

Survival Booklet

A hip-pocket sized paperback Booklet which summarizes the information on the Troubled Times web site TOPICS. The booklet is intended to be concise, covering the basics, and points to books or web site information for further information. Available in Adobe **PDF** format, which can be read and printed from an Adobe Reader, free to the public on the web as follows:

[Cover](#), front and back

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[Homeless](#)

[Settlement](#)

[High Tech](#) Note: continued in the next PDF document

[Communities](#)

[Resources](#)

[Addendum](#)

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Note: This Survival Booklet is now also available translated into Russian or Hungarian

[Russian](#), in Adobe PDF format.

If the Russian site is busy, this Russian version can be secured from the nonprofit site, as a [Mirror Site](#).

Also a [Russian Mini](#) booklet in Adobe PDF format and [ZIP](#) format.

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Note: other translations can be facilitated by downloading these zip files ([Text1.ZIP](#), [Text2.ZIP](#), [Text3.ZIP](#)) composed of the booklet text with graphics, to be formulated into PageMaker for Adobe PDF versions.



Troubled Times

a Nonprofit, Public Benefit, Corporation

This booklet presents issues which a family or individual would be presented with in the event of a global catastrophe such as a pole shift.

This booklet is not intended to be a survival guide, but a guide to information sources, an overview of problems, possible solutions, and options available. After such a catastrophe, there would be a loss of government and utility services such as power and clean water, volcanic gloom with dust polluting the ground and well water, and a lack of fresh food.

But healthy living through and after such a catastrophe is possible. Mankind has lived through these before. A family or individual can be helped to keep a cool head during troubled times, if armed with knowledge of the steps they can take to better their chances.

Panic should be avoided, particularly when young children are involved, and serves no good purpose. With knowledge, a family or individual can be empowered with a sense of control over their circumstances.

Each family or individual must think for themselves, as only they know of their special circumstances, matters particular to their environment, and their ability to prepare. Some families or individuals will find themselves on foot, with no or few belongings. Others will find themselves with a safe place to go to, which can be stocked with supplies, but even these settlements can find themselves overtaken or robbed.

This booklet is a work in progress, and will be updated periodically. It is the handiwork of only a few, and thus should not be construed to be an authority.

Troubled Times, Inc.

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Troubled Times, Inc.

Troubled Times, Inc. is a public benefit nonprofit corporation dedicated to educating the public on the likelihood of the pending pole shift, solutions on how to deal with such a cataclysm, and solutions for life afterwards. Troubled Times, Inc. conducts an outreach with educational materials on a number of different media forms.

Troubled Times, Inc. intends to have solution sets for:

- surviving the pole shift, whereby humans can escape injury to their person during earthquakes, tidal waves, fire storms, and high winds;
- surviving the pole shift, whereby supplies and technology emerge undamaged;
- living hand-to-mouth off the land temporarily, whereby safe water and atypical food sources are detailed;
- rebuilding settlements, whereby gardens and housing are quickly established;
- maintaining health and adequate nutrition, whereby atypical foods such as worms and algae are utilized;
- dealing with volcanic gloom, whereby indoor gardening and water distillation methods are detailed;
- re-establishing an Internet, whereby short wave or other means supports an Internet independent of satellites or land lines;
- generating electricity, whereby the methods for stand-alone installations such as windmills or hydroelectric are detailed.

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Pole Shifts

The geology of the Earth holds forth much evidence that pole shifts have occurred, and occurred regularly, in the past. Such global cataclysms seem to occur on a 3,600 year cycle, the last such catastrophe occurring during the Jewish Exodus. A sampling of the physical evidence for pole shifts, which involve a sliding of the Earth's crust, includes:

- flash frozen Mastodons and the recent Mastodon extinction
- a worldwide ocean level drop of 16-20 feet 3,600 years ago
- the Jewish Exodus scenarios 3,600 years ago
- an explanation for wandering poles and ice ages
- the disproportionate amount of ice in Greenland, a former pole
- and tropical fossils under Antarctica

A quote from Velikovsky's *Earth in Upheaval*, the chapter called Ivory Islands:

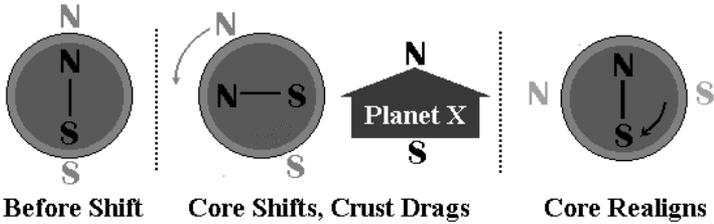
In 1797 the body of a mammoth, with flesh, skin, and hair, was found in northeastern Siberia. The flesh had the appearance of freshly frozen beef; it was edible, and wolves and sled dogs fed on it without harm.

The ground must have been frozen ever since the day of their entombment; had it not been frozen, the bodies of the mammoths would have putrefied in a single summer, but they remained unspoiled for some thousands of years. In some mammoths, when discovered, even the eyeballs were still preserved. In the stomachs and between the teeth of the mammoths were found plants and grasses that do not grow now in northern Siberia.



Charles Hapgood, in his book *The Path of the Pole*, first proposed the sliding crust theory to explain how pole shifts can happen. Zacharia Sitchin's books on *The 12th Planet* document that the ancient Summerian culture was aware of an additional rogue planet that returns to our solar system every 3,600 years. Such an inbound

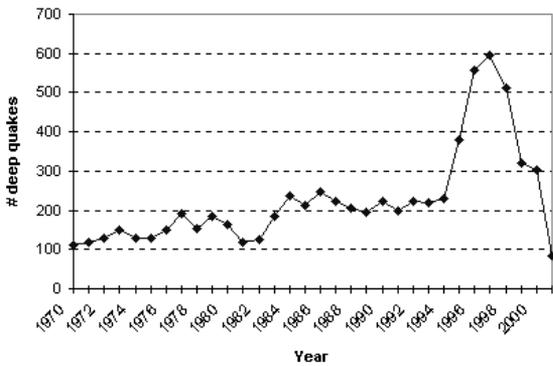
planet, dubbed Planet X, was discovered by an infrared sighting in 1983. The ZetaTalk site has explained how pole shifts can occur during the passage of such a rogue planet, due to a clash of magnetic fields.



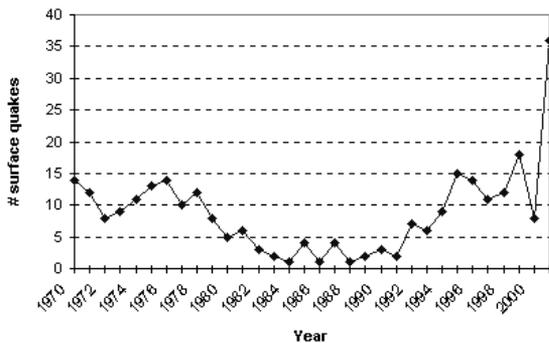
There is much evidence that another pole shift is pending. Physical evidence of a pending pole shift includes:

- the sighting of Planet X in 1983
- oceans heating up, primarily in deep ocean rifts
- rapid melting of Antarctica ice cap
- recent exponential rise in deep and high Richter earthquakes
- recent volcanic activity increases
- violent weather changes—droughts and deluges
- diffusion of the Earth's magnetic field
- increasing meteors showers
- increasing albinism in wildlife worldwide

Deep Quakes 1970-2001



Surface Quakes 7+ 1970-2001



Safety Measures

The pole shift cataclysms present those who would survive with several challenges. Hailstones, firestorms with a brief period of oxygen depletion, earthquakes of a magnitude mankind has never experienced, rapid mountain building, spewing volcanoes, winds of hurricane force, and tidal waves high enough to sweep over tall buildings. What to do?

Tidal Waves

As the exact position of the Earth when it stops rotation cannot be calculated, just which shore will experience the worst tidal waves cannot be predicted. This is more severe on the dark side of the Earth, as the waters are gripped by the passing comet on the side facing the Sun, and thus are not as free to flow. Practically speaking, to take no chances, one should calculate to a height of 200 feet and be at least 100 miles away from any shore.

