

MYCORRESTORATION!

use native species of fungi

never destroy what isn't already destroyed!

roliforme saprophytes, mycorrhizals, endophytes

exterior root mycelium - ectomycorrhizal

interior root mycelium - endomycorrhizal (VAMs)

oysters! turkey tails! wood lovers! meadow mushrooms! shiitake! maitake!
inky caps! white button! shaggy mane! king stropharia!
conocybe, agarocybe, mycena, pluteus, agaricus, phanerochaete

endophytes! curvularia! piriformospora indica! psilocybes
mutual symbionts for plants + trees

mycorrhizals!

root mushrooms!
enhance nutrient absorption for plants

truffles! chanterelles! matsutake! boletus!

mycelial mediums!
hair, paper, straw,
cardboards, wood chips,
oil, petal waste products,
corn cobs, compost,
burlap, spent compost,
cacti, brewery waste, cotton,
yard debris, leaves, poop,
nut shells, oils,
tea, tea waste, cloth

1 g spores = 1 billion spores!

make a spore print!

1. collect mushrooms.
2. get a piece of paper
3. set the cap gills side down on it.
4. sit at least 12 hrs

hooray!
some yield more than others,
keep printing till there's nothing.

* the spores save in plastic ziplocks!
label species, date + location, picture!

germinate!

1/4 ts. salt, 1 lbs sugar or
molasses, 1 gal H₂O. boil!
put in jar + let cool. 1 ts
spores (1 gram)! cover it +
stash it for a day or 2. shake!
a couple times a day. keep
between 50-80°F in shade.
it's done! add to a medium
and make them live!

stem butts!
1. gather fresh mushrooms
2. soak card board
3. cut off stem butt + root
4. put butt between layers
5. keep dark + moist
6. wait + grow!

spore brew!
collect spores of rhizomorphs
crush, immerse in 5 gal
bucket of H₂O!
5 gal H₂O + 1 rhizomorph =
100+ seedlings!

oils, inoculated rope or sawdust
works best on stumps

Coprinus comatus (shaggy mane,
inky cap) breaks through ASPHALT

tree mushrooms

pine: boletus edulis, leccinum aurantiacum, tricholoma matsutake, pirolithus tinctorius*
fir: hydnum repandum, cantharellus cibarius
deciduous: rhizopogon parkii*
cedar + redwood: glomus intraradices*

* inedible species

SELF SUFFICIENCY PAMPHLET

a common guide for living

plz - make copies and share

mushrooms produce spores from
gills, pores, teeth or folds.
store spores in jars, bags - plastic
or paper, oil - (1000,000 spores to 1 liter)

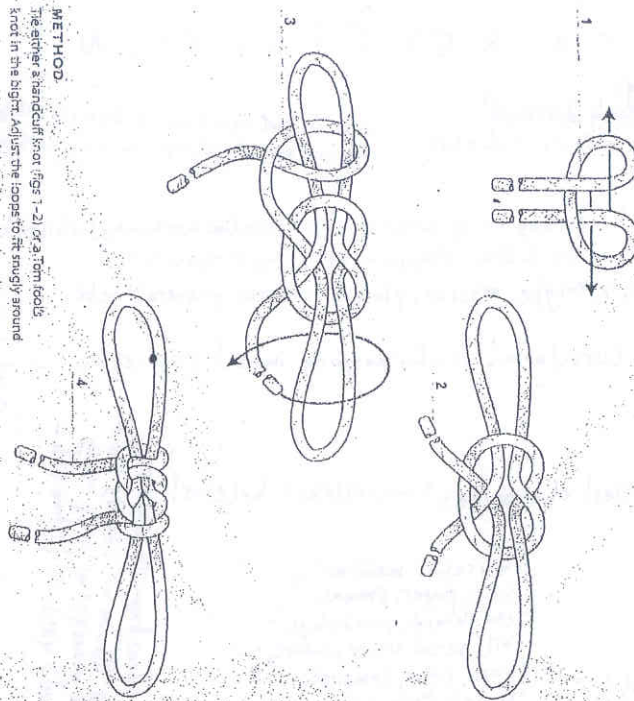
get mycelium-rich spent compost
from local mushroom growers.
get spores en masse from local + store in cool dark
place
growers! growing room air filters

best spores on
seeds before
planting - both
grow better together!

FIREMAN'S CHAIR KNOT

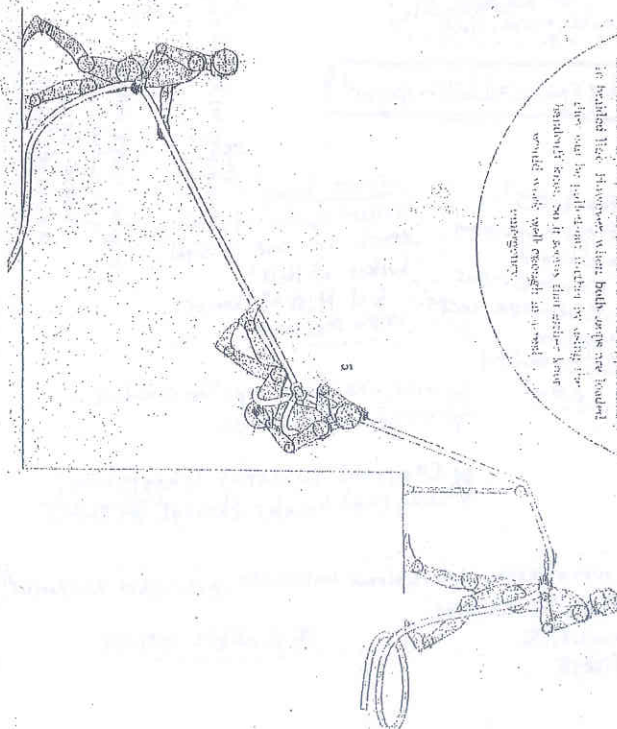
APPLICATIONS

When my two daughters were small I kept a coiled rope upstairs in their first-floor bedroom, as it was too far to drop them to the ground without injury in the event of fire. This knot, with its own adjustable (and lockable) loops, could have safely lowered them.



METHOD

Take either a handcliff knot (figs 1-2) or a Tom lool knot in the right. Adjust the loops to fit snugly around the chest and knees of the subject. Lock each one with a half-hitch (figs 3-4). The upper loop end is used to raise or lower the person, while a second rescuer on the ground holds them clear of any wall, cliff-face, etc. (fig 5).



HISTORY

Some techniques for upper-limb rescue have in the past, this knot was used by many firemen. It was also taught by the Soviet Association. who named it with a handcliff knot (see fig 5). Although the first Gaidler Association and the first Gaidler Association performed to start with the first knot, the first knot is a professional Firefighter and member of the International Council of Knot Ties contributed to the study of the Chair Knot (fig 5) than the handcliff knot version was better able to reach the shoulder repeated loading, due to its greater internal friction. When the knot is attached to a single loop, the first knot's knot allows the loop to be pulled out further, particularly in loaded use. However, when both loops are loaded, the knot is pulled apart, rather than being pulled apart by the handcliff knot, so it avoids that other knot would work well enough as a well as a well.

FLOWER
LIVING
the variables in which life can be sustained are debatable. this pamphlet covers shelter, food, water, health and information. all subjects are rough, this is a GUIDE.
live your life the way you need to. be mindful of other living things: big, small and unseen. try to think things through over a period of time. think about the energy return on the energy invested. if it is not necessary to do something or pick something, don't. let things be, including yourself. you are a valid part of nature. listen to the land and let it be your teacher. be patient. be whole. listen.

- COMPLEXITY (diversity of parts)
- SELF-CREATION (autopoiesis)
- SELF-REFLEXIVITY (autognosis—self-knowledge)
- SELF-REGULATION/MAINTENANCE (autonomics)
- RESPONSE ABILITY—to internal and external stress or change
- EMBEDDEDNESS in larger holons and dependence on them (holarchy)
- INPUT/OUTPUT of matter/energy/information from/to other holons
- TRANSFORMATION of matter/energy/information
- COMMUNICATIONS among all parts
- EMPOWERMENT—full employment of all component parts
- COORDINATION of parts and functions
- BALANCE OF INTERESTS—negotiated self-interest at all levels of holarchy
- RECIPROCITY of parts in mutual contribution and assistance
- CONSERVATION of what works well
- INNOVATION—creative change of what does not work well

A comparison of these principles with those by which corporations operate makes the point more clearly.

EVERY SYSTEM IS INTERRELATED WITH EVERY OTHER SYSTEM. BE CONSCIENTIOUS OF MICRO COSM / MACRO COSM. RELATIONSHIPS AND CONSEQUENTIAL EFFECTS OF CHANGE.

APPLICATIONS
This is a tight bend for
slippery cordage,
especially useful in
wet conditions.

METHOD

The interweaving (figs 1-4) is not too hard to follow,
although every crossing point over and under must be
exactly right. The appearance of the finished knot
(fig. 5) is distinctive.

HISTORY

Retired research scientist Harry
Asher discovered this knot while working
systematically through derivations from the
common sheet bend. It was published by him in
The Alternative Knot Book (1989). Asher was, however,
unaware that his knot was perhaps much earlier in origin.
When the writer and traveller Tim Severin started to make
his replica of the cow-hide boat used by the sixth century
Irish monk St Brendan, he found that the wet leather thongs
with which he was working were like slippery snakes, pulling
out of any knot he tried. Eventually, with a lot of twisting
and interlacing, he made a knot that held. As he wrote in
1978 in the Sunday Times Magazine: "... in a curious
way, the knot looked much like the braided
petrosus found in Irish manuscript
illustrations. And it might have looked
much like this knot too

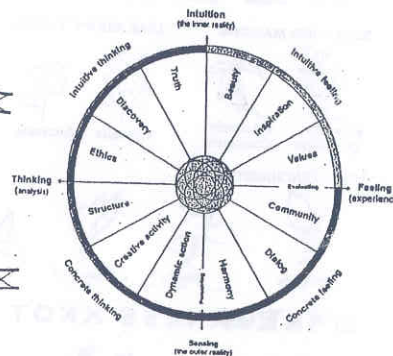
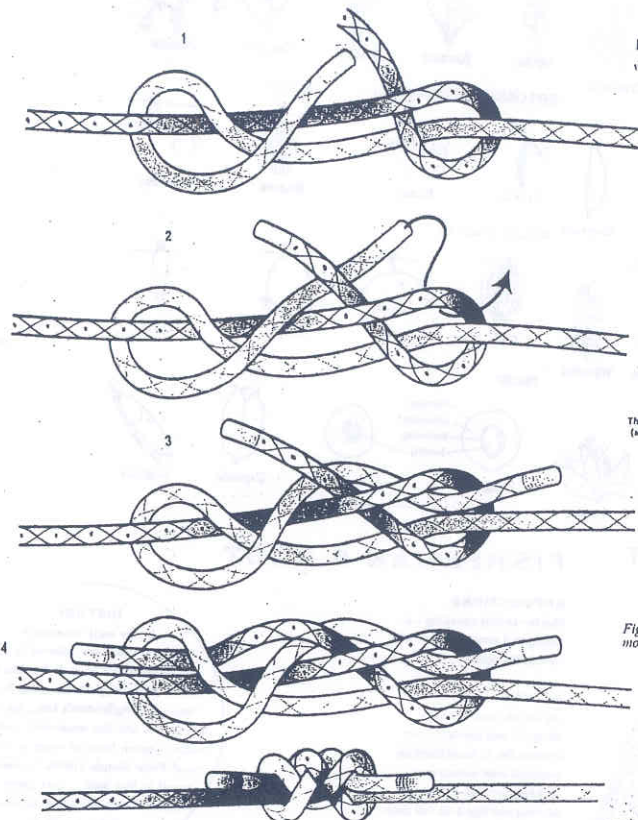
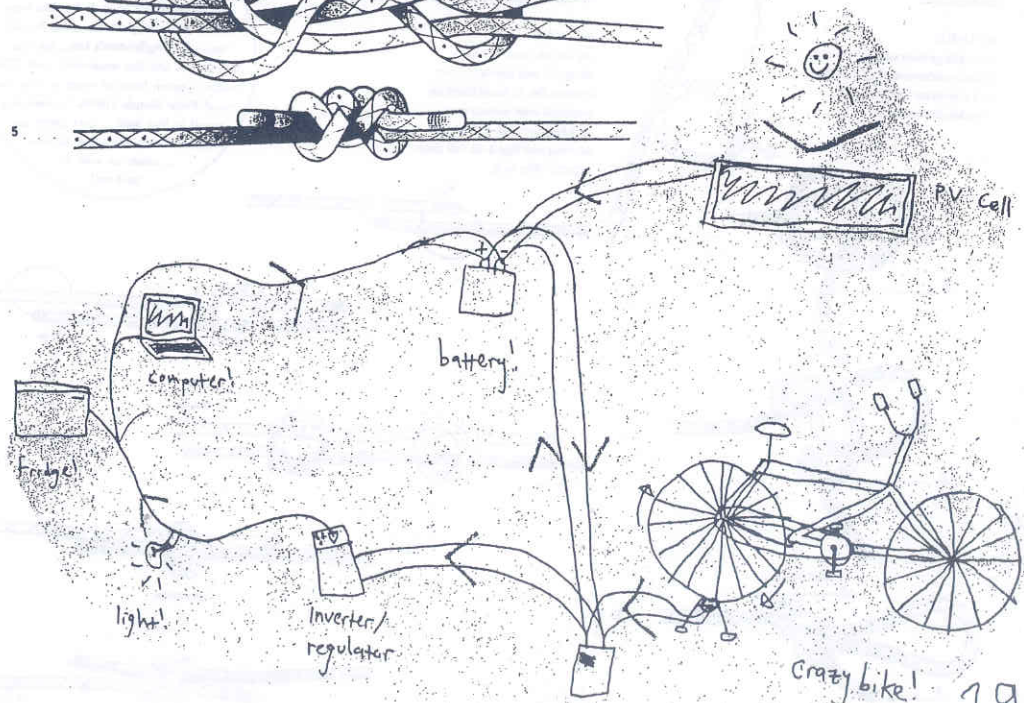


