Pennsylvania the population of German descent still use the leaves of the fragrant Golden Rod. This "mountain tea" has a faint perfume, pleasantly suggestive of its origin, and is sufficiently in demand to be an article of trade—gathered and cured in summer and peddled through the valleys in winter."

J. Bigelow, M.D., gives this information in his 1817 American Medical Botany: "The claims of the Blue Mountain tea to stand as an article of the Materia Medica are of a humble, but not despicable kind. Mr. Pursh informs us that this plant when dried, is used in some parts of the United States as an agreeable substitute for tea. He further states that it has for some time been an article of exportation to China, where it fetches a high price."

Blue Mountain Tea makes a golden brew, and has a delicious warm anise-like flavor and fragrance. Sweeten with brown sugar or honey. Serve hot.

BONESET TEA: A bitter brew, well known among early settlers and pioneers, who lived in cold, damp, log cabins, often with earth floors, and no windows. Sweet herbs, such as Wild Mint, Bee Balm, Sweet Fern, etc., were often added to the brew for flavor. The tea was generally taken hot as a night-cap. May be sweetened with brown sugar, or maple syrup.

BOTEKA TEA: Aromatic leaves gathered from high cool mountains of Mexico. A flavorsome tea, most popular in Sonora region. Add a little molasses, or sweeten with brown sugar or honey. A few Boteka leaves used with a good quality black tea, adds a taste and flavor "out of this world."

BRITISH HERB TEA: Recipe taken from a book on Domestic Economy, written in 1839: "Take of Hawthorn leaves, dried, 2 parts; Sage and Balm, 1 part. Mix these well together and they will make an excellent and pleasant tea, particularly wholesome for people who must avoid stimulating beverages."

CALENDULA: "The flowers are used in cooking and as a mild calmative tea."—"Venezuela Up-to-date." 1958

CASSINA or CASSENE: Indians in the Southeastern states traveled hundreds of miles to obtain a supply of Cassina. The plant is related to Yerba Mate, and has similar properties. A U.S. Department of Agriculture leaflet states—"Cassina is still being used to some extent in North Carolina and Virginia. During the War between the States, when tea and coffee were not available to the people of the South, the crudely cured Cassina leaves were extensively used by southern families and by the Confederate Army for preparing a beverage."

Cassina contains traces of caffeine. Attempts have been made to market Cassina, but as far as we know, they have not been successful, probably because of the cost of growing, harvesting and curing.

CATNIP TEA: Dr. Wm. M. Hand wrote in 1820 that "Catnip is an elegant warm cordial Aromatic." Catnip tea was a favorite beverage in many parts of Britain before the introduction of Oriental teas.

"The dried herb of Catnip, in infusion, is a highly popular medicine among the good ladies who deal in simples—and is probably often useful."—American Weeds and Useful Plants—1859.

CHAMOMILE FLOWER TEA: For ages, one of the most popular teas in the world. It is still found in many homes, European sanitoria, and served in fine restaurants in Paris. Leisurely sipping a herb tea or tissane, is, in the Frenchman's opinion the best way to top off an evening.

Dr. Schall, an old English doctor, declared that Chamomile tea was not only a preventative of nightmare, but also the sole certain remedy for this complaint.

Chamomile tea may be made in several ways. Some folks drink the tea several hours before dinner, with a little Ginger grated over the steeping brew. An after-dinner tea is made by adding Fennel seed in the proportion—2 parts Chamomile to 1 part Fennel seed. Cold Chamomile tea often gives a sense of relief after a heavy meal. Chamomile teas may be sweetened with honey. A thin slice of lemon or orange may be added too.

CINNAMON TEA: Williams, author of Useful and Ornamental Plants of Zanzibar and Pemba, states—"this is a very fragrant and refreshing tea used by the Arabs."

COSTMARY or SWEET MARY TEA: Reminiscent of Colonial days. Like all minty teas, it should not be steeped too long.

Clumps of Costmary are still found occasionally near very old home-sites.

DAMIANA: A fragrant tea from Old Mexico, held in very high repute by Spanish herbalists. Makes a sparkling golden brew with a delicious aroma and an agreeable bitterish taste.

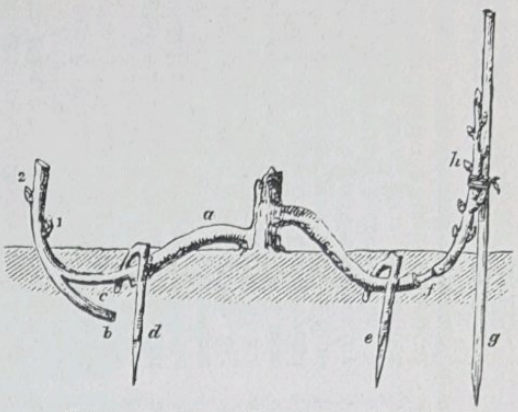


Fig. 39.—Layering by Tongueing and Ringing

—Layering by Approach

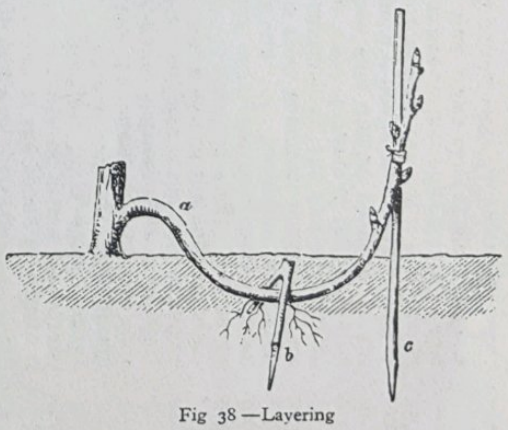


Fig 38—Layering

Many difficult-to-root woody plants can be propagated by burying a live branch while still attached to the parent plant. Use a hook or stone to keep it underground.

Always the young shoot goes up and the root goes down.