Volcanoes

Clearly safety involves removing oneself from active or even relatively active volcanoes. Volcanoes, new and old, will present those living nearby with sudden activity during the cataclysms, with little warning. In addition to being positioned on light plates, being in the center of large land plates is a safety factor. Staying away from the edges of plates where very molten lava can seep and explode, during pressure of plate movement, is a significant safety factor.

Mountain Building

Remove yourselves from areas where mountain building is likely to occur. Flat plains or plateaus are safest. In this, geological analysis of plates should be your guide. Don't be above a subducting plate, as even if you are riding on top, the ground beneath you may be heated white hot, from friction.

Earthquakes

The earthquakes will essentially level all cities, and of course railways, landing strips, and highways and bridges will be unusable. Public power and water systems will break and remain broken, and the telephones will surely be permanently dead. Practically speaking, one should shield any mechanical or electrical devices one hopes to use after the cataclysms with extensive padding such as rubber mats. Wrap everything as though it were going to be dropped from a height of 500 feet. Independent power sources, such as windmills, need to be secured. Batteries may be handy, but won't last long and will not be replaceable. When the earthquakes are expected, lie flat. In this way you will skid and slide a few feet. Standing, or positioned at a height, you will be dashed. And by all means, do not be under a structure that will fall upon and crush you.

Hailstone and Firestorms

Metal roofs will deflect the firestorms and hailstones also, if sufficiently thick. The thickness of a protective metal plate is not as important as simply being metal, not bursting into flame. Thin metal can bend and crumble under pressure, where thick metal might shear or snap, having less flexibility. Where the metal is deemed to be protection from falling ash and rocks from exploding volcanoes, the thicker the better. For large meteors, which are few, there is no safety measure to be taken. Trust to luck, there. If the shelter you are in is not open to the outside, temporary depletion of oxygen will not affect you.



Earthquake

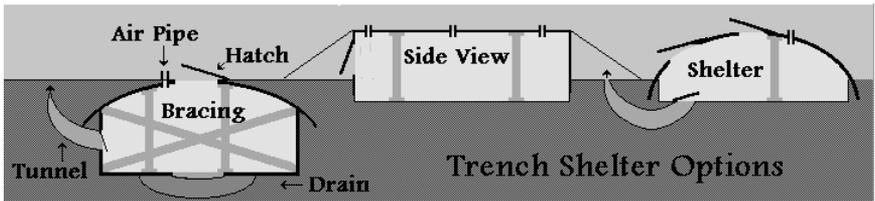
If you are thinking about constructing a shelter for your group before the pole shift which will take you through the cataclysm and beyond, the forces of earthquake are something you must take into consideration. During the pole shift their role will be more than major; and survival will depend upon total knowledge of the strength and hostility of your adversary.

After about seven or eight, seismic measurements on the Richter scale become pretty meaningless; 15 will be the order of the day during the pole shift. The shaking does not get much more severe as the magnitude rises above seven or so; it merely lasts longer. Since shaking increases as the force ascends from underground to the surface, it must be assumed that an underground structure, if properly built, will fare better than anything constructed on the surface. But nothing, however sturdily built, could withstand the pressures of an earthquake at or near a fault zone. How well could even the strongest steel fare against forces that can push up mountains and move and reconfigure entire continents? Still, even if one were to build a good distance from the epicenter, where there are no crushing forces, there are other dangers to consider, such as what are called surface waves. These roll along the surface of the earth like waves upon water, and have been seen to measure several feet from top to bottom.

Though it is theoretically possible to build a structure that would remain intact during these waves, being inside it and getting tossed around would be an unpleasant and dangerous experience. Modern engineering has now given up the idea of building solid, sturdy structures for safe passage during an earthquake, and flexibility is now considered a more viable option. Current thinking is that it is better to let the structures "go with the flow", rock along with the waves, rather than try to resist them.

If the shaking gets severe enough, the ground will simply become like a liquid, sloshing back and forth, and about the only thing that

would be safe in such an environment would be a submarine, with ballast to hold it upright. This would have to be built to quite specific parameters. For example: no winding corridors, or anything that could break off as the unit gets moved around. But how to dig yourself out if your entrances become blocked, and how to stop the rain coming in if cracks appear? Without going into too much technical detail, it would seem that the only way to be safe, if you must build underground, is to build into the bedrock itself. If this is not done, there is a good chance that as the ground liquefies; your unit could pop to the surface, exposing you once again to surface problems such as high winds.



For protection during the pole shift: one variation on the "dig a trench and put a sheet of metal over it" scenario could be to build a stronger-than-normal, but traditionally shaped concrete slab, with a concrete cellar. For the after-time, if you are in an area which may be prone to seismic disturbances, then study carefully all the material available on seismic failure in buildings, and the reasons therefor. This will help you to build a shelter having the best possible chance of being earth-quake proof. For instance: take the phenomenon known as shear failure. This occurs when the bottom of a building moves under the force of a quake, but the top does not.

One thing to keep in mind—a building is only as strong as its weakest link, and compensating for one failure and not for others could lead to downfall. Base isolation technology can be installed, which means isolating the building from the ground, using rubber bearings or sliders. When the ground starts moving during an earthquake, the structure will resist, due to inertia, and the bearings and sliders will take the heat. Between now and D-Day, it is highly possible that thinking in this particular area will advance further; so make sure your study of earthquake is ongoing.

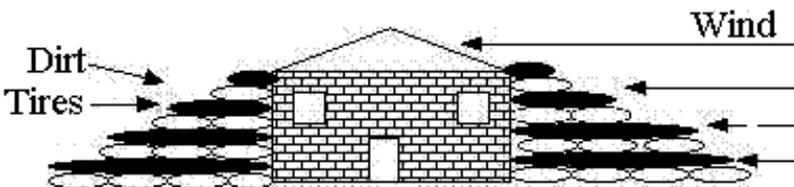
High Winds

The amount of wind damage that can occur to any structure seems to be partly dependent on the ability of the wind to get around any edges. The trick, therefore, is to build a shelter where edges or overhangs which could be grabbed by the wind, can be removed at a moment's notice. An alternative could be to "blunt" the wind flow by the use of concrete baffles. Such baffles would have to be at least 25% higher than the structure to be protected. According to the engineers at Monolithic, a 300 MPH wind will deliver a force of approximately 400 PSI to a flat wall. Very few structures can survive that magnitude of force.

Current thinking seems to put the monolithic dome at the top of the list when it comes to wind resistance; but, of course, high winds are not the only thing about which we must concern ourselves.

A carefully constructed shelter might possibly withstand the wind pressure; but how well would it do against flying debris? A small projectile traveling at 200 MPH could inflict a hefty amount of damage, and what will be flying around in the wind during and after the pole shift is not likely to be small stuff. Boulders, trees, and other unthinkable horrors will be cavorting around, acting as battering rams upon your precious dwelling.

It has been shown that structures with concrete walls reinforced with steel fare much better in this regard than unprotected buildings. But the best way to minimize the damage from this quarter is to partially bury your shelter underground. That way the target is smaller, lessening the likelihood of complete disaster.



Being on Foot

If for any reason - lack of financial resources, etc. - you must prepare yourself for a life on foot, here are some tips which may help you to exist more comfortably. Remember: There will be no shopping for supplies after the pole shift. Carry a backpack. Small mountaineering pack is recommended; has hip belt so eases load on shoulders. No bright colors; will attract too much attention. Brown/black recommended; pack should have straps on the outside for attaching bulky items such as one or more wool blankets (depending on where you are), wrapped in several layers of garbage sacks with the ends tied one inside the other; change of clothing, most importantly, socks. (Forget sleeping bags; not suitable for this kind of environment). Also strapped to your pack should be a small shovel (military type) for digging a trench in which to ride out the pole shift.