Figure 1: The optimal knowledge culture in relation to learning. The model is based on Jung's concepts.



living

housing

squattinġ-3

shelters -3

house building -4

straw bale juġk -5

figurinġ out clay content-5

plasterinġ juġk -7

buildinġ material info -8

comparison of house structure to
plasterinġ walls-10

wattle and daub -10

earthship juġk -11

earth cover weights -12

cave dwellinġ -13

water

collection -13

well construction -13

filtration and storage -14

food

plantinġ -15

compost -16

mulchinġ-16

companiġ plantinġ -17

permaculture -18

waterinġ -18

sproutinġ -19

sprout chart -20

food not bombs -21

dumpsterinġ -21

nutrition -21 and 22

eating habits -22

health

plant identification -22

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medicinal plants -23

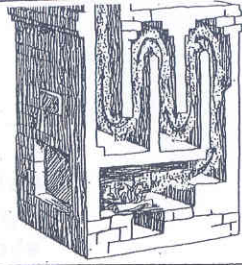
health guide-24

random awesome stuff -25 to end

add on to this
moving! and pour it on

.....SQUATTING.....
 if you decide to squat somewhere, bear in mind:
 don't be seen going in or coming out - protect the
 squat for future squatters, keep the place clean or
 natural - whether an indoor or outdoor squat - it's
 just good to be considerate, if you get found don't
 be violent - explain something to the finders or
 run if it doesn't work. most public forest land
 area is pretty safe.. most cities have co-op
 houses that are okay with floor sleeping or back
 yard camping. houses not jails is an awesome
 organization started in San Fran that helps people
 squat or finds squats to start. if you're squatting
 for civil disobedience and public awareness, be
 respectful of those just looking for a little sleep
 and stability. bigger cities tend to have squatters
 rights demonstrations with lots of people in massive
 buildings - help organize or participate.
SHELTER IS FREE IF YOU CLAIM IT.
COMPASSION BEFORE ACCUMULATION....

SHELTER



b. In a masonry heater, hot gases flow through an elaborate internal flu system, transferring heat into the masonry. Heat then slowly radiates into the room.

Source: Nicholas Lyle and Kristin Musnug

A GLOSSARY OF PLANT PARTS AND SHAPES

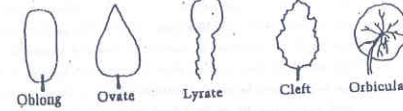
LEAF PARTS



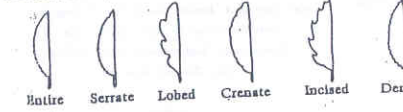
LEAF SHAPES



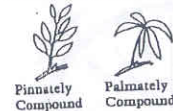
LEAF SHAPES (Cont'd)



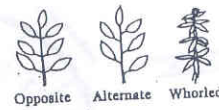
LEAF MARGINS (SIMPLE)



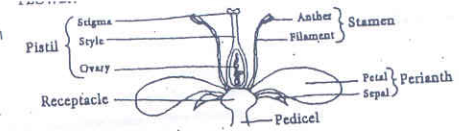
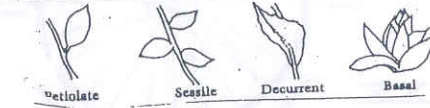
COMPOUND MARGINS



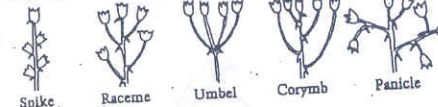
LEAF ARRANGEMENTS



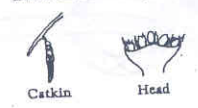
LEAF ATTACHMENTS



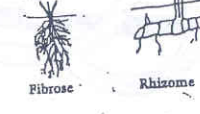
INFLORESCENCES



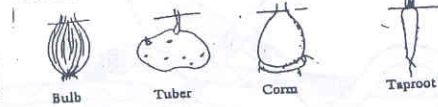
INFLORESCENCES (Cont'd.)



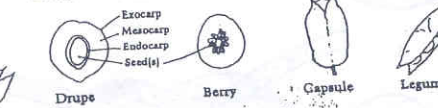
ROOTS



ROOTS (Cont'd.)



FRUIT



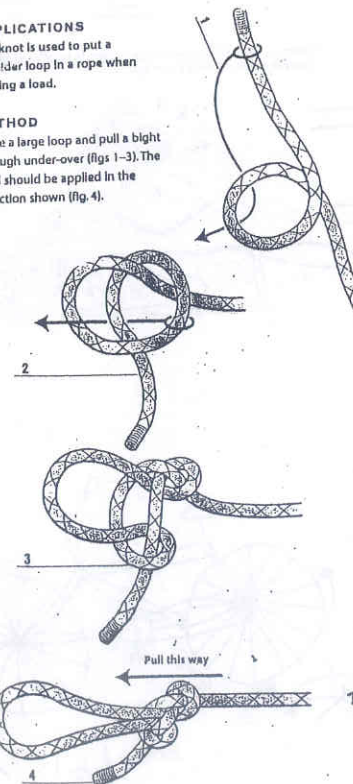
MANEWARNESS KNOT

APPLICATIONS

This knot is used to put a shoulder loop in a rope when hauling a load.

METHOD

Make a large loop and pull a bight through under-over (figs 1-3). The load should be applied in the direction shown (fig. 4).



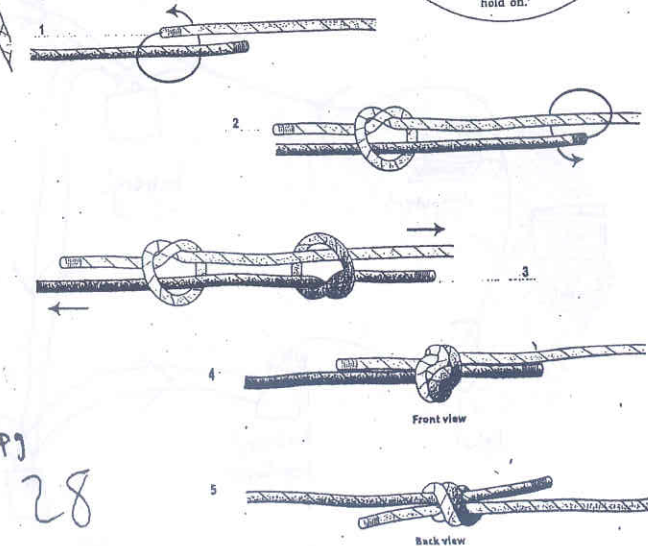
FISHERMAN'S KNOT

APPLICATIONS

This is - strictly speaking - a strong and secure bend to join two similar ropes.

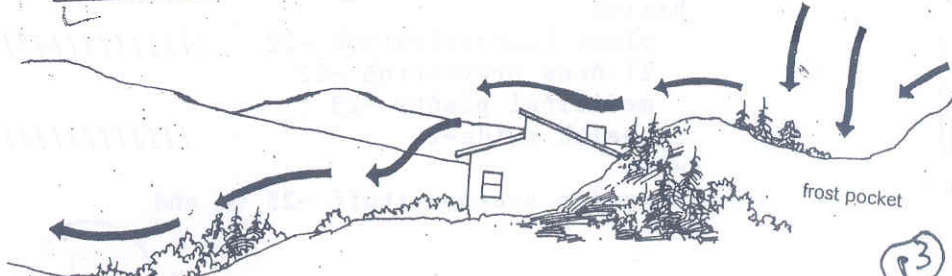
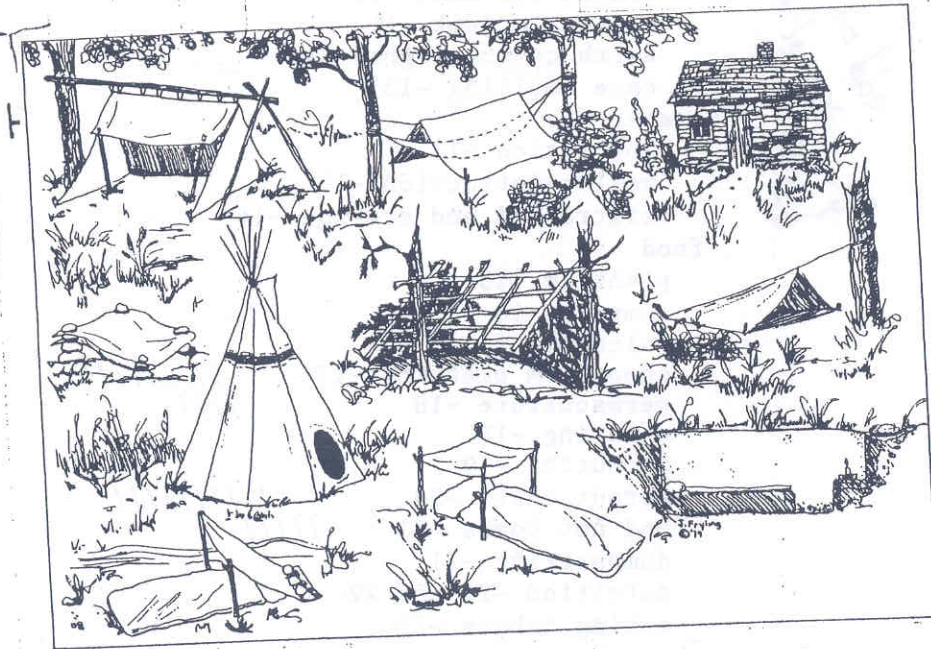
METHOD

Lay the two working parts alongside and parallel to one another (fig. 1). Tie an identical overhand knot around each standing part with the other working end (figs 2-3). Pull them together (figs 4-5).



HISTORY

In the early nineteenth century, fishermen referred to this knot as the water knot. It has also been known as the angler's knot, the English knot, the Englishman's knot, the true lover's knot and the waterman's knot. The author Captain Marryat wrote of it in his novel Peter Simple (1854): '... there is a moral in that knot ... that points out the necessity of pulling together ... when we wish to hold on.'



How to Make a Moccasin

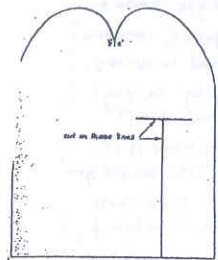


Figure 2:1

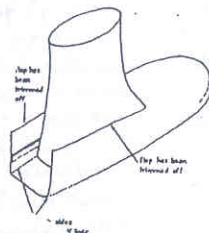


Figure 2:2

All moccasins can be made the same way. Keep work fields out while sewing. Sewing on leather can be close to the edge. Canvas should have 1" margin if edges are left raw.