HOW PLANTS WORK FOR THEIR LIVING

CONTINUED FROM 510

BECAUSE plants spend but little energy in the form of movement, we are apt to underrate their working powers.

Only some of the simplest plants swimming about in the water show any sign of locomotion, but the majority are very busy. As among animals, the business is mainly two-fold: caring for self and caring for others. It is the first of these that we have to do with here. It means capturing raw materials, manufacturing these into carbon compounds—sugar and starch, fat and oil, and, above all, *proteins* (like the gluten of wheat); and using this self-made food for upkeep, for growth and for storage.

A great part of the work of green plants is devoted to increasing the amount of living matter; to growing, in fact; and we cannot look at an oak tree fifty feet high without feeling that to build this up from an acorn the plant must have done an immense amount of work. Some of the Big Trees of California (the Sequoias) are about 300 feet high, and this is near the limit, for there is a limit beyond which a tree cannot grow without tumbling down. We sometimes see healthy trees laid prostrate because, when a strong wind came, their foundations would not stand the strain. Some of the great seaweeds, such as oarweed, grow to a very great length without having any hard tissues for support, but in these cases the heavy plant is floating in the water.

The most ancient plants lived probably in shallow water near shore, and when we look at the great beds of seaweeds exposed at low tide, we get some idea of the primeval vegetation—after ages and ages of the simple free-swimmers. The first use of the root was to anchor the plant so that it could not be swept away into deep and dark water. That is the use of the so-called roots of seaweeds to-day.

But land vegetation, when it began, meant, among other things, the need for a new water-absorbing organ. This is the main use of the root. A seaweed absorbs the water by the general surface of its fronds, and similarly the beautiful bladder-wort of bog pools, having no roots, must absorb water by its leaves. This is not possible in ordinary land plants, and thus the chief use of the root is to absorb water and salts from the soil. Of course, when the stem of the plant rises high, as in trees, the roots serve as foundations, or anchors. Another use of roots is to form a storehouse for reserve food supplies. This is plainly seen in the case of edible roots, like carrots.

The tip of a root is clear and delicate. It remains ever young and growing; it is always feeling its way farther into the soil. Its growing-point is protected by a root-cap which saves the delicate, rapidly dividing cells from being punctured by sharp particles in the soil. A little way behind the growing part we see the origin of numerous root-hairs which are of fundamental importance to the plant. They are the water-absorbers.

There are often many hundreds of root-hairs to a square inch, and they grow like delicate fingers into the gaps among the soil-particles. They are outgrowths of the very living skin-cells of the root, and their use is to absorb the soil-water which occurs in delicate films round the minute particles. The wall of the finger-like processes that probe and bend in the gaps is very delicate, so that water passes readily through it into the denser cell-contents. Moreover, toward the tip of the root-hair the cell-wall is soft and gummy, so that a soil-particle may almost be said to be glued to it.

HOW THE ROOT-HAIRS WORK THEIR WAY INTO THE DARK SOIL

For the most part what the plant gets from the soil passes in by the delicate root-hairs, and no one root-hair lasts very long. They shrivel away as the part of the root from which they arise gets older, and new ones are formed nearer the tip. It is important to understand that the growing of the root deeper into the ground is always just at the tip, below the youngest root-hairs; otherwise the growing would tear the root-hairs from their grip of the soil-particles.

In the core of the young root there is a column of pipes, or vessels (wood and bast), surrounded by a slightly corky sheath. There is another corky sheath just below the outermost cells that form the root-hairs. Between these two slightly corky sheaths there is the rind, or cortex, of the root, a sort of intermediate reservoir for the absorbed water. But as the root gets older, the rind often becomes unimportant, or disappears altogether. What is most important is this, that the water captured by the root-hairs passes into the wood-elements of the root's core and then into similar elements in the stem, until it finally reaches the leaves.

Before we leave the root it is of interest to notice two or three other points. Often as the root grows older it shortens as a whole, and this gives a plant a stronger hold in the ground. With the growth of the plant as a whole there is an increase in the total size of the root-system, and this is in great part due to the formation of new rootlets. It is very striking to find a boulder that has been cracked and has then allowed roots of plants to grow into it, with the result that it is eventually split in two. Then we may see the whole root-work of a heather plant much larger than the bush above ground. Rootlets begin in the core of the root and push their way through the tissue to the surface where they emerge as branch roots.

THE STRANGE WAYS IN WHICH THE ROOTS CLING AND HOLD UP WATER

Finally, there are roots that do strange things. Thus the little brownish air-roots of the ivy are used for climbing purposes, binding the stem tightly to tree or wall. In some of the plants of tropical forests, which live quite off the ground, the roots absorb water-vapor from the moist air. In the orchid which yields vanilla some of the roots serve as tendrils, and others dangle. They are able to absorb dew and rain, for they are surrounded by a sheath of large empty cells opening by pores to the outside, very much like the water-storing cells of the bog-moss.

In the bog-moss more than half the cells are dead and empty, but are kept from collapsing by delicate spiral and circular bands. Twenty times the plant's own weight of water may be stored in these cells, and this is used by the living elements which the others inclose.

THE BRICKS AND RAFTERS AND VENTILATORS OF THE LEAF

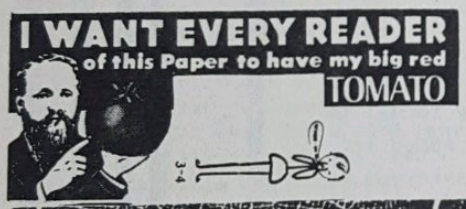
Thus, when there is prolonged drought the bog-moss is still able to flourish. It is also in part to be thanked for holding-up the rain that falls on the hills, so that the springs are slow in becoming dry. The use of bog-moss for soaking up moisture from wounds is well known. It is interesting to find the same sort of device in situations so different as the bog-moss and the vanilla root.

Beyond any doubt, the green leaf is the most marvelous laboratory in the world. As a famous botanist says, "leaves are so many workshops full of machinery worked by sun-power. They can do what the most learned chemist has not yet been able to do."