Pack should include the following absolute essentials:

- Home ax (not full-size); this will cut and split wood
- Wok, great for boiling water and cooking; you can eat from it
- High quality meat cleaver, and the means to keep it sharp, e.g. 2 x 4 inch "Arkansas stone". This can be used to chop slivers of wood from the outside, thus enabling one to get to the dry tender for starting a fire.
- Pliers, vise grips, heavy-duty sheet metal shears
- Two spools of wire: 100 ft twisted steel kind and 25 ft # 14 solid brass (for making traps to snare small game)
- As much salt as can be carried, (particularly ice cream salt) in sturdy ziplock bags. Good barter item after pole shift
- Water distillation kit: can be made from two one-gallon paint cans and a few feet of copper tubing; can distill water one gallon at a time from whatever source
- A book on edible wild plants (particularly one with pictures of mushrooms, mosses, and shade-loving plants such as the arrow-head (good substitute for potato)
- Medical kit. Pre-pole shift, try to build up defenses against pathogens that may be encountered post-pole shift; pay particu

lar attention to your psychological state and guard against depression.

Proper foot care is one of the most important requisites for survival. Always wear two pairs of socks: synthetic "wicking" socks against the skin with woolen socks over them. Change socks twice a day and hang dirty socks on outside of backpack so that they can air and dry properly. Boots should be big enough (surplus army boots recommended). Cooking corn starch makes a good foot powder. A hiking staff is a "must". This can be made as needed along the way.

General Tips:

- Appearance—low profile, camouflaged; there is danger from scavengers.
- Be prepared to eat insects. Grasshoppers, locusts and earthworms (properly purged) can safely be eaten raw. Grubs will be a source of fat; mix with arrowhead root, and steam.
- Bow and arrow can be made using your meat cleaver as draw knife; items of sheet metal found along the way can be cut into arrowheads
- Starting a fire: Charred cotton is good tender. When fire is going, wet wood can be added slowly. Problem: wet muddy ground in the after-time. Build your fire on an inverted garbage can lid.

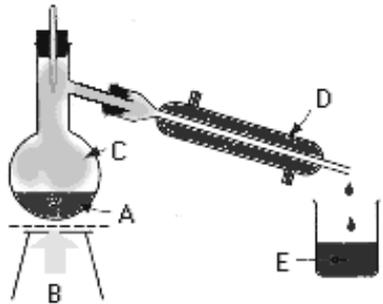
Drinking Water

This most important resource will not be readily available after the pole shift as it is at present. It will not be just a case of turning on a tap. Dowsing to find ground water; anyone can do this with something as simple as a coat hanger. Water can be collected from fog, using a cloth hoisted over a bucket, and from dew, using an air well, or by simply dragging a blanket around in the very early morning. There are all kinds of ways to catch rain water.

What water you may find will almost certainly be polluted in some way. Pollutants could include: various metals (notably lead), volca-

nic ash or forest fire ash, run-off from DOE dump site, hydrocarbons (mostly coming from the tail of the 12th planet as it passes near to the Earth), various waterborne diseases. Solutions to these problems could include: purifying by filtering, distillation, and boiling surface water. There are many ways to distill water. The process is relatively simple, as in this example. The dirty water:

- A** is heated
- B** to the boiling point, vaporizes
- C** (becomes steam), while other substances remain in solid state, in boiler.
- D** steam is directed into a cooler where it cools down and returns to a liquid, water
- E** and the end result is water, purified of additional substances found in it before distillation.



Distillation is an effective process and, what's more important, it can be done with a lot of improvisation. You can heat water with whatever is at hand: fire, electricity, or whatever. You can use almost anything that holds water for a boiler, as long as you can direct steam into cooler, which can also be anything from a long enough pipeline to a real cooler, just that steam cools down in it. In worst case, you can distill water with an ordinary household pot and two potlids. Boil water in a pot covered with first potlid. After a while, you'll see that water in a pot vaporizes, and condenses on a potlid (this is distilled water). Just replace potlid with a second one, and turn the first one vertically, so that all condensed water collects at one point, and pour over to a cup. Meanwhile, distilled water condenses on a second potlid, so just repeat the above steps again... until you have a full cup.

Distillation will remove from water almost anything, even heavy

metals, poisons, bacteria and viruses etc. However, it does not remove substances, that have boiling points at lower temperatures than water. Those are some oils, petroleum, alcohol and similar substances, which in most cases don't mix with Water, and can be removed with filtering. Also, remember that substances removed from water remain in the boiler, so you'll need to clean it up, every once in a while.

Proper storage: best for storage is a hard plastic container (polyethylene); make sure to keep it out of sunlight. Or: you could do what the old sailors used to do, scorch the inside of a wooden container, and this will ensure you have built-in carbon filtration. Double duty!

Eating Weeds

Weeds can be a wonderful way to stave off starvation, and this will hold true especially after the pole shift. Care must be taken, however, in deciding which ones to use, as some of them are toxic. What is provided here is merely a fraction of what is available out there; examples, if you like, to demonstrate what is possible and to encourage you to seek the answers to your own survival. Much literature has been written on this subject, and it is still not too late to consult some of this and teach yourself how to differentiate between toxic and non-toxic—and particularly edible—wild-growing substances.

Cattails

More than just the seeds of the cattail are edible. Ripe pollen can be used as a flour substitute when cooking.

Lichens

can have both edible and medicinal uses.

Bamboo

can be eaten, and a bamboo shoot has about the same nutritional value as an onion, and is a good source of fibre.

Seaweed

can be cultivated for food; but an intimate knowledge of this subject is needed before cultivation should be attempted.

Hickory

can be easily cooked, but care must be taken in its cleaning.

Sorrel

has its uses as a food enhancer. Wood sorrel is less acid than field sorrel, but when woods and fields are far away, field sorrel is well worth growing in one's garden.

Puff-balls and Fiddlehead Ferns

are great when they are fried

Burdock

roots can be harvested out of wet marshlands, and are like potatoes

Kudzu

has many uses, producing edible roots. Stems yield a fiber called ko-hemp. Source of hay and forage for animals. Can reduce soil erosion. But Kudzu has an ambition to take over the world, and is capable of doing this, so must be rigidly controlled

Prickly Pear

is easy to grow because drought-resistant, but can't tolerate cold. Not only edible, it is a source of water. Easiest way to obtain water: peel fruit or young pads, and eat raw.

Dandelions

can be a good source of vitamins. Best collected towards sunset, when damp air has caused heads to close up. Also have medicinal uses. The entire dandelion plant is edible, and there are many recipes on the market.

Blades of grass can be eaten in time of need. They don't taste that

good, but contain most of the elements that comprise the human body. As far as we are aware, there are no poisonous grasses. Locate healthy patches of young grass in shade, or partial shade, for most nutritional benefit. Lemon grass is a great addition to one's herb garden, and Canadian sweet grass is a survivor! Scurvy grass has medicinal uses. Formerly used on sea voyages to prevent scurvy.

Some weeds are particularly good as salad substitutes. Examples:

Lamb's Quarters

Red-rooted Pigweed

is recognized by its dark red stems. Leaves make a good substitute for lettuce. Can be steamed or stir-fried. More palatable in damp conditions, so will be most useful after the pole shift

Chickweed

can be used raw at any stage of maturity

Mustard Family

some of these can be used as a spicy addition to salads

Even flowers have other uses than just standing and looking pretty. Examples are:

Day Lily

young tubas can be used raw in salads, or boiled and eaten like potatoes. Young shoots can be prepared like asparagus, and buds cooked and eaten like green beans

Violet

leaves can be used in a green salad, or cooked and served like spinach. Dried leaves can be used for making tea, but best to do this only when plants are in flower, to ensure proper identification

Bugs as Food

Starvation is going to be a grim reality after the pole shift. Those of us used to popping out to the store whenever we run out of something, and who cannot picture any other way of life, will become its natural victims. There is a way, however, to avoid starvation, and this is by eating bugs. It is very important that we overcome the psychological barriers, which could cause us, in the end, to lose our very lives. If you think about it, though, what is the difference between eating a lobster, a sea arthropod, and an insect, which is a land arthropod? Surprisingly, insects contain a lot of nutrition.

Here are just a few examples.