Figure 2:3

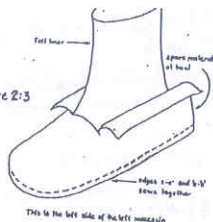
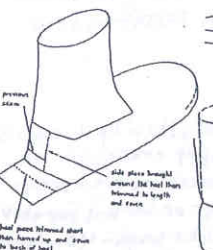
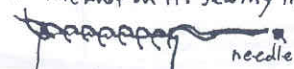


Figure 2:4



SEWING BASICS...

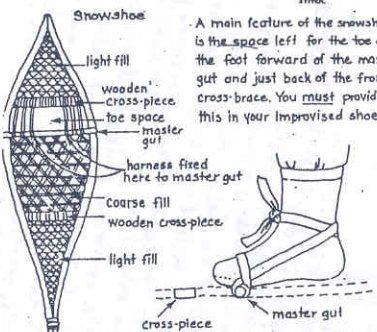
Everyone can sew! Get a sewing needle and string that can fit through the hole. Floss is also really good (and strong), put the string in the eye of the needle and tie the two ends of string together with a big knot (or at least bigger than what will go through your fabric). If you're sewing something where the knot won't hold, bring the needle through the fabric and then through the loop on the other side with the knot on it. Sewing like:



RE SOURCES
So if you're really getting into it and need more info or have adequate space and money to try these books are unbelievably awesome:

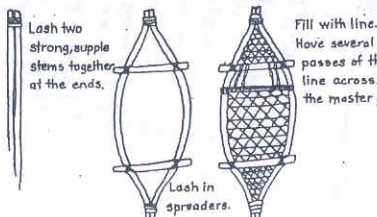
BUILDING GREEN: small + callahan
WHEN TECHNOLOGY FAILS: stein
KOEHLER'S MEDICINAL PLANTS: koehler
STEAMPUNK'S GUIDE TO THE APOCALYPSE: kirby

will stop edges from fraying and can bind 2 sides of cloth together. Sew on the hidden side if you don't want anyone to see. Keep in mind how the fabric gets pieced together, how the fabric frays, if a patch works better, how tight to stitch it, where the most wear is, etc.



A main feature of the snowshoe is the space left for the toe of the foot forward of the master gut and just back of the front cross-brace. You must provide this in your improvised shoe.

Simple but effective harness over the toe, around and secured to the master gut on both sides, then back and around the ankle to tie in front.



Making a Bark Whistle

Step 1: Cut a smooth green sapling stem growing in moist ground. Shape it as shown in the first sketch.

Cut through the bark only here, all the way around.

Step 2: Tap with your knife handle all over the surface of the bark to be removed, vigorously enough to help loosen it but not so as to damage it. Give it a firm twist to bend then pull it from the wood.

Step 3: Remove wood as shown in the third sketch. Do not use the wind channel at the top front very large; you can enlarge it later if necessary.

Step 4: Slip the bark back on the wood and give a stout rap. You will be delighted with your handiwork.

MECHANICAL SYSTEM OPTIONS:

- TEMP. REGULATION:
 - passive solar design
 - ground source heat
 - solar convection floor
 - masonry heater
 - wood stove
 - earth pipes
 - solar thermal collector
- *WATER*
 - *drilled well
 - *dug well
 - *lake, river, stream collection
 - *reservoir
 - *rain collection
 - *electric pump
 - *wind pump
 - *hand/foot pump
 - *gravity feed
- *SEWAGE*
 - *septic system
 - *composting
 - *outhouse
 - *leaching pit
 - *living machines
- *ELECTRICITY*
 - *solar panels
 - *wind turbines
 - *water turbines
 - *bicycle powered
- *WALL PARTITIONS*
 - *recycled materials
 - *screen dividers
 - *straw bales
 - *cob
 - *woven twigs
 - *mix + match

pg 4



We used a mixture of 5 parts clean sand and 1 part Portland Cement for the pier. Many larger rocks and pieces of scrap metal were tapped into the concrete to save on cement and add to the strength of the mixture (plate 3).

Embodied Energy of Common Building Materials and Products

Material	Embodied Energy in MJ/kg (million joules per kilogram)
Baled straw	0.24
Adobe block (traditional—mud and straw)	0.47
Concrete block	0.94
Concrete (poured on site)	1.0-1.6
Concrete (precast)	2.0
Hardwood timber, kiln dried, rough sawn	2.5
Softwood timber, kiln dried, finished	3.3
Cellulose insulation	6.1
Plasterboard	7-8
Cement	10.4
Plywood	30.3
Fiberglass insulation	32
Steel (virgin)	148
Carpet (nylon)	148

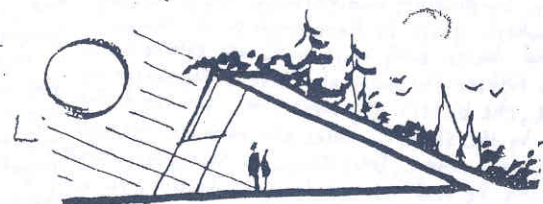
From: Andrew Alcom, Embodied Energy Capabilities of Building Materials, Wellington, New Zealand: Centre for Building Performance Research, 1999.

• HORSE BUILDING •

Consider your site, don't destroy already existing structures or wildlife, incorporate them. Draw out plans &/or sketches before building. Talk to people who have built similarly and learn. Think about movement through the dwelling—people movement, sun movement, wind movement, moisture, etc. Consider how your area frosts and thaws—how deep? how often? Consider passive solar heating or cooling for the roof and windows. Run the plans by an experienced third party. If changes are made, make sure that they are fully adapted to the rest of the plans. Materials can be awesomely scavenged from dumpsters, construction sites, dumps, demolition sites, etc. also garage sales, flea markets, the classifieds, Craigslist and re-stores are good locations for cheap/free building materials. Work parties can be an awesome way to do it.

A flat cultivated roof need not be difficult to seal. With a cultivated roof the roof seal is of particular importance. It must be root-resistant so that the roof plants cannot damage it.

Pitched roofs can also be cultivated. Roofs with pitches of up to 40° can be cultivated. When they are steeper than 25° they require protection against shearing to prevent the soil substrate from slipping, and there must also be a drainpipe along the eaves.



- * inspect carpentry for all things interacting with the bales.
- * prepare corner guides
- * mark + place bucks for doors, etc.
- * uncover + distribute bales around the building
- * layout the whole first layer - making custom bales that don't fit and stuffing narrow spaces with strawflakes.
- * place buck frames in when needed
- * do one layer of bales at a time to keep the plan simple + easy
- * pin the bales with capped bamboo or capped stakes to reinforce walls
- * finish the walls to the top
- * trim, curve + straighten bale walls
- * install Flashing and mesh
- * stitch mesh close to wall w/out touching
- * protect walls from moisture + let it sit and compress for a long time
- * get ready to plaster
- * plaster in coats - inside + outside

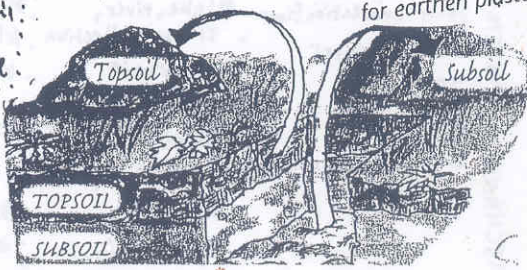
STRAW BALE OVERVIEW

Straw is not hay. hay is dried grass and is commonly feed to animals; it will degrade, rot and mold and harbor lots of living things that will eat it. straw is the dried stems of grain-bearing grass, currently considered a waste by-product; undigestible, tough, weedy. anywhere grain is harvested, so is straw. round bales don't work well, use square bales. the tighter the bale, the better. the drier the bale, the better. get more than you need and lift by the strings. bales are more fire-resistant than wood frame, loose straw is highly flammable and can be used as mulch. bale houses last a long time. let the stacked walls sit + compress for at least a week (month preferred) before building the roof or plastering the walls. frames can be load-bearing, post + beam, or hybrid - do research into what works best for you. don't overstuff your walls - they will bulge out. pinning, though helpful, is not necessary to build up sturdy walls. three-string bale dimensions are just like legos - get creative. make the walls trim before plastering. the wire mesh is very vital, but helps keep the plaster or cob mix on the bales. mix on the bales before plastering furthers adhesion.

- ### Building Materials
- Produced by socially and environmentally responsible companies
 - Produced sustainably - harvested, extracted, processed, and transported efficiently and cleanly
 - Low embodied energy
 - Locally produced
 - Made from recycled waste
 - Made from natural or renewable materials
 - Durable
 - Recyclable
 - Nontoxic
 - Efficient in their use of resources
 - Reliant on renewable resources

Nonpolluting

is really easy to make. mix sand, water, clay-rich soil, and straw. usually starting with the soil + water on a big tarp. you gradually add straw and sand, mixing with bare feet. once the cob is tacky and malleable, not wet and soppy and not hard and crumbly. you make balls roughly grapefruit in size and put those on whatever you are making. be sure to pat it into shape and poke your fingers into the balls and straw together. if it starts slumping, let the mix dry a little bit and try again.



- ### Summary of Principles of Sustainable Design and Construction
- Build small
 - Make homes efficient
 - Use recycled or recyclable materials
 - Recycle and compost all waste
 - Build recycling centers in homes
 - Use renewable resources - especially energy
 - Promote environmental restoration
 - Create safe, healthy living spaces
 - Make homes easy to operate, service and maintain
 - Design homes to be accessible
 - Make homes affordable
 - Make homes durable
 - Build community

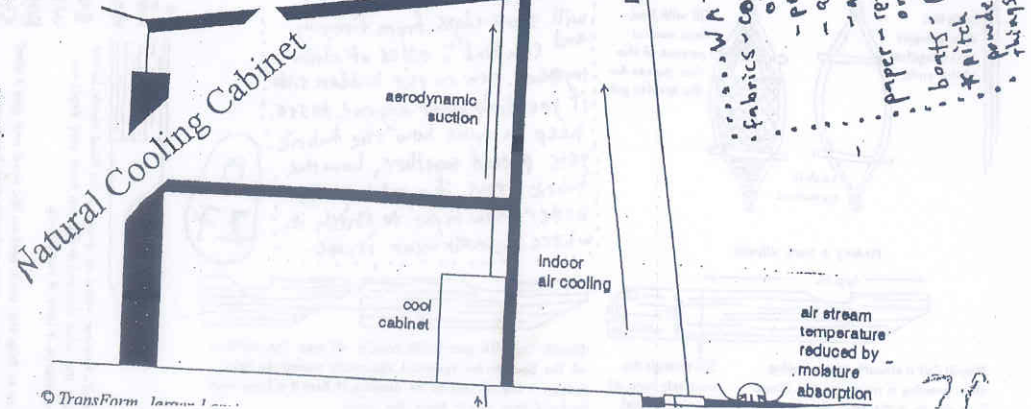
Subsoil usually contains higher levels of clay and lower levels of unwanted organic matter than topsoil. It is, therefore, usually the best source of material suitable for earthen plasters.

- ### NATURAL DYEING
- BURGUNDY-RED** - sweet gum bark
 - PEACH** - redbud roots, button bush branches, eastern red cedar bark, smooth sumac fruits, rusty black haw bark
 - SALMON-PINK** - sand evening primrose roots
 - BRIGHT YELLOW-GREEN** - rose vervain leaves + stems
 - OLIVE** - butterfly milkweed flowerst leaves, soft golden aster leaves + petals, blue ash bark
 - DULL GREEN** - indian paintbrush leaves + stems
 - BRIGHT YELLOW** - yarrow, box elder, red bud flower, nettle root, prairie phlox petals, carolina willow leaves, stiff goldenrod leaves
 - ORANGE** - red bud flowers, morning star florets, green thread leaves, sassafras bark
 - BLUE** - indigo

collect plants a day in advance, shred up dye parts and cover with water in dye pot overnight. an hour before dyeing, cook garment in other water and bring dye stuff to a simmer or low boil for about 10 minutes, if plant stuff is thicker tough - 40 minutes. 15 minutes before the dye is ready, put garment on stove until steaming. once dye is ready, add H₂O to dye - 1 gallon to a quarter pound garment and bring to simmer/steam. wearing rubber gloves! squeeze excess water from garment, put in dye pot + wait half an hour as it steams/simmers, then take off heat and let cool naturally. Rinse garment clear, hang or set to dry out of direct light.

test out amounts of plant: fabric - a common starting point is 1:1. some people pre-soak fabric in solutions of tin, iron, or copper to hold color.