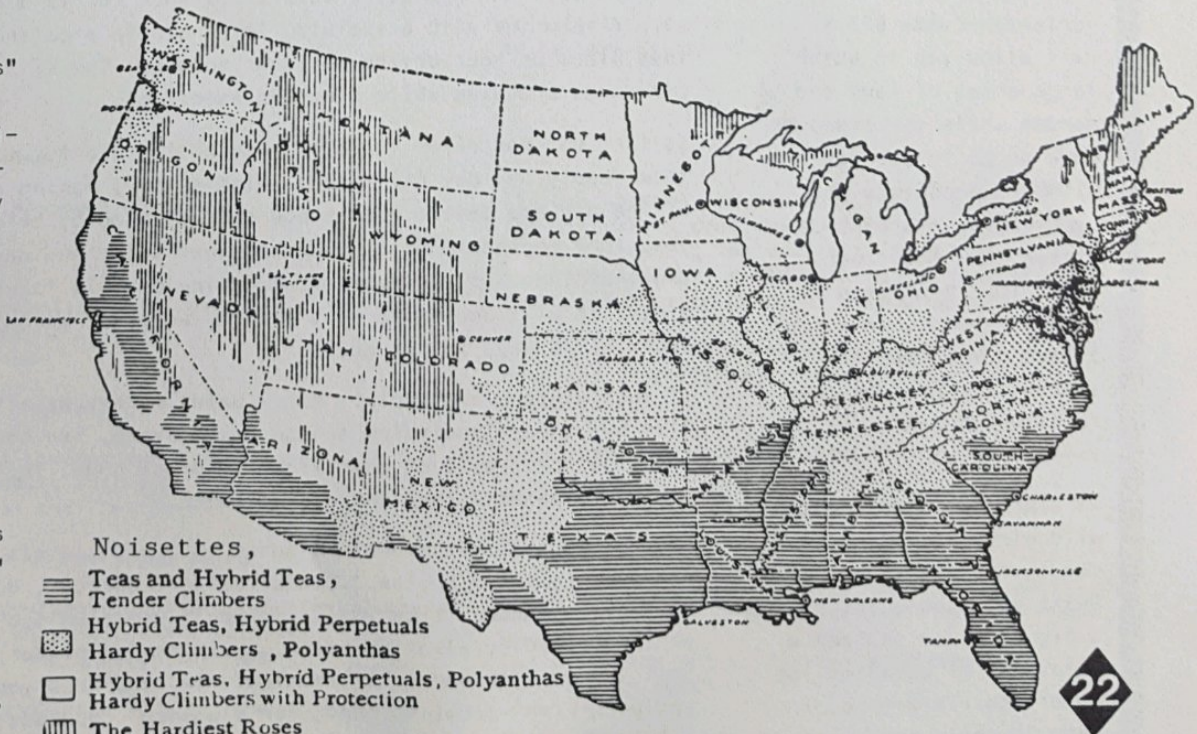
To the right is an early 20th century list of a few "somewhat organic" pesticides (except for the mention of adding lead arsenate to Lime-Sulphur!) that one MIGHT consider using for SPOT APPLICATION only as "emergency control measures". Remember that certified organic farms might not be able to use these compounds, all of which are non-selective and will readily kill beneficial organisms... the tobacco-based ones are toxic to earthworms, beneficial bugs, birds, pets, people and most vertebrates. Nonetheless, they can be useful "desperate last resorts" until one establishes a complex ecology on one's farm, yard and gardens with a full range of predatory organisms.

Preparation	How to Make	How to Apply	Principal Use
Lime Sulphur	Boil 5 gallons slaked lime and 5 lb. flowers of sulphur in water for about 1 hour, stirring meanwhile; make up to 25 gallons. Harmless to foliage.	Summer spraying on foliage; makes good combination with arsenate of lead. Strain solution before use, and do not use apparatus having copper fittings. Give second and third applications at 3-weekly intervals.	Black beetles, blister mite, flower beetles, leaf-scorch, mildew, red spider, scales, scab, weevils, and woolly aphis. A good fungicide, insecticide, and cleanser.
Lime Wash	Slake 6 lb. of quicklime with a little water, then dilute to 5 gallons. See lime is not air-slaked before use. Stir well.	A good insecticide, also an excellent cleansing wash. Strain two or three times before use in sprayer.	Aphides, lichen, and mosses.
Nicotine Emulsion	Boil ¼ lb. soft soap and 1½ oz. (90%) nicotine in a little water, dilute to make 9 gallons with water. (*Poison.*)	Reliable insecticide for use at all times. Apply as coarse spray. One of the most effective "contact" poisons.	Aphides, cuckoo spit, leaf-miner moth, leaf-roller moth, mealy bug, grubs, caterpillars, scale thrips, etc.
Pyrethrum Powder Emulsion	Dissolve 1 lb. of pyrethrum powder and ½ lb. of soft soap in a little hot water for about 4 hours; dilute to 5 gallons, and mix well.	Apply as fine spray.	Ants, aphides, beetles, caterpillars, and weevils.
Quassia Emulsion	Steep 1 lb. quassia chips in 1 gallon water for 12 hours, melt ½ lb. soft soap and add; make up to 9 gallons with water.	For use in warm weather after showers.	Aphides, green fly, hop aphis, red spider, rose beetle, and woolly aphis.
Tobacco Wash	Steep 2 oz. of tobacco in a little water for 2 or 3 days, simmer and draw off liquid; repeat and mix with 8 oz. soft soap, and 1 gallon of water.	Dilute to 5 gallons. Use as nicotine wash.	