- Insects are a good source of protein and fat
- Earthworms, extremely high in protein, can be eaten after a simple water purge, although, after experimentation by some Troubled Times members, subsequent rinsing and chopping has been found to be necessary
- Many grubs are edible: grasshoppers, locusts, ants, slugs, and maggots, to name but a few. They are also easily obtainable; just kick open a rotten log, or look under the stones, and bingo—dinner is served!
- Crickets actually contain amino acids

Cautions: Insects should be cooked when possible, because a lot of them contain parasites. Avoid insects which carry disease, are poisonous, have fine hairs, bright colours, or eight or more legs. Always remove heads, wings, and legs before cooking. When planning to eat bugs, it would be prudent to follow these time-honoured rules:

- Always attempt to cook insects
- Never eat a bug which you find dead
- Don't eat bugs that bite back
- If it smells really bad, don't eat it

A couple of interesting tips: Insects can be dried and ground up and the resulting powder used as flour, or soup and stew thickener. The

best time to catch insects is in the early morning, while they are still numbed by the cold night. A small light burning all night will likely attract next morning's breakfast. There are many recipes for insects. It would be a good idea to sample some of these while we still have time before the pole shift. In this way we can accustom ourselves to the prospect of eating bugs, and will have overcome the psychological barriers by the time our lives may depend on our having done so.



Sudden Shelters

If you are on foot for any reason, or have chosen the nomadic lifestyle, situations are going to arise—a sudden storm, for example—which will necessitate the building of a fast, very temporary shelter. Below are some tips in this regard; but once again it must be pointed out that it is not the purpose of this summary to give detailed instructions on how to construct such a shelter, but only to present a few ideas on which you can build, while there is still time. Maybe some practice exercises with your group could serve this purpose; but in any case there are many books on this subject which it may be in your interest to study.

Sapling Shelter

A good trick for a fast shelter is to find a stand of saplings, and bend them inwards to make a temporary roof. Already anchored, they can then be thatched, and this will provide reasonable cover. When you leave, just remove the rope used to tie them, and the saplings will revert to the position intended by Mother Nature.

Tarpaulin

A tarpaulin can be erected over a non-waterproof structure to make an area temporarily habitable. This does, of course,

assume that you have some way of anchoring the tarp, to prevent it taking off in high wind.

Debris Huts

These are built from whatever debris can be found in the area, however if we are talking about the after-time, it may be difficult to find dry material for their construction. Also, due to the fact that it can take one or two nights to make it more or less comfortable, and because a few hours may be needed to build one, a debris hut may not be the best way to go. Really, if you have a tent, it is probably just as easy—and a lot faster—to erect one. But the two constants concerning debris huts seem to be ... if you have time to build a debris hut you have time to build something better; and, always insulate with dry leaves. Stuff everything with them, including your clothes.

Circular Huts

These would appear to depend upon supplies of beams and poles, so are probably not as practical if you are constantly on the move.

Pit Shelter

Here again, possibly more suitable for one or two people. Unless you are conversant with this kind of thing, a pit shelter should maybe be avoided. This necessitates digging some kind of pit—a "grave"—burning a fire in it for one to three hours, depending on soil moisture (burning not included in total construction time), then you can put the dirt from the pit walls over the hot coals. The dirt will supposedly put out the coals. There are several variations on this theme, all of which will help you to survive; but after the pole shift, when there is constant rain, this kind of shelter could be difficult to build and maintain.

Rock Overhang

If you are near cliffs and find a suitable rock overhang, build your small fire across the wind, rather than away from it.

Survival Sacks

Not strictly shelters, but I think they deserve mention here. These are made of tougher material and are apparently warmer than sleeping bags. One innovative suggestion is to stuff them with leaves for better insulation. One type of survival sack called ThermoSafe has a hood and drawstring, instead of just being open at the top. They are heavier than sleeping bags and a little larger to carry—but probably worth all of the effort.

Hygiene

Personal care will be something of a challenge after the pole shift. There will be no running to the store to procure modern-day products which, in our present-day society, are deemed necessary for clean living. From the point of view of morale, as well as the normal considerations of everyday living, it will be important to overcome this challenge. Problems of survival will loom so much larger if one is stinky, and sticky and itchy! Luckily alternatives are available. Some examples of what we will not have in the after-time are toilet paper, diapers, disposable products for menstruation, showers, soap and washing powder, toothbrushes and toothpaste, and eyeglasses.

Toilet Paper

There are actually quite a few alternatives to toilet paper, i.e. wads of leaves, spruce boughs, and fir cones, and corn cobs (after removal of the kernels, of course!). The Arabs wiped only with their left hand. There are various ways to clean afterwards. One of these is to roll one's hands in the cooling ashes of the fire, or to sterilize hands by rubbing vigorously with aromatic herbs such as sage, juniper, and yarrow, which contain antiseptic properties. Caution: Learn to identify the dangerous plants and herbs in your area; then you can use the rest. Almost all highly aromatic plants have antiseptic properties.

Toilets

As for a toilet seat, before the outhouse is built and functioning, a bent sapling can be quite effective or, more simply, place your heels on a piece of wood approximately two inches high—easier to squat that way.

Diapers and Pads

There are quite a number of things that can replace modern-day disposable products for menstruation, including sponge products, rubber or plastic cups (which will catch the flow and can then be washed out), and washable liners. Sphagnum moss can be used as an effective absorbent, and can be packed in animal skins. The same technique could apply to making diapers.

Showers

A simple shower can be rigged with a bucket, and one shower a week should be sufficient. If this is not possible, a daily strip-wash with a basin of water can be refreshing. If one is outdoors for much of the time, the wind tends to "air one out", preventing body odour that seems to plague city-dwellers. Also, a rubdown with almond oil, or a similar type of oil, will keep one's skin healthy and smelling fresh.

Soap

Soap can be made from the lye water passed through campfire ashes and animal fat, both of which will be available to us after the pole shift.

Dental Care

Dental care may not be as difficult as anticipated. If you have stocked up on toothbrushes, one can be used alone, without toothpaste, as long as teeth are brushed each time after eating. To remove more of the bacteria than the brush can get to, use cheek muscles to swill hot water around your mouth, and the heat of the water will help kill left-over bacteria. Alternatively, twigs from various trees can be used as brushes, but learn to identify the poisonous trees! Even a substitute water pick can be

fashioned from a small needle syringe (used without the needle, of course). Shoot water between teeth and into crevices where bacteria can hide. The force of the water will quite likely free any trapped food particles. A mixture of baking powder and salt can act as tooth powder, and adding some glycerin, or some drops of something like spearmint, with a few drops of water, can make palatable toothpaste. Prickly Ash bark can be chewed, if available. Oil of cloves can temporarily relieve toothache, and oil of oregano, as well as the time-honoured method of rinsing the mouth with salt and water, will help stave off gum disease.

Glasses

For those who need glasses, it could be advisable to stock up with sets of glasses of progressive strength or, failing that, "poor man's glasses" can be made with cardboard. Cut out the glasses, leaving the eyepieces solid, then poke little pinholes through the eyepiece areas. You should be able to see with perfect clarity through these holes (something to do with the light rays going in a straight line without the need for focusing), and this seems to work whether one is near or farsighted. However, a somewhat better idea might be to purchase pairs of glasses with solid plastic lenses and punch holes into these plastic lenses. This would obviously have to be done before the pole shift.

Mental Health

Mental health will be as important after the pole shift as is physical health, and so now, while there is still time, it is necessary to take a look at some of the things we will be up against, and make our preparations accordingly. Below are just a few of the situations we can expect to encounter—fear, panic, despair, severe depression, feelings of hopelessness, lack of self-esteem, relocation stress, loneliness and boredom, and spiritual distress. What to do: It is far beyond the scope of this summary to give detailed explanations of treatment for these afflictions, but simplistically: Fear is a natural

and, actually, a necessary response to any disastrous situation. The danger comes when one allows that fear to degenerate into panic. Knowing what is to come and preparing for it, both mentally and physically, will go a long way towards banishing panic. But be cautioned: disasters are never absolutely predictable; and no matter how much one prepares there is always the unexpected element.