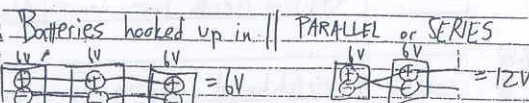
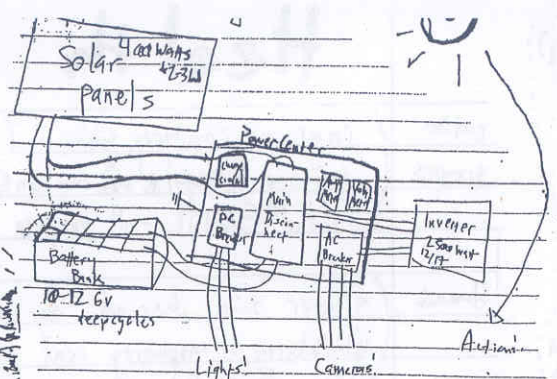
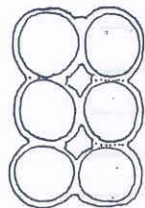
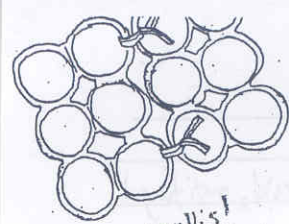
- ### BROWN BAGS
- Large brown paper bags can be recycled treasures once we realize the full extent of their usefulness. Use them as trashcan liners, mailing wrappers and book covers. Uses of the versatile paper bag are endless.
 - Save the money you spend on drip coffee filters by making recycled paper bag coffee filters. Cut a large circle from a brown paper bag and soak it in water. Fold the circle to make a cone, and put it into the drip coffee maker.
 - If you don't drink coffee, you can use the paper bag drip method for your roasted grain beverages. Ground and roasted dandelion, chicory roots and barley all make a satisfying, tasty beverage, either individually or mixed.



BACKPACK

everyone's got their own knick-knacks in their pack. packing is based on how you travel and how you live. will you build a fire? bring a hatchet. are you in a city? get food locations. how are you sleeping? eating? travelling? communicating? what time of the year is it? are there amenities where you are going? do you need those amenities? is there a lot of wait time? a lot of walking? think about packing light to start. everyone likes a light pack. essentials. then look at your secondaries. first-aid kits can be extremely useful, as are natural rope, hankies, a knife, a small tupperware box, floss, a pen, notebook, water container.

- ### WATER PROOFING (with heat) completely
- fabrics - coat in husked oil, be careful oil is combustible, rubbing it on inside
 - proof with wax, rubbing it on outside
 - an epoxy coat on fabric and brushed on - brittle
 - any tree pitch melted and already written on project
 - paper - resin or wax to coat wax, until it sinks through
 - or melt the resin or resin calsk wooden sealing boards
 - boats - pitch, resin or resin calsk wooden sealing boards
 - pitch is made by boiling down sap and adding any powder or black ash - it's good for sealing any wood things like bowls, spoons, buckets, caskets, etc.



All rivers of modest gradient develop a meander pattern. The faster and deeper water is found on the outside of the curve, the slower and shallower water on the inside.

indicates the main current

Shallow water. Your raft may go around here. Try to keep to the main stream.

indicates the safest route for walking on the ice in winter. DO NOT walk through a canyon or a fast-dropping place with boulders showing through the ice. Skirt the mouth of a tributary stream.

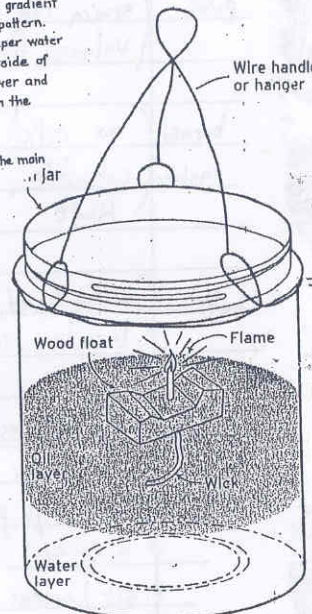
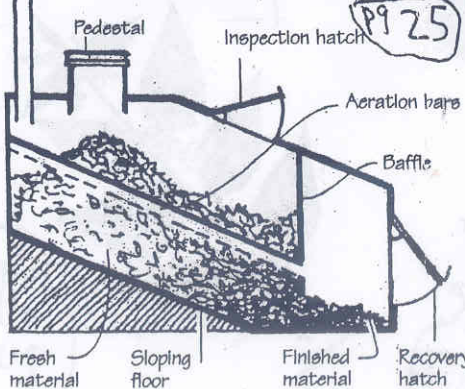


FIGURE 34: IMPROVED OIL LAMP



Compost Toilet

A generalized, continuous-process toilet. The baffle prevents fresh material arriving prematurely at the retrieval point.

Graphic from "Lifting the Lid", by Peter Harper and Louise Halestrap. Publisher: the Center for Alternative Technology Publications. ISBN: 1 898049 79 3 © CAT, Peter Harper.

REPELLANTS.

- cedar keeps out moths.
- wild mint keeps out mice.
- green elder boughs repel rats.
- camphorated spirits repel mosquitoes as well as citronella.
- sage leaves repel red ants.
- boiled poke root and molasses repel cockroaches typically.

- if building a fire, don't make a pit, make a mud and. pits kill all the micro flora and fauna up to 4 inches in. make a four inch high mound.
- latrines are hard to come by outside dig a cathole at least 6 inches deep and pack out any toilet paper or use leaves.
- what sticks are what sharpen your knives and hatchets. no need for sport-bought! look at the ground and find one that does the job.
- keep a notebook or similar pad to write in.
- you will find it invaluable for contacts, dreams, poems, slips of loose paper, survival notes... etc

- to extract beeswax put comb in a natural fiber bag with a stone inside. boil the bag and the wax will rise to the surface.
- have a store of medicinal plants or tinctures just in case. cover all emergent bugs. dried plants stay more potent when out of sun and away from moving air. tinctures are best.

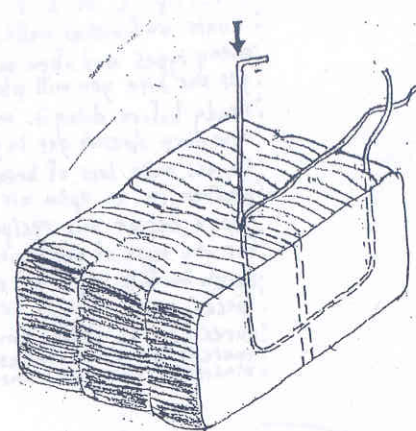
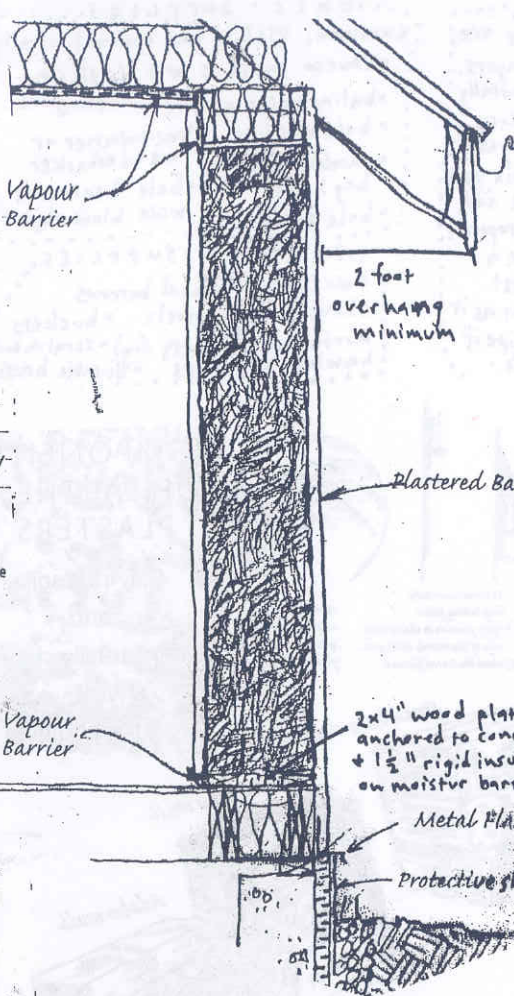


Illustration 17.5

A bale needle runs string through a bale before it is tied off and the old strings are cut.

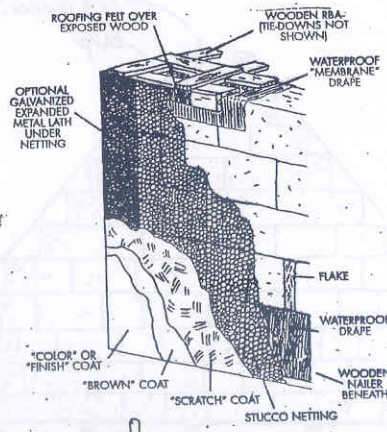
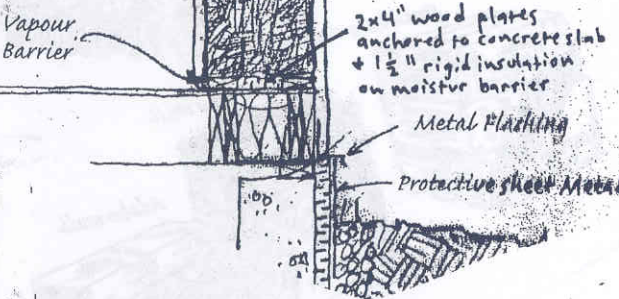
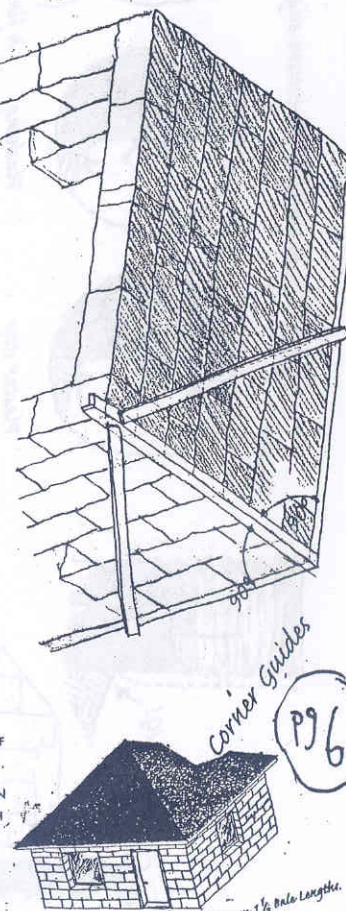


Figure 7-13. Plaster finish on a straw bale wall. Illustration from Build It with Bales by Molly Myhrman and S. O. MacDonald.