If there is magic on this planet, it is contained in water.
Loren Eisley



The Hardiest Roses" mentioned at the bottom of the climate zone chart would include own-root cold hardy roses like: Rosa rugosa rubra, R. rugosa alba,R. rugosa "Hansa", Damask & Gallica & Centifolia & Alba & Moss roses, Rosa pendulina, Rosa woodsii, Rosa eglanteria (apple-scented foliage!), Rosa multiflora (invasive), Rosa spinosissima hybrids "Harison's Double Yellow" and the Canadian hybrid series "Explorer". Roses grafted onto a root-stock (Dr. Huey, Manetti, multiflora, etc.) may be killed by hard winters.



THE U. S. DEPARTMENT OF AGRICULTURE ROSE ZONE MAP.
The Zones have been determined upon frost information

SHARING SECRETS

Try using old Wall Street Journals or the Sunday comics to wrap presents in. New aluminum foil can be used for a fancier look, and can be later recycled.

To visually "deepen" your front yard, plant flowers near the street instead of just slapped up against your house.

White perennials and annuals planted at the front of a flower bed act as color brighteners to accentuate the hues growing behind them.

A spigot timer ($9-$18) and a good oscillating sprinkler ($8- $13) will allow you to water large areas of lawn and garden while you sleep or work or go to the movie WITHOUT spending a ton of money on a sprinkler system. Set the timer for a four hour deep soak for each area every 5 days during the dry season to encourage deep roots while using less water.

In winter in cold areas, wild birds are often desperate for liquid water: Set a fat candle inside a big clay pot and set a metal pot of water on top. Cover the rim with duct tape so their feet won't stick.

Try using a posthole digger to make 18" deep holes all over your yard and gardens throughout each growing season and fill each with leaves, twigs, kitchen debris, bush trimmings and other valuable organic "waste" materials...pack it all down tightly, then cover it with a handful of the soil you removed from the hole and spread the rest around. These little pockets of organic fertility can be especially valuable between rows of vegetables.

A discarded water bed heater pad set at about 85°, with the thermocouple touching the pad itself, makes an excellent source of "bottom heat" for rooting cuttings and starting seedlings. Potted tropical plants can be set on it also to keep their soil mass and roots warm.

Each fall, use your blender to make a puree of the inevitable excess zucchini and other surplus crops. Pour the puree into recycled cottage cheese tubs, etc., and freeze. These nutritious somewhat bland baby food-like purees can be thawed out on winter days and added to soups, gravies, breads, pet food, or where ever you desire fiber, enzymes, vitamins and vegetable goodness.

Before drying sliced apples on screens, immerse the slices in a solution of Vitamin C, say 20,000 milligrams dissolved in 1 quart water. Let soak for 15 mins., strain them out with a spatula, let drain in a colander, then place on your drying racks or screens. The Vitamin C reduces browning while boosting nutrition.

To find out how often to water your potted plants, water them deeply one day (till they weigh a ton), making note of the day and date...notice how many days go by before the plant begins to wilt, and then just water one day short of that. If your potted angelwing begonia takes 6 days to wilt and weigh very little, water it well every FIFTH day, and so on.

If your winters are brutal, stack bales of hay as effective but cheap insulation around cold frames, hen houses, even the north wall of your stone or brick home. In the spring, dismantle them for use as mulch.

Many victims of Alzheimer's Disease have high levels of aluminum in their brains...Cause? Effect? Unknown. But aluminum IS known to be toxic, so don't use aluminum sulphate to acidify alkaline soils, avoid baking powder or salt loaded with sodium silicoaluminate, and read your antiperspirant label to check for aluminum compounds. Antacids are also often based on aluminum.

You'll never have a quiet world until you knock the patriotism out of the human race.
Bernard Shaw

And forget not that the earth delights to feel your bare feet and the winds long to play with your hair. **Kahil Gibran**

These instructional poems are taken from the collection "Future Moods" by John Starnes, who devised the instructional poem format in 1981 and is now in search of a publisher.

Dictum

Live a Big Life.
Stretch the skin of each new day
then fill it with the flesh of your dreams.
Find the frozen stone of your fear
and chip it into sparks
to illumine the wonders that you can do.

Tell a Big Truth so bright
that the light of it flies out from your mouth
into the dark places
beneath every stone
behind every building
inside every mind.
Just let your words and deeds be trusted things
that others can hold and treasure
as trusted measures of honor.
And when your truth can be seen
moving across the sea
like a clear tsunami
a stain will fade from the hearts of your children,
their grandparents
and you.

Ask a Big Question.
Never lose the cool hunger of your youthful eyes...
learn of the mysteries
inside a lover,
a seed,
even you.
Use your fear to taste the dark sweetness
reserved for heroes
so that when Death does come
you will have really been,
you will have truly seen.
And as you leave that frail human shell,
it a faded chrysallis,

feel the quiver of your new, unseen wings.

Chef

Use a wooden spoon
to gather some thunder
into a stew pot.
On high heat cook the sound down
into a clear syrup
you can barely see.

Ladle some liquid thunder onto a warm sidewalk
on a sunny summer day and hide:
watch people stop and
look down and
all around for the thunder.

Leave a spoonful of thunder syrup in a cave.
And another in a public restroom.
Mix it with iced tea and feel
your teeth shaking.
(Let friends listen to your open mouth).

Use it to moisten postage stamps for important letters.
Add it to titanium white for a sky painting.
Pour some into your dog's water dish and
watch his expression.
Whisk it into soapy water and blow rumbling bubbles.

(Share these recipes with your best friend).

Lesson

Wait for summer.
Find a lake deep in the Rockies and
walk across the water.
Use each footprint as a lens
to view fish and stones beneath you,
deep in the clear cool.

Then close your eyes,
breathe deep and

become the sky.

Entrepreneur

Hire a bulldozer
to scrape the reflections off a mountain lake
then load them into a dumptruck.

Drive to a flea market and
use a large shiny knife
to cut the reflections into scarves.

Sell them for what the market will bear.

Furnisher

Wait for a foggy dawn.
Use a straight razor
to cut out thick slabs of fog
and stack them
into a soft couch in your livingroom.
Sit there that evening,
eat popcorn with the lights out
and watch reruns of "The Big Valley".