Despair over the loss of loved ones, of possessions, of the known world, will overcome many, particularly right after the catastrophe. Once again, those who know what is to come will be much better able to handle it. The common sense remedy for this, as for all of the above examples, is just to have a lot of patience, a lot of understanding, and give daily reassurance. Try assigning various tasks so that people can keep busy and productive. St. John's Wort is a good herbal remedy for depression. As for relocation stress, find your survival site now. Get your group, and especially the children, familiar with this site. It could be an idea to build some kind of a shelter there and stay a weekend, or a few nights at a time. Then, by the time the catastrophe comes upon us, the chosen site will at least seem a little more like home to your group.

Books can be a great escape from the harshness of reality for a while; make sure you have a well-stocked and varied library. Music can also help in this regard; you will be well advised to ensure that there is music for all tastes, as well as a variety of other entertainment. All of this will go a long way toward alleviating the above-mentioned situations.

Warm Clothes

The type of clothing you will need post pole shift obviously depends on the location of your chosen survival site. Remember that in most cases the after-time climate will differ vastly from the present one, and make your clothing decisions accordingly. For those of you who are changing from a more temperate climate to a cold one, preparing adequately for this change, if you are unable to move away, cannot be over-stressed. Before the pole shift occurs you are

strongly urged to undertake a thorough study of your situation as it will be, and make your plans accordingly.

Outside

With regard to outdoor clothing, and especially if you are traveling, your apparel must be chosen with extreme care. Cotton is definitely out. It has poor insulating qualities, and does not dry easily. It allows heat to be conducted through itself, even when dry, at a rate three times faster than wool, nylon, polyester, and acrylic fiber cloth. Wool, and some synthetics, will fill the bill here. For the upper half of the body, lightweight sweaters of open weave will insulate well. Over that, another synthetic-fabric shirt could be worn. For the rest, woolen pants as your outer layers are a good choice. Wool will not retain moisture. Within half an hour of getting soaked, although still damp, it will regain most of its insulating abilities.

Layering

The key to staying warm is to layer clothing. The inner layer, consisting of your long underwear, should be capable of wicking perspiration away from itself to the next layer of clothing. It would be well worth stocking up on plenty of such items. If your underwear is wet, you will be cold. Layers should be such that they will not retain moisture. What not to plan for: non-layered, one-piece garments such as ski suits, quilted one-piece outfits, and single parka type coats. These do not allow for the wearer to remove layers, adjusting body heat as one works outside, or walks, and temperatures vary.

Belts and Suspenders

Keeping these layered pants up could be a problem! One suggestion is to purchase the wide, two to three-inch suspenders made for holding the weight of a carpenter's tool belt. This will hold all the layers up at an even height, and prevent the wearer from becoming entangled. Make the layers of different sizes, each being at least a half-size bigger

than the previous, with the outer layers a whole size apart. layers of different sizes, each being at least a half-size bigger than the previous, with the outer layers a whole size apart.

Coats and Hats

As for outer covering, leather will serve well in this regard at temperatures above zero. When the temperature drops below zero wear a cloth coat, as even with the same clothing underneath, leather can feel cold when the temperatures plummet. A soft, tanned, fur-lined coat could also work here. One thing to keep in mind: clean clothes are warmer than dirty clothes. In the matter of headgear, a balaclava or wool stocking cap, and for extreme temperatures a fur hat with earflaps! Since 80% of heat is lost through the head area, this is an absolute must.

Footwear

For footwear, cloth, rubber-soled boots, made by Sorel or La Crosse, seem to be the most favored. There should be insulation between the insert and rubber. For the cold winter, inserts can be up to 13mm thick. The thing to remember about using rubber boots is to keep the moisture away from your feet. Here again, woolen socks will do well. Inserts, of course, must be removed to be dried. Keep in mind that whatever boots you eventually choose, if you stand in one spot for a long time, your feet will still get cold. Best to move around a lot and keep the body temperature up. One last note concerning footwear: panty hose—or an after-time equivalent thereof—will really help to keep the legs warmer.

Hands

For the hands, high-cuffed mittens rather than gloves. At temperatures 30 below zero, your hands can frostbite in eight minutes. One caution for those who, not having been used to a cold climate, suddenly find themselves in one—when temperatures dip to frostbite levels, do not under any circumstances touch a metal object, such as a door knob, with bare hands, and especially if your hands happen to be wet. Your

hands will freeze to the object.

Inside

inside your shelter, particularly if the temperature is fairly constant, special underwear will not be needed. Silk is a natural fiber which lets moisture out, and breathes with the body. Has the same warm properties as Polyester, good for winter and summer, dries quickly, but is expensive. For sleeping on those cold nights, flannel is warm but of course is a cotton-based material and does not dry quickly. Polarfleece, a brand name for 100% Polyester, is excellent. Plan to take products made from this into the after-time, since it could be a while before a warm equivalent can be found. Coats are also made from this substance. It washes easily and dries quickly.

Staying Cool

Warm Weather: Main rule—if you are in the sunlight you cover your head and skin. In the shade, or inside, you wear as little as possible. Bedouins, for example, do wear layered clothing. There is no shade where they are, and their thinking, presumably, is that the more barriers they can put between their skin and the merciless sun, the better. Another plus, of course, is that in deserts where there is not much water and people cannot wash frequently, layers of clothing do help to mask offensive odors! After the pole shift there will, apparently, be very little direct sunlight, owing to the junk and gunk thrown up into the Earth's atmosphere, but there will still be heat.

Regarding modesty versus comfort: If the modest members of your group have room for their extra clothing, then allow them to do this. Hopefully when they realize that not only are they not exposed to the sun but are uncomfortable with this clothing style, they will make themselves as comfortable as possible. And the way to do that, of course, is to go with the "little or nothing" scenario.

Whether in sun or shade, cotton is the best material for hot weather

wear; but whereas a tighter weave is best for the sunny scenes, for shady activities a loose-weave, gauze-like cotton is best. A long robe with loose pants underneath—although if the robe is long enough, forget the pants; no underwear. Cotton pants with drawstrings around the ankles will keep out bugs and crawly things; but this kind of thing would only really be needed if your group is in a tropical jungle condition, where nasty little biters and stingers abound. If members of your group feel that some sort of clothing must be worn, best for a muggy climate with no jungle around would probably be a bathing suit, swimming trunks, or the like.

Hats

No hat. Hats are great for keeping out the sun; but if there is no sun, they simply make you hot.

Footwear

Footwear? Sandals, to let the feet breathe! Definitely no socks. If you are on foot and traveling, though, you might want to wear something a little more substantial, such as running shoes or tennis shoes. Walking barefoot in a primitive environment may not be your most pleasant experience.

Heat

Of prime importance in the after-time will be the replacement of utilities which now, in our present-day society, we take for granted. There will be no going to the sink, turning on a tap, and watching water magically appear; nor will you be able to raise or lower your temperature by the turn of a knob, for furnaces will no longer exist. Flushing a toilet will not be an option; and no air conditioning unit will be available to cool the air on a humid, muggy day. This section looks at what can be done to keep us comfortable after the cataclysm, in the absence of our modern-day conveniences.

Heating: Traditional heating fuels, like gas and oil, will not be available. If you are settled, a simple wood stove will serve you well. Charcoal can be saved from the ashes of such a stove and

used to re-start a fire, or cook food. Different kinds of wood burn in various ways. Some of them will be available in your particular area; others will not. Wood from a fig tree is fast burning, while olive wood burns much more slowly. Oak and maple are excellent, and less messy than pine. Cyprus—messy, but okay; cedar—not as good as oak. Eucalyptus burns quickly but has the added benefit of a healing effect.

Some cultures seem to have made an art of building for heat. Shelters can be built into a hillside with accommodation for humans on the upper floor, and the livestock occupying the lower. Access can be had to either floor from ground level. Ventilation holes allow the warmer air created by the animals to circulate up into the human quarter—a cheap and effective way to keep warm! And for individual comfort on those cold nights, a hot rock can be wrapped in a thick piece of material and used as was the old-fashioned but effective rubber hot water bottle. Manure pits, buried garbage and compost heaps can also be used to furnish heat and hot water; but these methods assume that you have pipes, or a way to manufacture them, and such systems will need to be carefully studied in the time remaining to us before their implementation, or otherwise, can be decided. The same applies to the idea that hot water can be heated with a tube coil setup. If your group decides to take this route, ensure that the joints in your system are leak-proof.