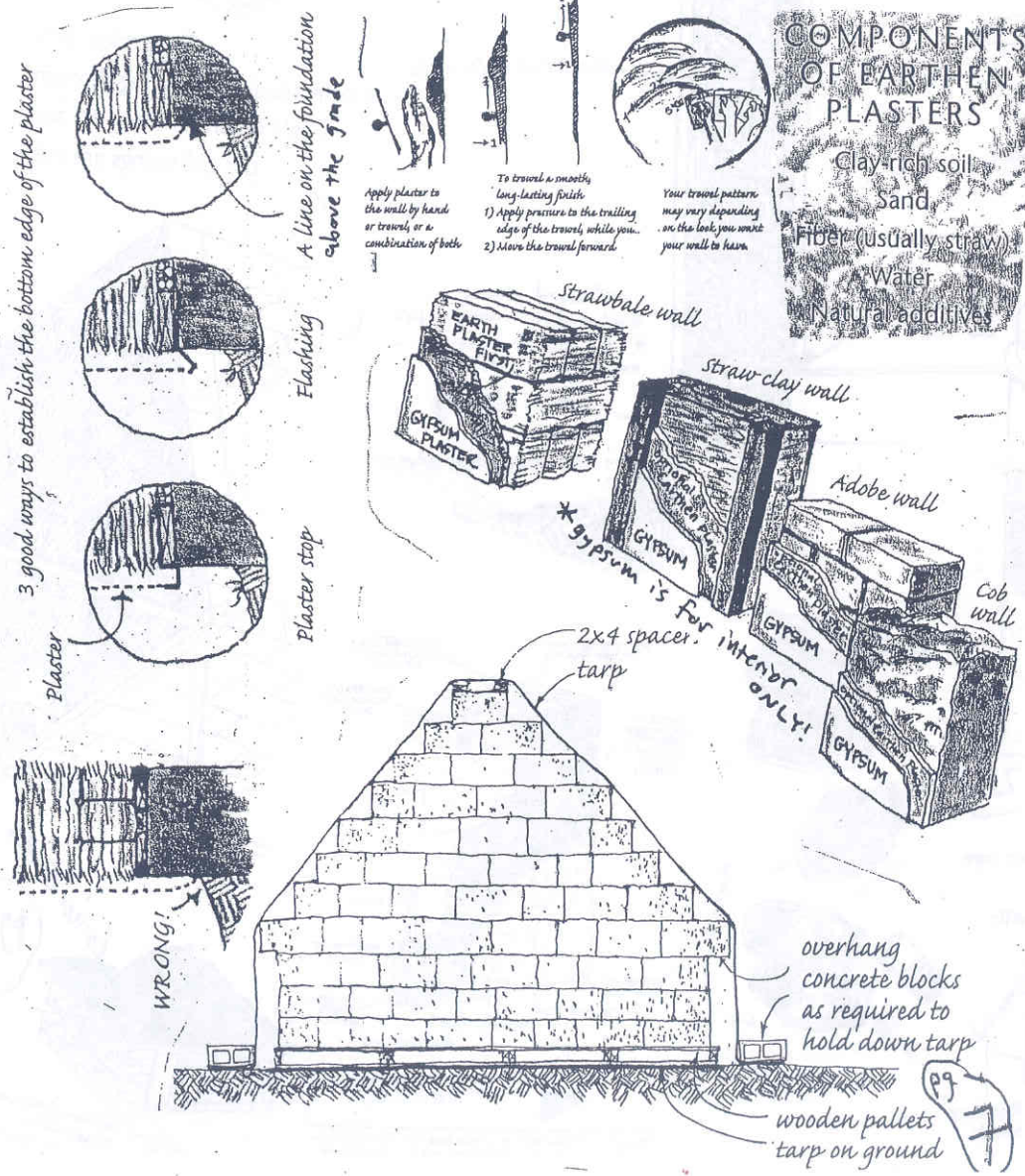
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Minimum 1/2 bale lengths (Correct Method) are staggered (Correct)

PLASTER
 coats unfinished walls. there are many types and often many layers. get the site you will plaster totally ready before doing it. make sure the dust doesn't get in your eyes or lungs. take lots of breaks. mix your plaster in an open air place and get a decent mix recipe appropriate for the type of plastering. use a batch to fill in holes on last spaces, avoid direct sunlight as it cures (dries). change your recipe if there is a lot of cracks. don't plaster in freezing weather.

PLASTER SUPPLIES
 common, useful, and optional (usually)
 • Stucco meshes w/ staples & staple guns
 • baling twine or wire
 • bale needles • line trimmer or weed whacker
 • garden shears or hay knife • bale beater or wide blunt object
 • bale tarps
PLASTER SUPPLIES
 • two (at least) wheel barrows
 • shovels and trowels • buckets
 • mortar boards (easy dry) • scratch tool
 • hawk • sponges • durable brush

COMPONENTS OF EARTHEN PLASTERS
 Clay-rich soil
 Sand
 Fiber (usually straw)
 Water
 Natural additives



Health

cuts (cayenne, comfrey, yarrow (stop bleeding))
 scrapes (tea tree & veggie oil - antimicrobial, antibacterial, antifungal)
TORMENTIL - all-purpose salve
 Stomach (ginger & charcoal for nausea)
 (blackberry or raspberry leaf tea for diarrhea)
 (yellow dock for constipation)
 aches (witch hazel, arnica, St John's wort for cramped muscles)
 pains (arnica tea as compress for pain, swelling & discoloration)
 (valerian for menstrual cramps)
 burns (no oils! yes cold water)
 rashes (calendula, comfrey, chamomile, St John's Wort, plantain, lavender tears - chills)
ALOE
 bugs! (witch hazel, plantain, grindelia, comfrey, lavender - itching)
 (lavender, citronella, eucalyptus, cedarwood, lemongrass - bugs)

Tinctures

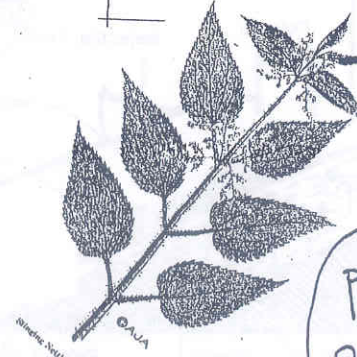
1 c herb
 5 c high proof alcohol
 * mix & seal
 * sit 2 weeks
 * strain & store in dark glass

Salves

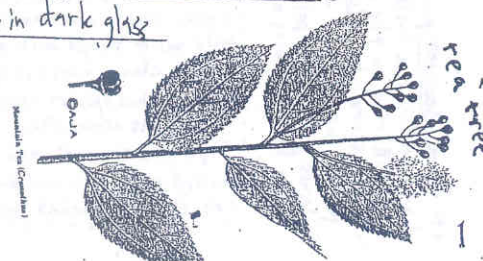
100 ml oil
 25g bees wax
 25g anhydrous lanolin
 * melt together
 45 ml tincture
 2g borax
 * combine & warm
 * add tincture a drop at a time,
 * store in dark glass

Poultice Powder

* dry herb
 * grind into powder
 * save powder to use
 * combine w/ water to make paste
 * apply topically
 * cover loosely



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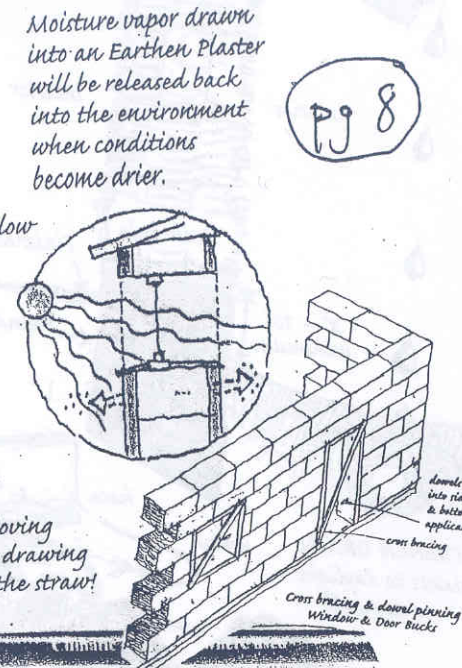
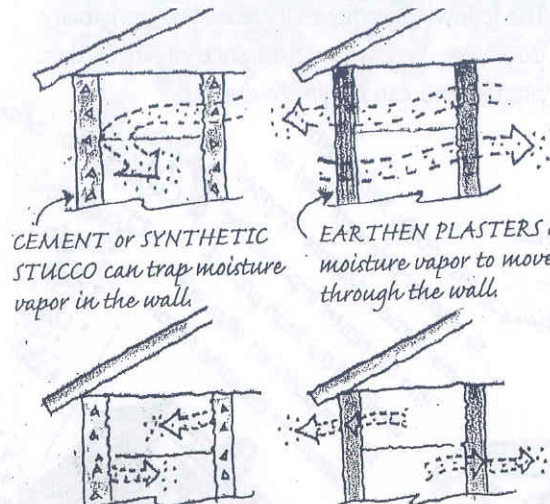
Arise Wild geraniums, which grow from Newfoundland to Georgia, west to Manitoba, Kentucky, and Tennessee in the East and in the West from South Dakota to British Columbia, southward into Nevada and California. Rarials throughout much of North America's Temperate Zone.

Uses: Wild geraniums were said to be the Indians' strongest astringent, the green solution made from the powdered roots and water being especially valuable for dysentery and for internal hemorrhaging. It was also favored for drying up such sores as slowly healing ulcers. Crushed geranium roots were incised for poultices for such ailments as protruding piles and for arthritis, overexposed joints, sore feet, ruptures, and the like.

A tea steeped from the roots was perhaps the most widely used faith control substance taken internally, the drinker being thought to be safe from pregnancy for at least a year.

Household geraniums, incidentally, are members of the same family but are of a different, also large species known as *Pelargonium*. Root tea from the wild geranium was considered effective for delicate stomachs, neuralgia, as a diuretic, and for compresses kept deep for burns, for bleeding wounds, infectious sores, and piles.

When dried, the roots could be ground into a purplish brown, generally chocolate-colored powder, and was used, along with dried, dysentery, cholera, and the like being 15 grains. The leaves of the dried leaves, too, were held to be valuable as mouthwashes for sore throats.

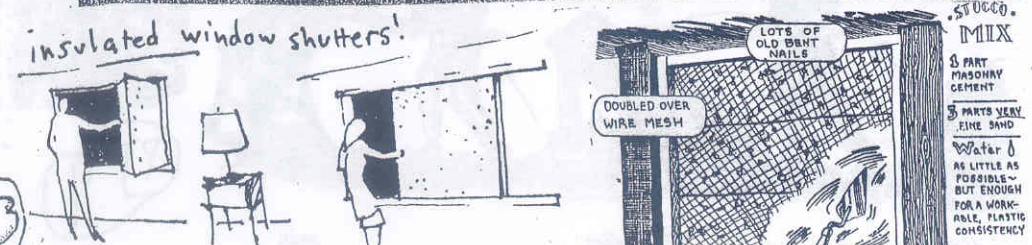


STRAW is more water-loving than CEMENT - thus straw draws moisture vapor from the cement.

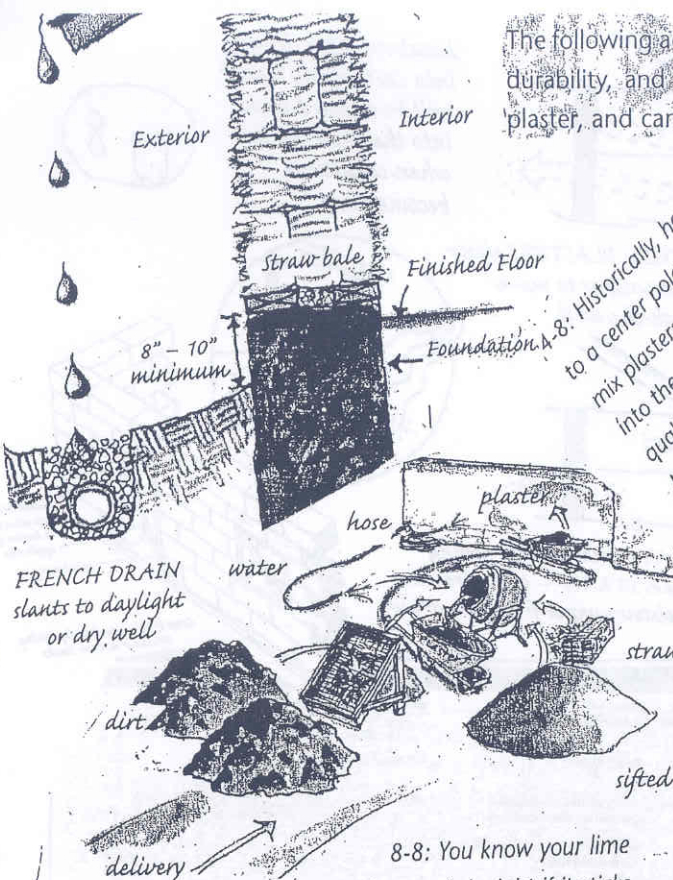
CLAY is more water-loving than STRAW - thus drawing moisture vapor from the straw!