Note that your fog couch is the same color
as Barbara Stanwyck's hair.

Gesture

If, one morning, as you work in the garden,
the air raid sirens suddenly wail one last time,
continue combing the soil with your rake,
your hands grasping the warm wooden handle,
the hopeful green glint of unfolding leaves
diluting your fear.
And be sure to be stooped over planting seeds
when the fireball suddenly kills the sky
above you.

Seedlings will survive where your shadow falls.

Exercise IX

Envision sound as a pliable, transparent substance.
Cut out a small, cube-shaped piece of each sound
you like.
Use a rolling pin to flatten each cube
into a thin sheet.

Wallpaper your bedroom with them.

WINDOW JARDINIÈRE.

Indoor Gardening

by John Starnes

More and more people are becoming vegetarians, and many vegetarians are in turn becoming more and more food self-sufficient, for both the primal satisfaction gardening provides, and to know that one's food is pesticide free. The winter months are a good time to try interior or "window gardening"...all one needs is a few 1 gallon pots (black plastic ones will be nicely warmed by the incoming sunbeams), some compost or good soil from an organic garden, and a BRIGHT east, south (best), or west window sill.

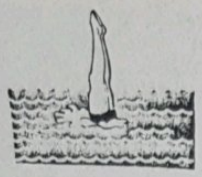
The easiest crops to grow in a winter window garden are mature root crops and cole crops, the latter rescued from an outdoor garden just before the first autumn freeze. Fill your pot to within 1 inch from the top with good soil, make a deep hole with your hand, and insert a turnip, beet, daikon, sweet potato, garlic, onion, or shallot so that its top barely protrudes from the soil. Soak well with warm water, place it on a drainage dish in a window, water deeply weekly, and in a few weeks you'll have fresh green tops to chop into soups, casseroles and stir fries, a nice treat on a snowy day! Or dig up a mature cole crop plant (Broccoli, collard, Brussel's Sprout or rape[canola])just before that freeze, cut it back by half, pot it up, and watch it re-grow in your window to provide fresh "greens" all winter long. In a VERY bright and VERY warm window, you can even try tropical natives like tomato, peppers (hot or mild) or eggplant, all rescued from an outdoor garden, cut back by half, and re-planted in 3 gallon black plastic pots. For fruits to form you'll need to be a "bee" and pollinate each flower manually with a small brush or Q-tip so as to transfer pollen. (Surprise your Christmas party guests and hand them a Q-tip as each arrives at your door...be the Queen bee and put them to work!).

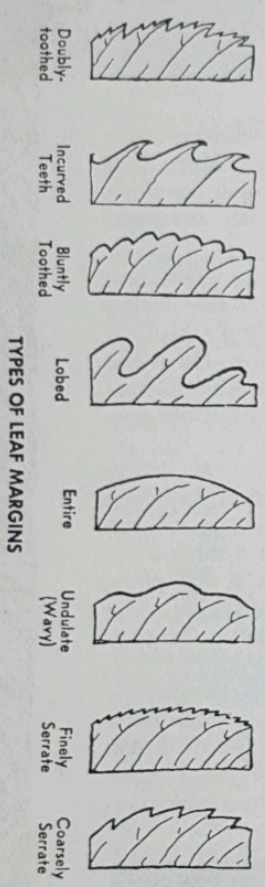
Aphids, mites and mealy bugs can plague indoor plants of all kinds during the winter months; just hold the affected plant in a brisk, warm stream of water from your shower head to rinse them off, unless your empathy for fellow creatures extends to crop pests. Monthly, feed each plant with manure tea, fish emulsion, kitchen waste buzzed in warm water in your blender, or alfalfa pellet tea. Rotate each plant 180° every 2 weeks to keep them from leaning towards the sun.

I used these techniques during the winters of '87 and '88, and plan to use them again this winter, for I am likely not migrating to Tampa, Florida this fall, as I have for the last 4 years, but staying put here in Denver. If you have any questions, call me at (303) 388-4731...I'll try to help.

Remember the Chinese proverb..."A journey of a thousand miles begins with a single step". One garlic bulb in a pot in an apartment window providing richly-flavored green tops for someone cooking on a blizzardy January day IS a solid step towards routinely growing pesticide-free produce at home. Go for it.

The mature roots of carrots, rhubarb, dandelion, chicory, radishes, kohlrabi, & sugar beets may also be bought or dug up and potted for their tender leaves.