If you are traveling, there are various ways to keep yourself warm. Starting a fire in the rain can be difficult, but it can be done. However, before the pole shift hits us, you must discover the myths and legends that adhere to the concept of doing this. For instance: In rain, there seems to be less oxygen to feed the fire. People will place the sticks further apart than usual, so that more oxygen can get to the fire. This is not the correct thing to do! Place sticks at least as tightly as usual, and force oxygen to reach the fire by vigorously fanning it. Do not reduce the amount of wood placed on the fire; in fact, add more wood and more wood to force the air through. There are other tips and tricks for doing this; but these have been well documented in books written on the subject of

survival.

There are battery-heated vests, but unless we come up with another energy source before the pole shift, these will have to depend on batteries which must be charged and re-charged, and may not be an option for long. Space blankets and sub-zero sleeping bags are another way to combat the cold. A space blanket could either be wrapped around one individual, or placed behind your fire, where, by reflection, it will increase the power of your fire and heat up your shelter space more effectively. Caution: these blankets are flammable, so do not place them too near your fire. Native Americans used thermal feedback in cooking and heating, which, while utilizing their resources to the fullest, also helped conserve them. This option would be worthy of study before the cataclysm comes upon us.

Light

From the very earliest times, light has been of paramount importance to humanity, not only in a visual sense but also psychologically. Life looks and feels a lot more secure when there is a lot of light present—and the brighter the light, the better. Unnamable terrors can lurk in darkness and shadows, waiting to pounce upon the unwary. After the pole shift there will be very little sunlight due to volcanic dust that will last for a couple decades, and, of course, even smaller doses of moon and starlight. Without electricity it will be difficult to create light, and any solutions in this regard will be short-term at best. Some of these are, however, mentioned below, so that at least in the immediate after-time your group will have light, and with it, a little hope for the future.

Oil Lamps

Even in the most primitive situations, an efficient lamp, for both light and low heat, can be made from animal fat. The leanest animal will have some body fat stored (Maybe under the skin), but most often this can be found around the internal

organs, especially the kidney area. Ball up whatever you can find to about fist-size. Any plant fiber or twisted strip of garment (cotton) will do for a wick. Cordage can be made from many barks, grasses, or plant fiber. The wick can be made as big as required: but remember, although larger wicks burn more brightly, they also burn faster. Melt a small quantity of fat in a depression in a rock next to a fire, and soak the wick thoroughly. Form the ball firmly around the wick—and you're set! Make sure the candle is placed in a fireproof container, such as a hollow rock, to catch the fat as it melts. Try to keep the burning portion of the wick out of the oil. This candle/lamp can be used indoors or outdoors. For the rock mentioned, substitute any non-flammable container with which to catch the oil or "rendering", which results from the burning.

Light Sticks

This is a plastic tube containing two chemicals, which will emit light for approximately eight to 12 hours. Cheap and durable (although nothing may be unbreakable when faced with the moving and shaking of the pole shift), these items are easy to stockpile and may see your group through the first year, until you are on your technological feet, and better ways can be found to produce light. Be sure to read the instructions if your intention is to stockpile; some of these need to be stored in a specific way, and the luminous stuff inside is sometimes poisonous. There is an expiration date, and once cracked or crushed accidentally, they cannot be used. With proper care, however, there is no doubt that these will be an excellent short-term solution, no batteries or accessories needed.

Candles and Matches

Also good for stockpiling, of course, is the candle. The modern candle comes in many shapes and sizes. If you feel you must take some matches with you into the after-time, ensure that they are stored in airtight containers, and packed so as to reduce friction. Thus if the matches do ignite, there will be no oxygen to fuel the fire.

Crank-Up

Also worth considering is the crank-up flashlight produced by a company called Applied Innovative Technologies. This flashlight does not use any batteries, and, although not especially bright, would be great for emergencies, needing only to be shaken for activation. “Starlight” is rather expensive, but would be a good product to take into the after-time since it needs no batteries or filament light bulbs. The housing of this light is, according to the company, durable, and practically indestructible. Cheaper is a flashlight made by a company which appears to be called Rush Ind. Inc. No good if you don’t have a strong hand, since activation requires constant squeezing, and the light does disappear quickly when the squeezing stops. Good for the short-term and for emergencies; but it does use standard flashlight bulbs, and given the fact that it has a spring-loaded handle with a gear that turns a small dynamo or generator as you squeeze, it is uncertain how long it would actually last.

At this point, you and your group have survived the pole shift with little more than you could snatch at the last minute as possessions. If you have more time to prepare, or as time passes, you will settle and build a more substantial structure and begin to grow food.

It is this setting that the next topics address.



Supplies

After the pole shift there will be looting. Gangs who have nothing of their own will be on the lookout for communities who have prepared themselves for survival, with the intention of taking everything they have. So it is important that when you are storing your precious supplies, diversification should be the order of the day. In other words, do not put all your eggs in one basket! Store your supplies in different locations. This way, if some of them do not survive either the pole shift or the after-time looting, chances are that others will. One way to do this is to bury supplies at points some distance from your habitat, well camouflaged and protected from the elements, and from pests and other creatures which might bring them to harm. Here is how this can be done.

Garbage containers, or large containers of any sort, can be bought and stacked inside each other until after the cataclysm. When the quaking and shaking have subsided, they can then be buried in the ground, filled with food, and other needed supplies. Inter these with their rims just above ground level. Be sure the containers are not punctured or leaking, then add enough weight of supplies to minimize the likelihood that they will get pushed up out of the ground. Use silicon caulking around the rim to seal the lid, preventing the intrusion of water or vermin. Camouflage (without crunching) your containers using dead leaves and other debris. Be sure you remember where your supplies are located! When these containers are emptied, they can be reused as mini root cellars, for hydroponics, or for water storage.

Caution: the importance of proper sealing cannot be overstressed, not only for the reasons mentioned above, but also to ensure that the lids don't become "crunch-unsealed". If your survival site is in a location where the ground is stable, you could set up supply caches before the pole shift for later retrieval; but this is a judgment call that must be made by your group as the time draws near, and it must be made carefully. A mistake in this regard could prove fatal.

Temporary Housing

An important fact with which to come to grips is that after the pole shift, most buildings, including our homes, will not be standing. Before the cataclysm, temporary shelters will be easy to put up. Tents, teepees, and yurts, vinyl shelters or any easily erected, simple-to-take-apart type of shelter will serve. Just prior to the pole shift this temporary housing should be taken down and stored, in whatever storage sites and boxes you have prepared. During the cataclysms, your group must find a way to protect everyone from the firestorms and high winds which will be a part of the shift. The simplest way to do this, of course, is the metal-roof-over-a-trench scenario, but probably, in the time remaining, your community will find a better and safer way to endure and survive.

When it is over, hopefully you will find your supplies etc. intact, and can at least re-erect your tents and temporary shelters. Some of these simple structures may become at least semi-permanent, while other necessities are attended to. In this regard, attempts should be made to ensure the comfort and habitability of your living space, so that you have one less thing to worry about while attending to situations which may be, at least temporarily, more important. Below are a few tips in this regard; however there is still time to accumulate your own information, and it must be stressed that this summary does not attempt to instruct you on how to build and survive, but only to act as a signpost to point you in the direction of your own salvation.

Tents

Dome tents will withstand the prevailing high winds and will have stability; but are expensive. The Shepherd's tent, used by wilderness outfitters, seems ideal, really, because of its roomy size, and also its more reasonable price. Could possibly be classed as a somewhat more permanent construction.

Teepees

There are different types of teepees, but the plains buffalo hide teepee (or maybe there is a more accessible material in

our modern times) with its large diameter and high and controllable smoke exit, seems the most suited to our purpose. Here again, because of its roomy construction, permitting for a larger inside fire, this teepee could be adapted to fit a more permanent lifestyle.

Yurts

Are apparently not quite as comfortable as the above examples, and are quite expensive.

Igloos

If you are going to live in a really cold climate, an igloo will probably save your life. Some quite complex and actually stylish igloos have been built by communities where the igloo is more or less a permanent type of housing.