Material	Composition/Properties	Used for	Climate
Clay	Indefinitely recyclable, breathes (air throughflow), absorbs and releases heat and humidity, permeable, high resistance.	Floors; walls; roofs; dome construction.	all
Plaster	Random clay + gravel.	Floors; walls.	(all) Found everywhere but in Greenland.
Adobe	clay + straw + flint gravel for blocks, brick, laying.	walls, vaulted constructions (parabolic), floor separation.	all
Clay	clay + straw + fine gravel.	Floors; walls; internal fire protection for thatched roof.	all
Bricks	clay, burnt, absorb less humidity than dried compressed; more impermeable; higher tensile strength; lighter than concrete; crystalline water components are evaporated; irreversible process (lower recyclability).	Floors; walls; roofs; terraces; ceilings; roofs.	all
Compressed Earth	clay + gravel, compressed; high compressive/tensile strength; easy to handle and produce.	walls; vaulted constructions.	all
Wood	Cellulose; easy to work with; good insulator; lightweight; though flammable in itself, more fire resistant than concrete when properly baled and plastered; high earthquake and wind resistance; high strength in relation to weight.	load-bearing constructions; roofs; walls; roofs; foundations; stairs; windows; doors; inventory.	everywhere where straw is naturally available; low suitability in humid tropical climates (problems with rot).
Straw	Cellulose; easy to work with; good insulator; lightweight; though flammable in itself, more fire resistant than concrete when properly baled and plastered; high earthquake and wind resistance; high strength in relation to weight.	walls; composite for floors; walls.	everywhere where straw is naturally available; low suitability in humid tropical climates (problems with rot).

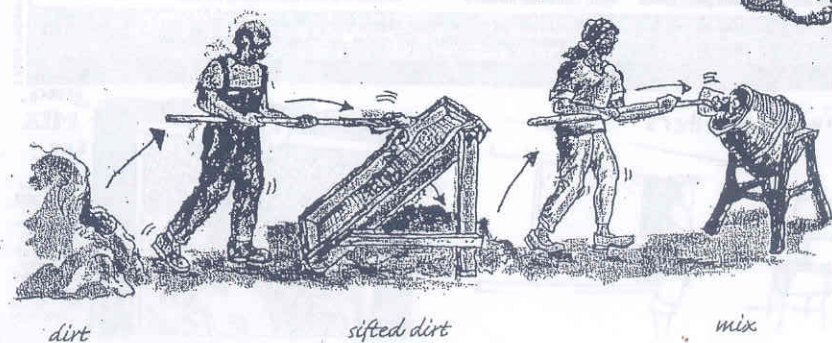
Material	Composition/Properties	Used for	Climate
Pumice Stone	lightweight; easy to work with (soft); relatively insulating; porous (high air throughflow, breathes).	insulation (also in pulverized form in insulation).	can be used everywhere, but is not found in many places.
Sandstone	lightweight; easy to work with (soft); porous.	walls; foundation; inventory.	vulnerable to cold and humidity, not in humid/cold climates.
Grass	lightweight; easy to work with (soft); porous.	walls; foundation; inventory.	vulnerable to cold and humidity, not in humid/cold climates.



© Kaitia Hatfield. Remediation of chart is authorized with mention of author's website.



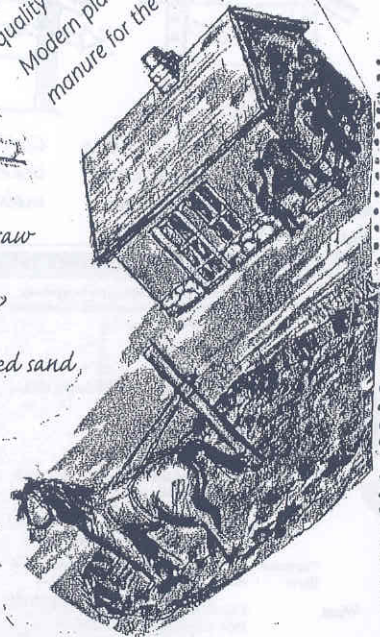
5-1 (a) (b): A well-organized work site is safe and efficient. Organize materials and equipment so they are close to the walls that need plastering. By aligning functions, such as sifting and mixing, you can save a lot of work.



The following additives increase the workability, durability, and water resistance of an earthen plaster, and can minimize dusting:

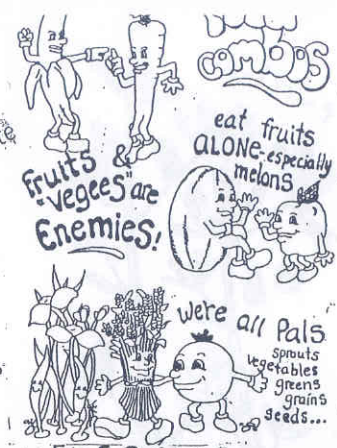
8-8: Historically, horses tethered to a center pole were used to mix plasters. Manure dropped into the plaster improved the quality of the finish product. Modern plasterers often add manure for the same reason.

- Cactus juice
- Cooked flour paste
- Gum arabic
- Alum
- Kelp
- Lime
- Oils



8-8: You know your lime plaster mix is right if it sticks to a trowel when turned upside down. If it drips off, it is too wet and will very likely shrink and crack as it cures.

These additives increase the plasticity and strength of plaster by adding fiber.



... EXERCISE ... a basic regimen of stretching and exercise helps your body out. there are many ways to get the blood flowing and your muscles moving. let your exercise develop your body as well as your mind. let it be something you enjoy and look forward to.

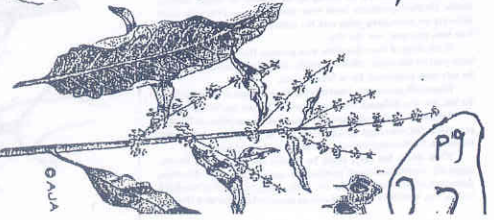
REDUCE • REUSE • RECYCLE • this can be applied not only in waste reduction but in all facets of life. first, prevent accumulation; then minimize it. re use what you have - give it new meaning, recycle it into the possibly flawed system to produce something else, only if you HAVE TO, do you use it as a fuel for raw energy or worse, dump it. there are sustainable ways to deal with weight.

PLANT I.D. ING ... can be easy or hard. the best way to learn is from someone who knows. the next best is to get a local field guide, if you are starving in the wilderness, watch what big animals eat and try a TINY bit and wait for a day to see if you get sick. gradually increase the amount if you don't get sick. some parts of plants are not as edible as their counterparts. know what you can eat & don't eat potato seeds!!

... EATING HABITS ... greatly define your body and your health - physically, mentally and spiritually. it is obvious that fast foods kill your bodily systems overtime and if you haven't asked yourself why you eat what you do and whether it is a healthy choice, you probably should. becoming conscious of your food is not hard, just follow the energy backwards. where did it come from? how was it made? are there lots of synthesized chemicals in it? are there excess toxins used to process it? meat tends to be a highly toxic and hard to digest (staying in your body's digestive system for weeks instead of hours) food - especially coming from large corporations which institute factory farming. mind you, the local farms normally can't afford to use commercials or fancy packaging, eating organically (no pesticides, herbicides, or other chemicals), locally, with native foods that are varied and fresh will give you more health vitality and will not only support small farms and your local economy, but will also create less of a demand to factory farms, oil for transporting food, chemical production to plants and animals. deciding to boycott actions you don't believe in may seem hard at first but become routine with practice. decide what you believe in and follow it.

... LEVELS OF VEG HABITS ... First and most common is the omnivore. omnivores eat plants and animals and the animal byproducts (eggs, milk). next is the vegetarian. there are pescavegetarians who eat fish only as a source of meat and vegetarians who eat chicken as a source of meat. veggies tend to eat plants and animal byproducts. their protein and iron come from dark green veggies, eggs, nuts, seeds, grains and beans. next are the vegans who don't eat animals or their byproducts. then are the raw foodists whose only rule is to never cook food - they may be omnivores, veggies, or vegans. then there are fruitarians who respect the sentient nature of plants and eat a mostly fruit and nut and seed diet. everyone has different reasons for why they eat what they do. listen to what your body says and follow it the best you can.

... ILLNESS PREVENTION ... it has been said that if one eats right, sleeps enough, and breathes deeply, one will never get sick. drink lots of good water to flush out toxins and eat enough fiber to vacate the bowels regularly. thinking positive thoughts also tends to lighten things up and happiness is certainly a helpful factor for staying healthy.



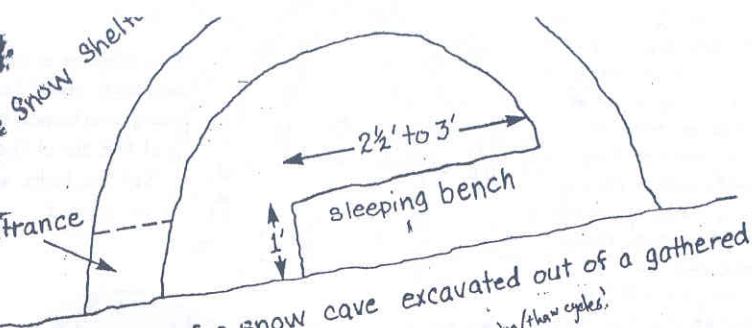
P99

BE WELL

P99

...SPROUTING.
 Sprouts are awesome. they are tiny, super nutritious, and easy peasy to grow. In any clean container, pour water into it, pour the seeds or beans in and let it closed for a certain amount of time where the seeds can wake up in a cool place. dump out the water (or drink it, water plants, cook with it...) then rinse the little guys with one or twice a day till a sprout. Hooray! sprout!

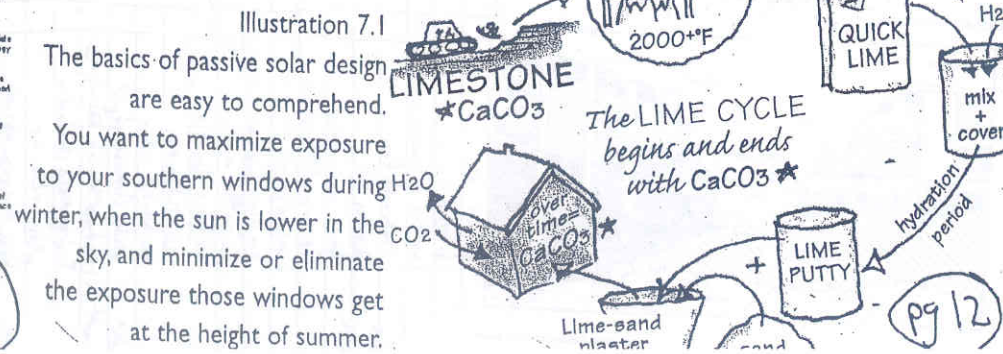
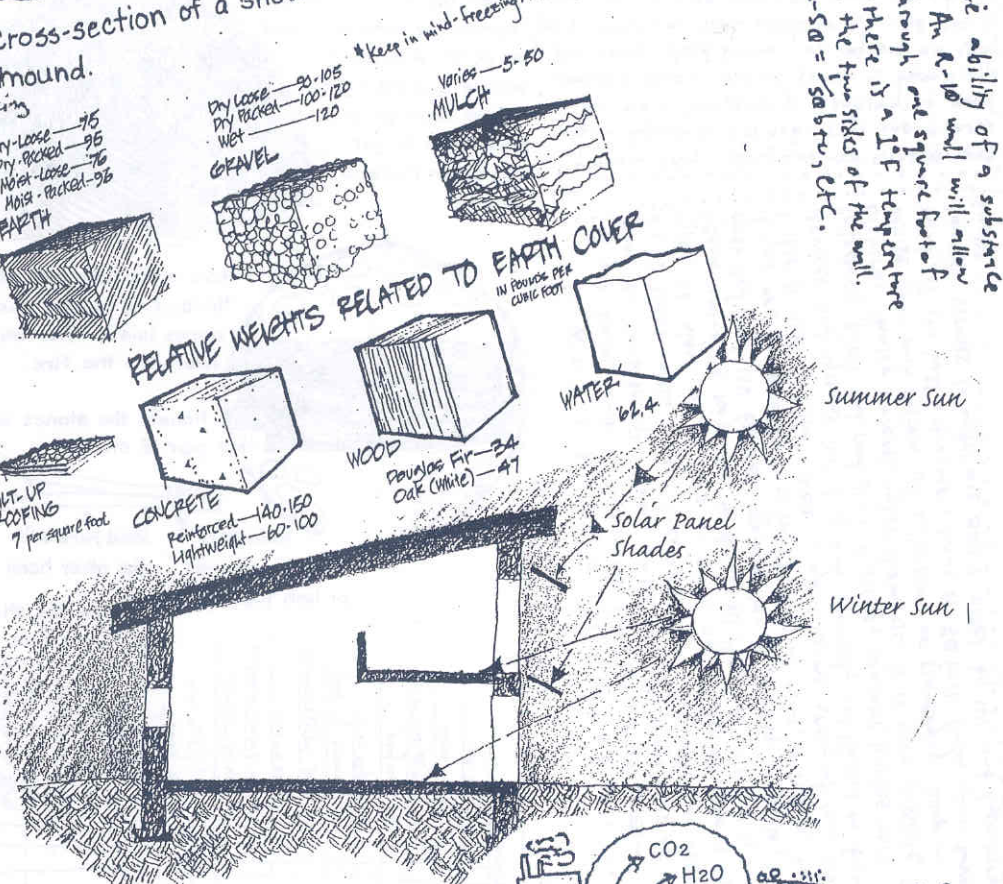
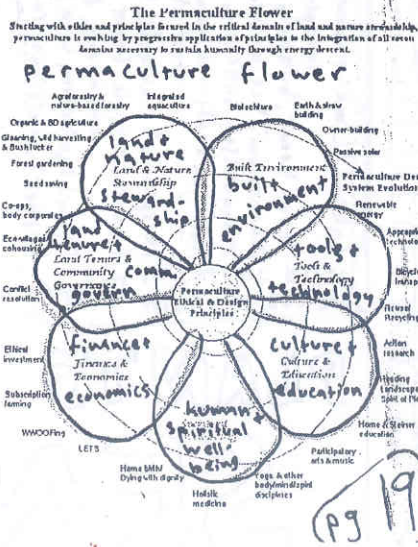
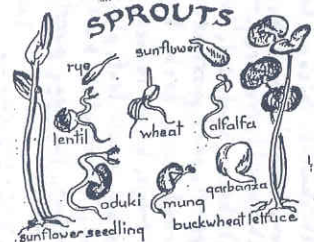
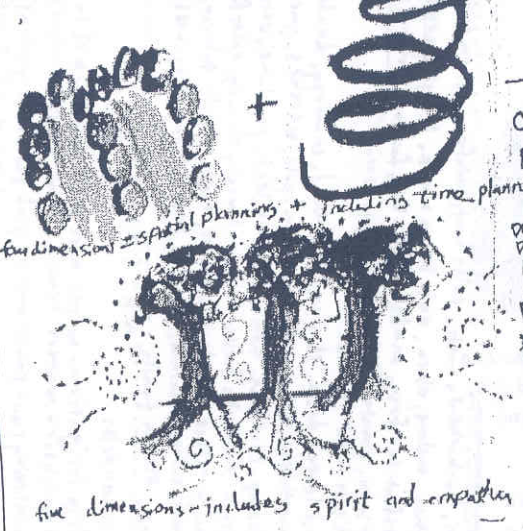
AGRICULTURE - 5 dimensional thinking