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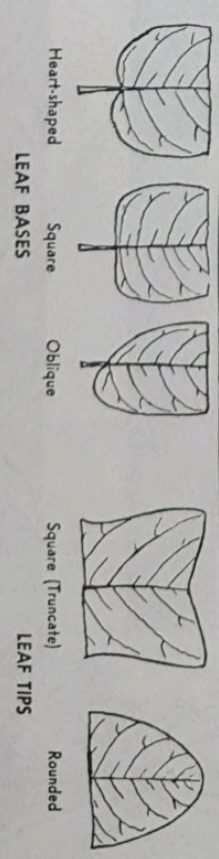
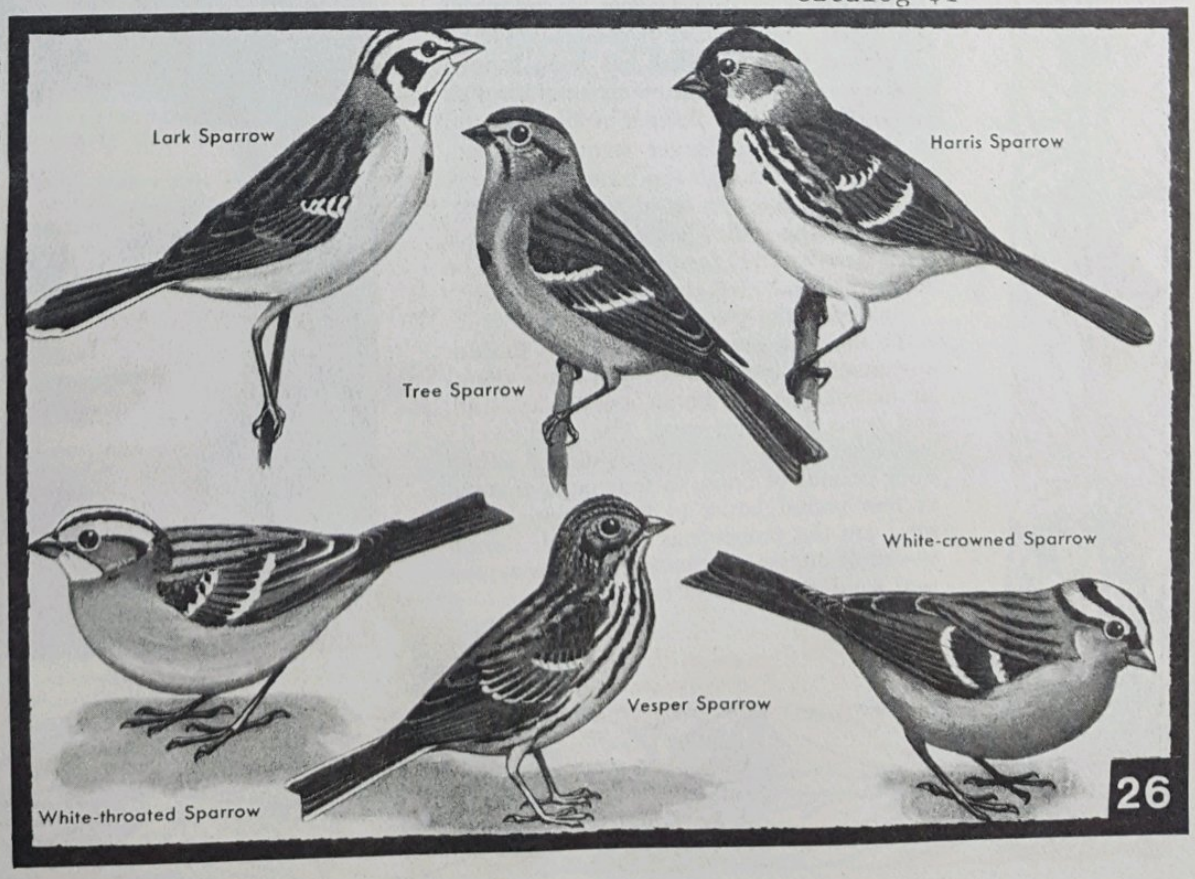




Flower Preservation

by **Daisy Dahlberg**

Drying flowers is an interesting activity, and a worth while hobby that gives an added joy to your gardening. You will find many uses for these dried materials. A few of the successful methods for drying flowers are discussed in this article.

Flowers to be dried should be picked at the peak of perfection—roses and strawflowers just before full bloom. They should be picked during the time of day that they are driest. Leaves should be removed. The stem should be left about one-quarter inch long.

White, yellow, orange, and pink flowers retain their color the best. Dutch iris, bougainvillea, daffodils, camellias, daisies, pansies, sweet peas, roses, dahlias, marigolds, and zinnias are best for drying.

Dried flowers become brittle, and care must be taken in handling them. Overdrying increases the brittleness, and the flowers lose their rich colorings.

The simplest method of drying flowers and ferns is to place them between several newspapers and then add pressure for several days; or they may be ironed with a hot iron for quicker results.

Smaller flowers, particularly the spiky ones, tied in bundles, need only to hang upside down to dry. Larger blooms, such as zinnias, mums, and hydrangeas should be placed in a box that has been topped with wire mesh. Let the stems hang through the mesh with the flowers resting on top of the wire. If a longer stem is needed, pierce a wire through the base of the flower, and loop the wire as in corsage making.

Lily of the valley leaves may be dried in an oven at 150° for twenty minutes. The leaves will not shrivel nor lose their color.

However, the popular method of drying is the use of a dessicative material. Besides a commercial product, there are four popular materials—sand, borax, borax and sand, and borax and corn meal. The sand should be well washed, salt free, dried, and sifted. Four pounds of borax to four cups of sand, or one pound borax to five pounds cornmeal are the proportions suggested. Another article suggested two parts borax to one part sand or ten parts cornmeal.

For sand alone, dry the flowers over night in an oven that has a pilot light. This method works well with the small flat flowers, such as violets or pansies. Do not overdry!

In all four methods, dry the plant material by placing two inches of the drying mixture in a card board box. Make mounds or ridges the length of the box. Have the ridges wide enough to place the flowers between the mounds, with the bottom petals firmly in the sand.

Sift the mixture slowly (a salt shaker works well at first) over, around, between the petals, being sure the shape of the flower is retained. Cover with a thick layer of the mixture. Let stand in a dry place for one week, and test for dryness. The size of the flowers will determine the drying time.

Carefully remove the dried flowers by tilting and rotating the box to gradually pour off the drying material. Gently brush the flower with a soft brush to remove excess mixture. Store in a dry place until ready to use.