Caves

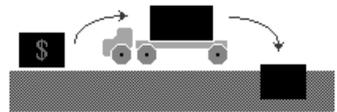
Small caves can be made habitable; larger ones could be quite easily converted into permanent homes. If set above valleys they are likely to be fairly dry inside; but caves should be approached with caution, since other animals needing shelter could already have moved in. If there are signs of other inhabitants, light a fire at the entrance ... but be sure to allow them an escape route! Beware of rock falls; insulate with a layer of dry plant material, and always build a fire toward the rear of the cave. Smoke from a fire built at the entrance will blow inwards.

Other shelters to consider are sod houses (for temporary use) or log cabins, which can, of course, be made into permanent homes. Although the above shelters are fine for temporary or even semi-permanent use, more enduring dwellings really should be constructed, as time goes by. Houses can be better insulated from climatic extremes; they afford more privacy and can be added to as your community grows; but most of all, permanent buildings will give your group both psychological stability, and, quite literally, a foundation on which to build its future.

Containers as Homes

One suggestion for shelter and storage after the pole shift is to use shipping containers. As has been stated many times before, it is not the intention of this booklet to give "how-to" instructions on the ideas provided here. Rather, the intent is to point you in the right direction so that you can search for your own information. In this instance, however, this is such an innovative notion, and there is no information available other than what is on the Troubled Times website. As usual there are advantages and disadvantages. One of the foreseen drawbacks is that containers of this type absorb a lot of heat from the sun; however, this is mitigated by the fact that there will not be much sunlight after the pole shift, and if some little heat can be absorbed from what sunlight there is, this could be a positive, rather than a negative property.

These used containers can be bought now, but quite often the reason for their being sold is that they have developed a leak. Ensure that if you are buying one now, it does not have such a leak. One could actually use these containers singly, or bolt them together for a bigger shelter, depending on the size of your group.



If your shelter is fully above the ground, there is the problem of exposure to wind, since your container is, after all, a box. There will be some extremely high winds both during and after the pole shift. There seems to be but one answer to this dilemma. When your group is picking the site for your container/shelter, select a location with natural wind-breakers, such as hills, ditches and the like. If your containers are placed on slabs, this whole structure could act as a "Noah's Arc".



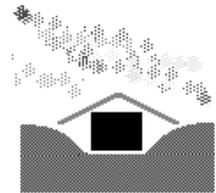
This concrete boat would be able to ride the waves of rippling land and survive the liquefaction (soil turning into a liquid) that is likely to occur in many areas. Depending on the ground conditions, this could be built differently. In soil that is not very deep to bed rock, one

would not worry about sides and possibly the slab thickness could be less. In places where there is soil and it is very deep to bedrock then the slab should be thicker and sides higher and possibly the slab is a little larger overall. This would have use after the pole shift as an excellent closed watertight storage to keep out the humidity, or as continuing housing.



Design considerations: Until one can get a structural engineer to look at it, estimate roughly a 14" thick slab for a bottom over liquefaction and about an 8-10" slab for a bottom close to bedrock. Use lots of large reinforcing rods and wire mesh. Use supports from rooftop to slab to make a triangle. Fasten storage units securely to bolts welded to large plates embedded in the concrete. Make sure the slab is done at least 6 months before the pole shift day for maximum strength."

A partially buried container would utilize the advantages of a fully buried container, while avoiding many of the problems. In this situation your container is kept above ground, and dry enough not to need any additional corrosion protection, other than a good industrial coating. Spray foam is waterproof, light, and paintable, and also insulates from heat and cold, and could therefore be used on the outside of any container/shelter. If you are in a colder environment you may want to paint the outside of your shelter black, to absorb as much as possible of what little heat will come from the sun; if you are in a warm climate, then white could be your color of choice. You also might want to consider storing other paint for the after-time, since it could be useful for camouflage.



The inside of a container can be sprayed with about four inches of foam, with air vents and escape hatches on all sides. This could serve during and after the pole shift, but there are cautions which must be noted. Remember, for instance, the caveat concerning spray foam, which could give off gases. Prefabricated foam sheets might

be better, and although soft cell would be good during the pole shift, for the after-time tight cell would be more durable, particularly if there are playing children in your group. A product called Liquid Nail will glue your sheets to wood, or plywood.

The main reason for a completely buried shelter would be protection from the elements, and although this purpose would be served, there are many cautions. If you are planning to bury your container/shelter underground, water seepage and soil liquefaction become an immediate problem. There will be lots of rain and run-off water, so do not place your shelter at the lowest point. Collapsing walls could be another hazard. Calculations would therefore have to be made for the type of soil density in which your container is going to be buried.

The collection of heavy gases such as radon, radioactive carcinogens, etc., could also become a concern. Depending on the acidity of the ground and the oxidation of the container, rust would eat through it in the same amount of time as, say, an automobile. In a full-bury situation, openings and hatches must be constructed on the roof, and these would have to be secured and waterproofed. There is no easy way to fully secure these openings, and they could become blocked if the container shifts during earth movement. It must also be remembered that after the container/shelter is in place, any material brought in will have to be limited to the size of the largest hatch.

Adaptive Structures

Conditions after the pole shift will not be optimal, even compared to conditions which existed when a lot of these options were being employed by people who lived before our modern, technological times. For example: although adobe bricks were used abundantly in less technological times, and possibly could be again, it must be remembered that drying bricks could present more of a challenge due to the constantly damp conditions, and the fact that there will be

little or no sunshine. The concept of straw-bale houses, which were being built, apparently, 100 years ago, may flounder for lack of viable straw after the cataclysm. This in part would be due to the fact that there will be little or no outdoor gardening, and thus straw will not form. Then, of course, there is the fact that unless cement, which figures largely in a lot of these ideas, can be either ported from the present into the after-time, or substituted when we get there (by mud, maybe), a serious disadvantage could be encountered when trying to build some of these houses. Having said that, here below are some examples of what could be done, were the circumstances propitious, and the right materials available.

Houseboat

One practical idea could be to live on a houseboat. This way, with there being so much water around after the pole shift, transportation wouldn't be a problem, and food, in the form of fish, seaweed and algae, would pop up right at your door. If you ever got really fed up with seafood and wanted a change, you could always land and trade some of your fish for something more palatable at the time.

Rammed Earth Homes

Would consist of earth mixed with a little cement. Even in our time, these kinds of homes are becoming known for their extra strength, and superb insulation. Construction forms could be of plywood, taken, maybe, from boxes used for storage, if any have survived. If this is not available, imagination and resourcefulness may enable your group to come up with a substitute.

Straw-Bale Houses

When the first little pig built his house of straw in the famous and well-loved fairytale, it turns out he was not far off track. He was, though, missing one essential piece of equipment ... a straw baler. A baler can compact wispy strands of straw into sturdy bricks that can be made into walls capable of withstanding assaults by hurricanes, fires, or pests. Farmers in the

Great Plains built straw-bale homes more than 100 years ago, and found the benefits to be enormous. Using such an abundant waste product is environmentally smarter than cutting down trees. Moisture damage is uncommon in a straw-bale home, and it is widely believed that these homes are more seismic-resistant than some of our modern buildings. Fewer advanced carpentry skills are required, which makes this a viable way to build, providing the circumstances are right, and the required materials available.

Coating Burlap

There have even been outbuildings constructed by coating burlap with a thin veneer of cement.

Adobe Brick

The basic resources for these bricks are sunshine, water, straw, and sand, and they were being made long before there was modern technology. Pueblos-masonry and adobe communal housing: Are an ancient form of native housing, and their durability has been proved, if properly built.

Navajo Hogan

On the surface, this looks like a great structure for permanent living after the pole shift, but the climate must be taken into consideration. An outside coating of concrete would provide some-but depending on your climate, maybe not enough-insulation. The construction of a Navajo Hogan is complex, which makes it unsuitable for temporary type housing. If built with the suggested addition of reinforcing with wire mesh or chain link (chain link would probably be stronger), this could be a pretty solid structure.

Earth Ship

Houses built with discarded tires filled with rammed earth, plus aluminum cans, and then bermed, look like a good way to go. The after-time, like our present, may be filled with tires and cans; but how intact they will be is, at the moment, anyone's

guess. If this is your choice and you have access to such things in the after-time, these are self-sufficient houses.