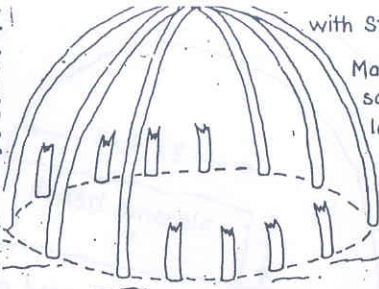
R-VALUE is the ability of a substance to resist heat flow. An R-10 wall will allow 1/10 of one Btu through one square foot of wall in an hour if there is a 1°F temperature difference between the two sides of the wall. R-30 = 1/30 Btu, R-50 = 1/50 Btu, etc.

18. GARDEN PROBLEM GUIDE

Symptoms	Possible Cause	Possible Cures
Dying young plants	Fertilizer burn Disease (damping-off)	Mix fertilizer thoroughly with soil. Treat seeds; don't over-water.
Stunted plants pale to yellow	Low soil fertility Low soil pH (too acid) Poor soil drainage Shallow or compacted soil Insects or diseases Nematodes	Soil test for fertilizer recommendations. Soil test for lime recommendations. Drain and add organic matter. Flow deeper. Identify and use control measures. Soil test for treatment recommendations.
Stunted plants purplish color	Low temperature Lack of phosphorus	Plant at recommended time. Add phosphorus fertilizer.
Holes in leaves	Insects Hail	Identify and use control measures. Be thankful it was not worse.
Spots, molds, darkened areas on leaves and stems	Disease Chemical burn Fertilizer burn	Identify, spray or dust, use resistant varieties. Use recommended chemical at recommended rate. Keep fertilizer off plants.
Wilting plants	Dry soil Excess water in soil Nematodes Disease	Irrigate if possible. Drain. Soil test for treatment recommendations. Use resistant varieties if possible.
Weak, spindly plants	Too much shade Too much water Plants too thick Too much nitrogen	Remove shade or move plants to sunny spot. Seed at recommended rate. Avoid excess fertilization.
Failure to set fruit	High temperature Low temperature Too much nitrogen Insects	Follow recommended planting time. Follow recommended planting time. Avoid excess fertilization. Identify and use control measures.
Tomato leaf curl	Heavy pruning in hot weather Disease	Don't. Identify and use control measures.
Dry brown to black rot on blossom end of tomato	Low soil calcium Extremely dry soil	Add liming material. Irrigate.
Misshapen tomatoes (catfacing)	Cool weather during blooming	Plant at recommended time.
Abnormal leaves and growth	2, 4-D weed killer	Don't use sprayer that has previously

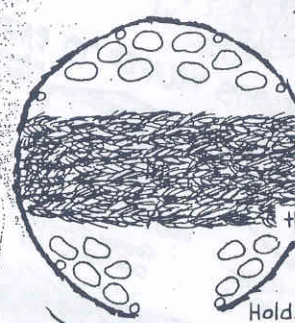
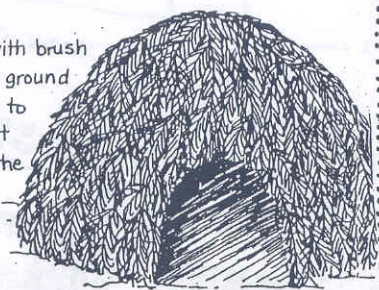


People have lived in caves since forever, they shield from the elements, are insulated by earth for 55°F/13°C all the time. they can be found naturally or scraped out of mountains. they also tend to have little or no ventilation and pretty much no light either. typically, caves with water flowing through harbor interesting mold spores that tend to be extremely delicate. most things that live naturally in cave environments are fragile, so avoid caves with things living in them! be aware of where the moon is for potential of rising tides in oceanic caves. don't go too far in! many people have lost their way in caves despite clever string-path techniques. if dwelling in an old carved-out cave, you are relatively alright. don't disturb any artifacts. keep warm!

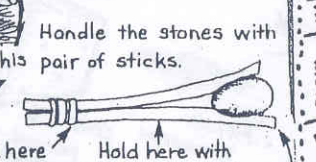


with Stones
Make a frame of supple saplings about ten feet long, overlapped and tied at the top of the dome.
Set the butts well into the ground.

Cover the dome with brush followed by moss or ground trash. You may need to weave in some light willow saplings on the horizontal to get the cover material to hold.

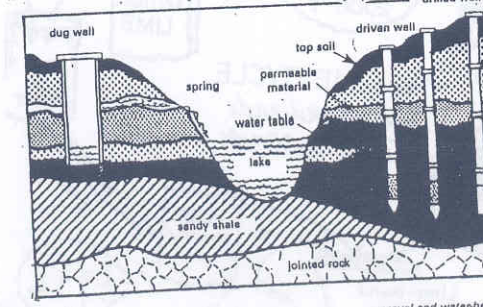


Here is the floor plan showing the bed of boughs and the stones laid in after being heated in the fire.



WATER COLLECTION
if you know what is upstream from you, most streams are good to drink straight from. make sure there are lots of unacidified rocks in the stream. accumulation of still water or stagnant water is a sign to move on to cleaner moving H₂O. if you are going to store it for periods of time, it is wise to filter it and UV filter. there is an awesome array of rain collecting devices and systems including and certainly not limited to bamboo cisterns (water stored) under them, etc. it is very possible to devise your own system of collection or scavenging. keep in mind, if you build a structure, have it 50 feet from your water source. vines in water are ONLY killed by UV, and degassing.

VARIOUS TYPES OF WATER COLLECTION



clear air	clear water	preserves moisture	produces food	enriched soil	uses waste for soil	provides wildlife habitat	experts advise	human powered transport	moderates weather	uses daylight	possible heating	possible cooling	maintains health	provides oxygen	humans powered, stretch	cleans indoor air	built of recycled materials	can be reused
pollutes air	pollutes water	wastes rainwater	consumes fuel	destroys soil	wastes water unused	destroys wildlife habitat	experts disagree	requires fuel powered transport	increases weather	excludes daylight	mechanical heating	mechanical cooling	needs chemical repair	produces human waste	fuel powered circulation	pollutes indoor air	built of virgin materials	cannot be degraded

Calcium/Line: rhubarb, beech, nasturtium, fennel, chickweed, dandelion, fennel, melons, okra, oak leaves, bark, stringy nettle, purslane.
Iron: beets, buttercup, chickweed, larch, oak, potato, plantain, silverweed, yarrow.
Magnesium: beets, chickweed, daisy, larch, oak, potato, plantain, silverweed, yarrow.
Manganese: buttercup, chickweed, larch, oak, potato, plantain, silverweed, yarrow.
Nitrogen (only while young): beans, bindweed, broad-leaved dock, clover, chickweed, confrey, dandelion, fennel, melons, okra, oak leaves, bark, stringy nettle, purslane.
Phosphorus: seaweeds, broad-leaved dock, buttercup, confrey, hainbush, oak leaf, purslane, vetch, yarrow.
Potassium: apple leaves & twigs, beech leaves, broad-leaved dock, buttercup, chickweed, clover, chickweed, confrey, dandelion, fennel, melons, okra, oak leaves, bark, stringy nettle, purslane.
Silica: epiphyllum, larchtail, horse radish, knotgrass, onion, plantain, stringy nettle, purslane.
Sulphur: brassicas, calisfoot, fat hen, purslane, quinoa family, WATERING

IN GROUND:
drip irrigation - water hose with holes poked to drip evenly, good for sprinkler - water leaves, stems, roots - wasteful
watering can - saves water, good for small gardens
mulching helps preserve water and keeps down weeds as well as stopping the water from evaporating
RAISED BED:
watering can - promotes personal relationship with plants
reservoir - constructing an under plaster reservoir allows water to percolate to the roots
* keep a good soil - air - water ratio for roots, let them breathe & drink.
make sure there is good drainage, get ENTIRE root bage (not just under main stem or trunk), never water in mid-sun - it will fry them, grey water (used water) is wonderful for watering

plants are ALIVE
they think. they feel. treat them like FRIENDS.
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PLANTS AND TREES ARE SENTIENT BEINGS

ALLIUM: chives, garlic, leeks, onion, shallot

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BEEF - beet, chard, mangels, orach, quinoa, spinach

BRASSICA - brassica, broccoli, brussels sprouts, cabbage, cauliflower, collards, kale, kohlrabi, mustard, radish, rutabaga, turnip

CUCURBIT. cucumber, gourd, melon, pumpkin, squash, zucchini

GRASS- barley, corn, millet, oats, rice, rye, sorghum,
wheat

MINT- basil, peppermint, spearmint

NIGHT SHADE - eggplant, pepper, potato, tomato*

PARSLEY: carrot, celery, cilantro, coriander, fennel,
parsley, parsnip

PEA- bean, cowpea, fava, garbanzo, lentil, pea, peanut,
runner bean*

SUNFLOWER: artichoke, cardoon, endive, lettuce, salsify;
sunflower

*exceptions: tomato, allium, mint, parsley x brassica; potato runner beans x allium, beet, brassica, sunflower x grass

EAT STUFF!

- DISEASE STOPPERS: alliums, nasturtiums, comfrey

- **PEST STOPPER:** Catnip, elderberry, mints, nasturtium, horse radish, marigold, flax, tomato leaves, tan.

- QUICK SPREADERS: black berries, lamb's quarters, horse radish, mint
- GOOD GREEN MANURE: flax, spinach, lamb's quarters

- narrow increases other plants' oil production & vigor

• nasturtiums are a spicy flower that grows best in poor soil - High in Vit. C.

- stinging nettle is super nutritious and highly fibrous, can only be eaten after boiling!!
- potatoes are very prone to illnesses and pests

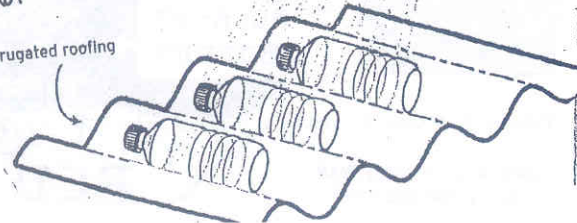
- pot compost and elderberry close together to speed up decomposition

- dried nettle help preserve & ripen apples



glass containers may be better than plastic!
keep in mind: pressure of hot water!