Margaret Head's View of the News

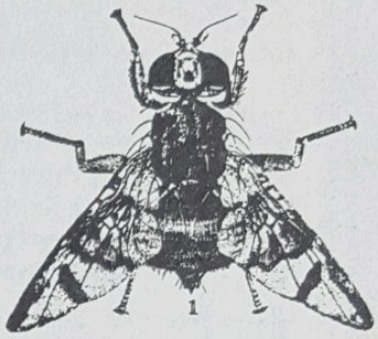
"Obstacles are those frightful things you see when you take your eyes off the goal." Hannah Moore 1745-1833

I just walked in tired and dirty from an afternoon of weeding my perennials beds and large veggie gardens and BOY am I pissed! Here we are at a junction in the history of the planet when every few minutes a dizzying extinction rate that WE humans are causing robs the earth FOREVER of yet another shimmering species of butterfly, or colorful bird, or some delicate wildflower, but we're up to our butts in Canada thistle (no offense, Canada), bindweed, dollarweed, Spanish Needle, fleas, roaches, mosquitoes, quackgrass, and mutant viruses. I've been pulling quackgrass from the SAME spot for 5 years now, but each spring it bursts forth like a malevolent Jack-In-The-Box! Hey, I'm organic, wouldn't think of a closeted midnight application of Roundup, I compost everything in sight (except for my treasured back issues of "THE GARDEN DOCTOR")....I feel like Mother Nature owes me one! Like the immediate global extinction of quackgrass. Is that too much to ask? Aww, come on Mom Nature, please mutate HIV just one more time into a virus that exclusively destroys bindweed? Or how about having mosquitoes and fleas evolve into pests that suck blood out of roaches instead of me and my pets. Sounds fair to me! Why can't human ecological folly pay off JUST ONCE by nuking a pest instead of another helpless endangered species?

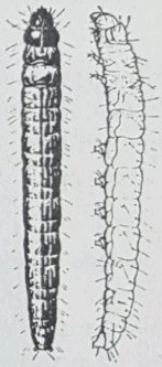
Okay, as I settle back and calm down with this scrumptious glass of iced mint tea, I'm realizing that THAT'S the tragedy of extinction.... as we humans overpopulate Planet Earth like a twitching horde of aphids smothering a head of cabbage, we are indiscriminately, carelessly, often unknowingly, crowding out and/or killing off countless living jewels, creating open ecological niches readily filled up by opportunistic "mongrel" species, be it man-made cattle we grind up into burgers, or more often than not, pest organisms that exact some element of revenge against us. So even though we humans "win" with each new extinction to our credit, we lose...one less bit of beauty, one less companion species on this lonely ride through space, one less potential ally. God knows, if extinction were beneficial to us, we'd asphalt everything in sight tomorrow, making the world one big smoky, crowded, tacky stadium full of billions of arrogant humans chanting "WE'RE NUMBER ONE!". But maybe Mother Nature is really ticked that we never "clean up our room", and so instead of cleaning up after us is letting deadly viruses and pesticide-resistant insects evolve in our toxic clutter.

It's hard to iamgine that the dinosaurs sinned against the globe even a fraction of what we humans have, yet apparently a celestial rain of terror snuffed them out with fire, cold and darkness. On the other hand, Homo sapiens ("Thinking Man" [?]) has triggered a global extinction rate that, according to the fossil record, exceeds the one the dinosaurs suffered through. So just maybe I'd better quit bitching about weeds and fleas...I'll take them over exploding molten asteroids and summer glaciers any day!

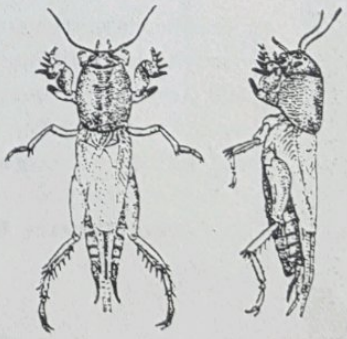
Okay, okay, rather than wish for the extinction of pests, I'll wish instead that each sexually active, reproductive human being look around them HARD, notice the tragedy-in-progress and commit themselves to the responsible use of their vast procreative powers, stopping at, if not one new child, then two. After all, our kids deserve to inherit a world also inhabited by what remains of the wondrous, beautiful and mysterious living things that accompany us, not just quackgrass, roaches, crop pests, viruses and humans.



Mediterranean Fruit Fly



Lesser Corn Stalk Borer



Mole Cricket

The value of Bordeaux mixture as a fungicide was discovered by accident in the grape vineyards of southern France in 1878 by Millardet, a professor of botany at Bordeaux. He observed that where this spray solution was applied to ripening grapes for the purpose of checking theft, such vines suffered less from the destructive downy mildew.

At the present time Bordeaux mixture is one of the standard fungicides. There is evidence that in regions where apple blotch and bitter rot are prevalent its application gives more complete control of these diseases than any other known fungicide. In the heat of summer, spraying with Bordeaux probably causes less injury to fruit and foliage than applying one degree lime sulphur. On the other hand, cool, damp weather favors Bordeaux injury, as, for example, when applied to control apple scab in the first and second summer sprays.

BORDEAUX MIXTURE

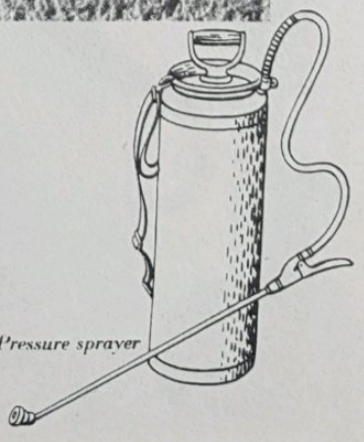
Field Formula:

(Standard)

Copper sulphate	4 lbs.
Stone lime	4 lbs.
Water	50 gals.

The abbreviated form of this formula is 4-4-50. (In ordering stone lime, specify that it shall contain 90 per cent calcium oxide. Unless air is excluded from the container, stone lime should be used at once.)

Hydrated lime may be used in place of stone lime, and this form may be stored indefinitely in a dry place. The amount used in all formulas is 50 per cent greater than the amount of stone lime.



Pressure sprayer

PHUKINAP!