Corrugated roofing



COLLECTION WATER FROM TRANSPIRATION DUG STILL

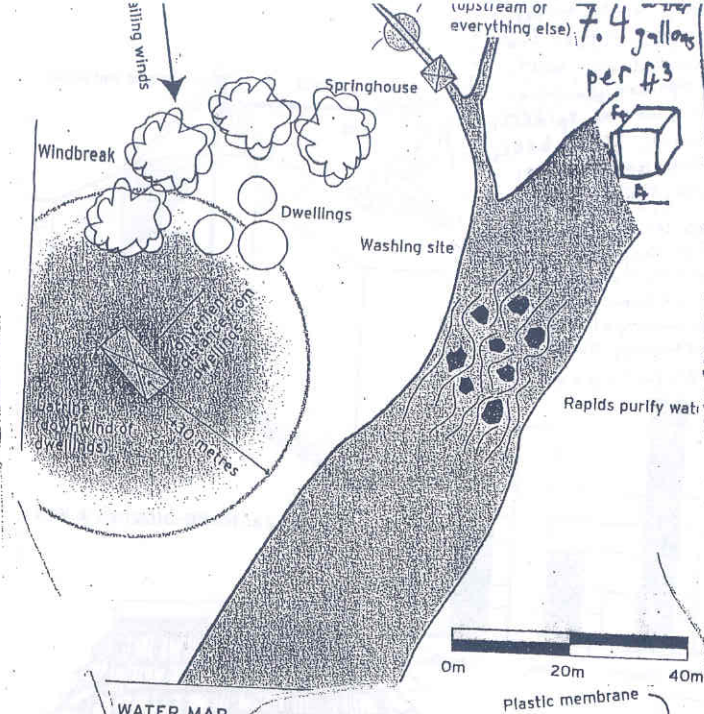
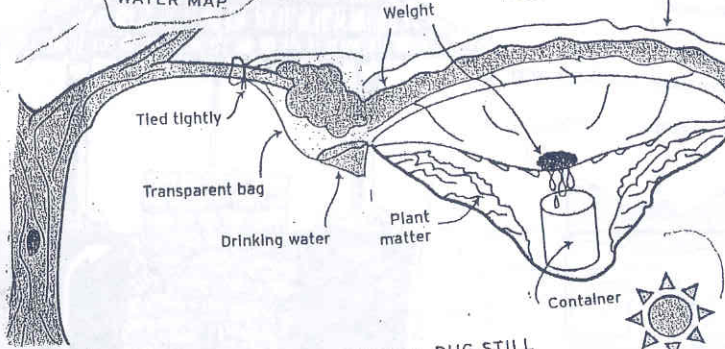


CHART 1: EFFECTIVENESS OF WATER TREATMENT METHODS

METHOD	SALTS	PATHOGENS	ODOR & TASTE	TURBIDITY
STRAINING	X	X		
SEDIMENTATION	X	X	X	X
STORAGE	X			
BOLING	X	X	X	X
CHLORINE	X	X	X	X
SOLAR DISINFECTION				
DISTILLATION	X	X	X	X
SLOW SAND FILTER	X	X		
RAPID SAND FILTER	X	X		

Keys: ☒ ineffective ☐ somewhat effective ☐ effective

For a more detailed comparison, see *WELL Technical Brief #48*

When one decides to collect their water, filtering and storing becomes sort of necessary. there are two types of filtering that need to happen: bacterial and viral. bacterial filtration is relatively easy - first filter out the chunky stuff like leaves and algae with a cloth or coffee filter. then you can distill the water, or use various other methods (that tend to not be as effective). in the past years (at least 30 years) a system of plant filtering has evolved and proven itself. it's not only for individuals, but for small towns en masse. water can also be filtered through varying sized rocks and sand, to filter out tiny tiny bity viruses, the water must be exposed to UV light for an extended period of time (if using the sun) or a short flash if using a concentrated UV light. if your water comes from a well or stream, test the safety of the water, to store water for extended periods of time, never use black cisterns, use food grade containers or build one out of rubber, or underground - there are many options for creating cisterns, make sure the walls will hold the water and not pollute it or degrade.

in pots, milk cartons, paper boxes, cut up water bottles or plastic containers, glass jars for sprouting, cups, plastic bags, news paper, paper bags, wind, pollination, planters, cinder blocks, sun, rain

trees, vines, bushes, compost, veggies, fruit, native plants, nuts, companion planting, bugs, worms, spiders, humus, birds, bees, planter, rain

Sprouts & herb gardens do well indoors, hanging, but don't go ripping out gardens with tomatoes or strawberries are also good. Be wary of quick & spreading plants! homes are warm!

BE CREATIVE AND ADVENTUROUS!

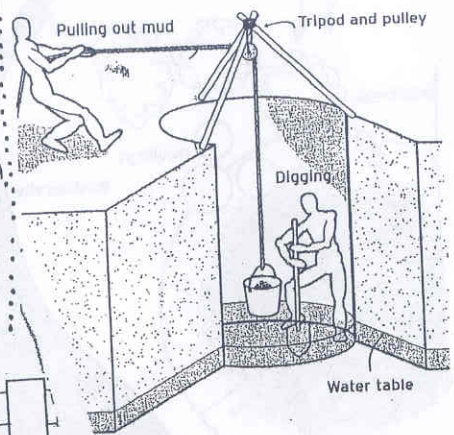
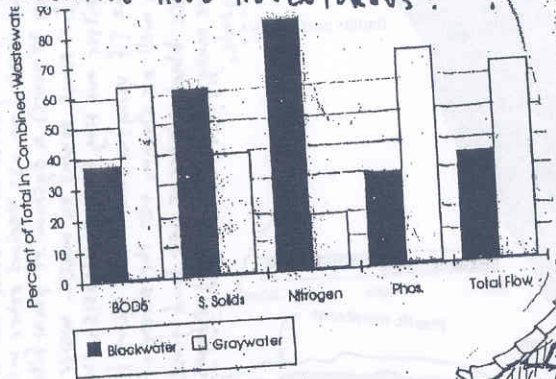


FIGURE 2a: HAND-DIGGING A WELL

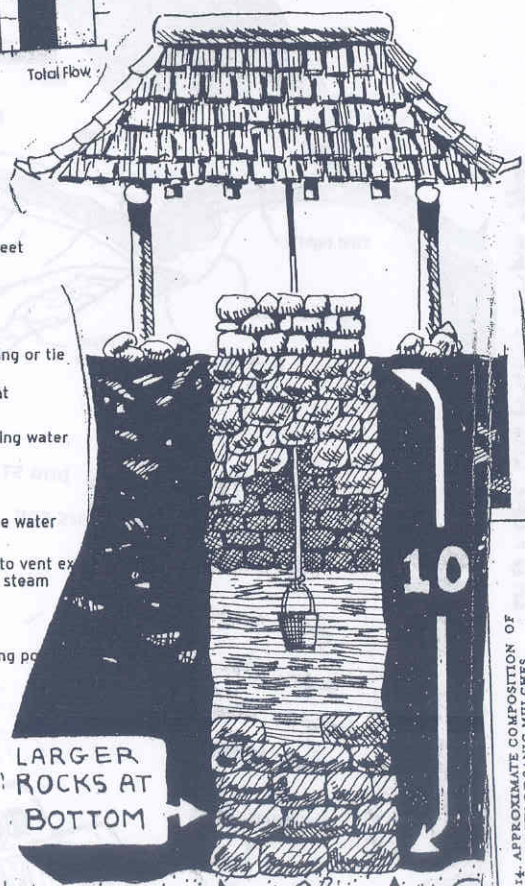


FIGURE 9: STOVETOP STILL

Based on version from RYAN Foundation Handout #655.

ALIVE

ALIVE

ALIVE

ALIVE

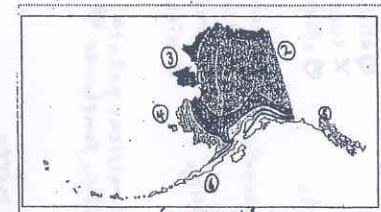
ALIVE

POST 1 is basically layers of alive green stuff, dead brown stuff, dirt, air, moisture, the more you turn it, the more air it gets, add lots of earth worms! keep it warm with a cover if you want, it should generate its own heat if its working. when it stops stinking and starts to look like dirt, its done

The botanical name refers to the genus + species. Sometimes the species is sub categorized into sub species (ssp) and varietas or variety (var). If a cultivated variety was selected, the name is in 'Name' and if an x appears, that variety is a hybrid.

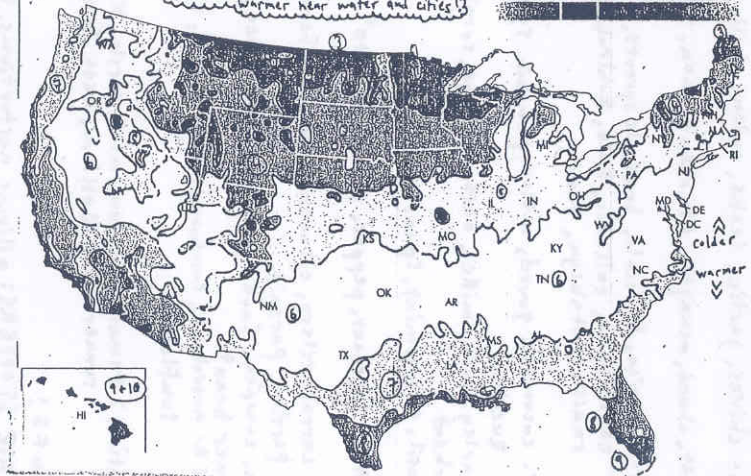
plant hardiness is the temperature range a plant can live at, optimally or otherwise. Shelter, bodies of water, cities are often warmer than inland, open and spaced out. Plants are given a zone range setup by the USDA that is sort of helpful.

PLANT HARDINESS ZONES



Zone	Average min. temp. Fahrenheit	Average min. temp. Celsius
Zone 1	-60° to -40°	-46° to -40°
Zone 2	-50° to -30°	-40° to -34°
Zone 3	-40° to -20°	-34° to -29°
Zone 4	-30° to -10°	-29° to -23°
Zone 5	-20° to 0°	-23° to -18°
Zone 6	-10° to 10°	-18° to -12°
Zone 7	0° to 10°	-12° to -1°
Zone 8	10° to 20°	-12° to 1°
Zone 9	20° to 30°	1° to 10°
Zone 10	30° to 40°	10° to 20°

REMEMBER! Warmer near water and cities



14. APPROXIMATE COMPOSITION OF BULKY ORGANIC MULCHES

Material	Nitrogen (N)	Phosphorus (P)	Potassium (K)
Alfalfa hay	2.5	5	2.0
Bean straw	1.2	3	1.2
Corn straw	1.0	2	1.0
Olive pomace	1.6	2	1.0
Peanut hulls	1.2	8	1.5
Pest	1.5	1	1.5
Sawdust	2.3	4	1.2
Sawdust (chip)	2.2	1	1.3
Timothy hay	1.6	1	1.5
Winery pomace	1.0	1	1.5

13. MULCHING MATERIALS

Material	Pro	Con
Straw/Hay	Cheap; generally available; adds organic matter	Can contain weed seed, insects and/or disease
Leaves	Readily available; generally free; rich in nutrients	Can mat down or be too acid for some plants
Grass clippings	Easy to get and apply; good source of nitrogen	Can burn plants; may contain weed seeds
Pine needles	Attractive; easy to apply	Large quantities hard to collect; may be too acid
Wood shavings	Weed and disease free; easy to apply; available	Can be acid; tends to tie up nitrogen in soil
Manure	Great source of fertility and organic matter	Should be well-rotted; expensive to buy; usually contains weeds
Newspaper	Easy to get and apply; earthworms thrive in it	Decomposes very fast; must be weighted down
Plastic	Total weed control if opaque is used; warm soil for early start; heavy plastic can be used more than one season	Expensive; unattractive; adds nothing to soil; must be weighted down and cleaned up in the fall

BED ROCK FOOD IS FREE IF YOU LET IT BE