48% of Americans say that oatmeal is made of wheat. **Harper's Index**

The odds of your being killed by a tornado are 1 in 450,000; by a lightning strike- 1 in 1.9 million; by a bee sting- 1 in 5.5 million; by a falling airplane fuselage- 1 in 10 million, or by a shark- 1 in 300 million. **Natural History Museum of Los Angeles County**

Applications of pesticides per acre of growing corn have increased by 100,000%....corn crop losses have increased by 400%...both increases are since 1945. **David Pimentel,Cornell University**

During the Renaissance women applied juice from the Deadly Nightshade (Atropa belladonna) directly to their EYES to dilate the pupils, a fashionable look at the time. **Science News May 15, 1993**

In 1988 Mrs. Eileen Chappel grew a 59 pound cucumber at Nudgee, Queensland, Australia. **Guiness Book of World Records**

7 people can be nourished with the soy and grain used to produce the dairy products and meat eaten by the average American each year. **Realities for the 90's**

An underground fungus discovered south of Mt. Adams in southwest Washington state has infiltrated 1,500 acres ($2\frac{1}{2}$ square miles) of forest soil. The fungus is called "Armillaria ostoyae" and produces small edible mushrooms above ground. It is estimated to be from 400 to 1,000 years old. **Terry Shaw, U.S. Forest Service Rocky Mountain Experimental Station**

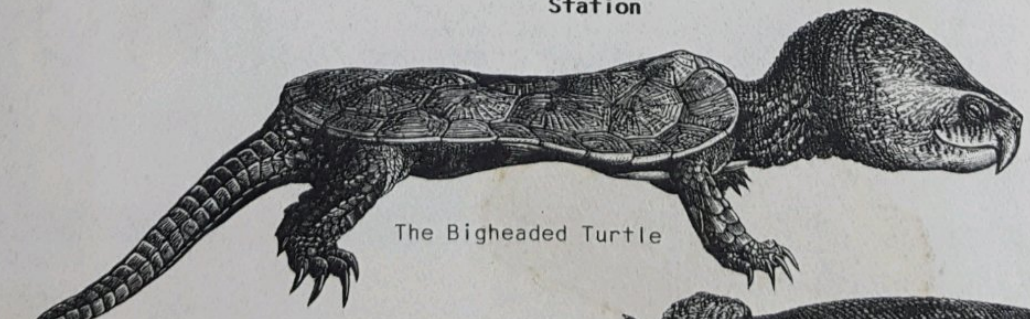
8 million years ago in the Amazon lived a giant crocodile called Purussaurus. Weighing 12,000 kilograms, it was 8 feet tall and 39 feet long. **Carl D. Frailey, Johnson County Community College, Overland,KS**

The Amazon River discharges 4.2 MILLION cubic feet of water into the Atlantic EACH SECOND. **Fascinating Facts**

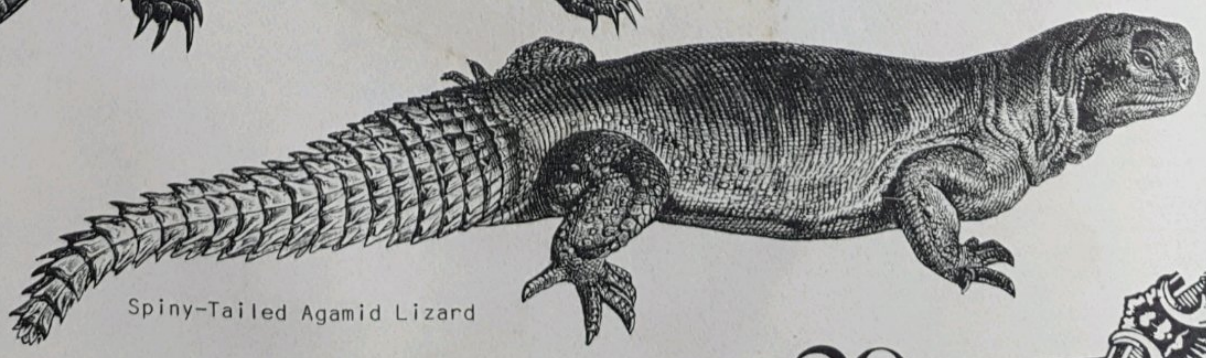
Maple syrup gets its unique flavor from vanilla and a group of compounds called "furanones" which are also found in beef broth. **Robert Lindsay, University of Wisconsin-Madison**

An Alaska gardener grew a 51 pound turnip in 1981. **Guiness Book of World Records**

I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, while the great ocean of truth lay all undiscovered before me. Isaac Newton



The Bigheaded Turtle



Spiny-Tailed Agamid Lizard

JURASSIC BARK

Touch the bark of a Ginkgo tree and you touch prehistory, for Stegosaurus, Apatosaurus and other famous dinosaurs of the Jurassic Era walked past, and perhaps even ate, Ginkgo trees. Its fossilized leaves show that this sole surviving member of a once vast family of ancient trees has changed very little in the last 80 million years; most of its unique, leathery fan-shaped leaves are still divided into 2 distinct halves or "lobes", hence the botanical name "Ginkgo biloba". For centuries, Chinese herbalists have valued this tree's nuts, leaves and green bark as a source of natural medicines for treating ills afflicting the male and female human genito-urinary system. Modern Western herbalists see it as a brain tonic that improves memory and alertness, as a treatment for impotence, as a general cellular anti-oxidant, and as a tonic (in conjunction with Hawthorne) for the circulatory system.

The Ginkgo is also a beautiful ornamental tree that tolerates polluted city conditions well while resisting most insect, bacterial, viral and fungal pests. Female trees, rarely seen in the U.S., produce a fruit that "stinks" to the Western nose but is savored by Asian people, who also consider its roasted pit a delicacy. This 130 foot tree tolerates a wide range of climatic and soil conditions; its name derives from the Japanese 'ginkyo', meaning "white nuts" or "white fruits". While fossilized dinosaur DNA, and frozen eggs, may make it possible SOME DAY for us to see live dinosaurs, we can see and touch right now part of the forests they shared with prehistoric birds and mammals...the pressed Ginkgo leaf below was donated by Letty Weisbart of Englewood, Colorado for your learning and pleasure. Consider growing this living fossil.

"I am a great believer in Luck. The harder I work the more of it I seem to have."
Coleman Cox

"Nothing measured is enough." Gayle Natale 1944-1990

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