Cob

A mixture of earth, sand, and straw, cob is a cheap and effective building material. Construction seems to be simple, requiring little more than one's hands and feet! And cob buildings, which have survived for centuries in some places, seem resistant to just about everything.

Other Suggestions: Grain Silos, Sunk into the ground on concrete foundations, with the side door exposed. Shelters made out of steel pipe have nuclear-tolerance type strength, although it is admitted that more research needs to be done on this kind of shelter. Adapted Quonset hut. Full cylinder drainage pipes could form a sturdy, quake-resistant home, quickly constructed, and half cylinder buildings, now mostly serving as farm outbuildings, could be simply adapted to become living space. In addition, this type of pipe comes in kits, and sections could be easily stored for later use. These kinds of structures would have the same properties as domes-wind resistance, and general quake stability.

The ecolodge is a totally portable system that fits into a standard overseas shipping container. Its efficient design and portability into the after-time plus the fact that it is easy to erect and just as easy to take apart, make this a habitat worthy of consideration. Old military bunkers have also been suggested as a way to gain shelter both during and after the cataclysms; but we can be sure that if we know the location of these, so does the military. If money is not a problem, a fiberglass shelter (and specifically the Radius P10), would seem an ideal way to go.

Materials

No matter how careful we are after the pole shift, sooner or later things are going to start wearing out, and running out. For example:

the availability of lubricants and ball bearings will diminish as the years go by. Ball bearings can be greased and re-greased, providing that a lubricant can be found; but in the end, they will simply wear out. Then bushings will have to be made from whatever there is—nylon, bronze, brass or copper, depending on what is left. Recycling will be a must. Landfills have been suggested as a good resource for all kinds of recyclable material, but whether any of these will stay intact during the cataclysm is anyone's guess. The caution with landfills, even if they do stay intact, would be that along with your recyclables you could also end up unearthing disease pathogens, a phenomenon which we could well do without. This is probably moot, though, since, due to the expected strong quakes and shaking around, nothing will be left intact and such diseases will likely be rampant anyway.

So how to fix the problem of spare parts? Well, stockpiling, of course, is one way; but no matter how much we stockpile even if it is later rather than sooner, the dilemma will eventually catch up with us. All the moving and shaking will bring new material to the surface, or at least render it more accessible and therefore, later, mining may be possible. Manufacturing may also become a reality, but for both of these activities we must look to medieval practices, since, unless your group has a great supply of power and energy, these are what we are going to have to rely on. We will return to such concepts as the blacksmith's forge and will likely do so with gratitude. Meanwhile, there are substitutes for some materials which would be fairly simple to make.

One of our Troubled Times members gives us a description of how to make a Portland Cement substitute:

If limestone is heated red-hot for long enough, it turns into chunks of lightweight, white substance called quicklime. This is mixed with water which makes a chemical reaction (as in Portland cement). I think they called this slaked lime. To this bubbling white goo they added sand for mortar, or sand and gravel for cement. To waterproof it they liked to add volcanic ash, but since that was rarely available they used crushed

clay tiles instead. The red clay in the tiles made their mortar pink. So, when I can't buy a bag of Portland cement anymore, I at least know how to make it.

Ferro-Cement, a mixture of cement and chicken wire, is mentioned as a good, strong way to build; but of course being able to use this kind of thing would depend on how much cement and/or chicken wire can be ported from the present, or scavenged in the after-time. If you are in an area which produces it, bamboo is a strong and natural substance which can be used in a lot of ways. It could be a good idea to introduce bamboo to your chosen site before the pole shift, or, if your climate is going to change radically in the after-time, take some stock with you in order to make use of this strong, wonderful resource.



Practically any source of protein will yield glue when boiled down. One exception to this, apparently, is animal hooves and horns. Collagen is a protein and is found in different animal parts, as well as other substances. Rope may be of great importance after the pole shift. Rope can basically be made out of any material that can be cut into long, flexible strands, or is made that way. However, it could be a good idea to include a lot of rope in your after-time supplies, to give you a start. Your group should make a study of this resource before the cataclysm is upon us, since this is something every survival site is going to need. (A note to would-be blacksmiths: You might want to research Abraham Darby, who pioneered many of the blacksmithing processes.)

Furnishings

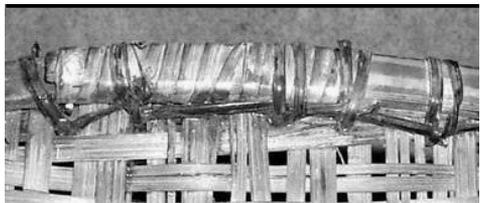
Immediately after the pole shift, it will be important for your group to get to a point where structure and order are dominant, and one of the ways to do this, after erecting your shelter, is to furnish it. Your choice of furniture in this instance may of necessity have more to do with practicality than personal taste; but once you have a completely furnished shelter, anything will seem possible, and you will have a secure base (psychologically speaking) from which to launch other

projects.

There are lines of furniture that will be better than others when it comes to setting up house after the pole shift. For example, air-filled furniture: chairs, ottomans, air mattresses—all that needs to be done with these is to blow them up, and go. Ideal for the immediate after-time, before the major unpacking of supplies has been accomplished. The caution with this type of furniture, of course, is that it will be subject to puncturing, and this should be taken into consideration when assembling supplies pre-pole shift. This inflatable furniture would be ideal if, for instance, you are planning to ride out the pole shift in a furnished shelter of some kind. Air-filled furniture bouncing around the room could get inconvenient, but would not be injurious. This type of furniture should be considered at best a temporary solution, since, by its very nature, it has a limited life span.

On the other hand, solid plastic furniture, currently sold for outdoor use, will fare better after the pole shift. Light, mildew-resistant, easy to carry around, easily stacked for storage, it could almost have been invented with an emergency in mind, so well suited is it to this concept. Also, plastic as a raw material can be melted and re-shaped into something else which may be of more benefit than the original furniture, and re-usability must be a consideration for anything we take with us into the after-time. Another product that should definitely be included in our plans is Ikea furniture. Sold in kits, and in flat packages easy to store and transport, this furniture can be assembled by an unskilled person.

Bamboo is another candidate for after-time lightweight furniture, and it is suggested that bamboo pins be used in its construction, since furniture made with rope and wire can fall apart fairly quickly. Pins would ensure a longer-lasting product. They are made by slicing a section of stem into sticks



which can then be inserted into precisely drilled holes. These pins could be made before the pole shift.

As regards sleeping arrangements, another suggested product is a humidity-proof mattress—and what better candidate than a mattress used at sea? It has closed foam cells, and therefore is waterproof. In addition, in the winter, your sleeping bag won't freeze to the bed, and this mattress provides excellent insulation.

Some folks, however, might prefer to sleep in a hammock. Lightweight, handy, easy to stow, easily washed and dried, able to be tailored to an individual's height, this marvelous resource has been around for centuries, and has more than proved its worth. In our modern society we are more or less accustomed only to the yard hammock, which does not provide the most comfortable way to rest. Seasoned hammock-users know that the trick is to sleep at an angle to the suspension line, as one reclines—flatter as one approaches the perpendicular, to the hammock line. A rectangle of cloth (heavy-weight denim is good) 60 inches wide and three or four yards long, depending on one's height, hemmed at the ends to enable a rope to be threaded for hanging the hammock on hooks, between supports. If nothing else is available, a tubular frame can be used to suspend the hammock, and it can be covered with a waterproof covering, or with netting, to discourage hungry insects. Easy to care for, and adaptable to a variety of climates.

One of the ways to create dishes and other useful things for your community is to study the art of pottery. Many and various things can be made out of clay, which is a fairly abundant substance throughout the Earth. It can be obtained most easily from stream banks and ponds. If it is wet when found, then you have saved yourself a step!

Hunting

Of paramount importance after the pole shift—both from the point of

view of morale and health—will be the ability of your group to hunt. There will be no room in a post pole shift society for niceties like a revulsion against killing animals, an indulgence which some of us urbanites allow ourselves at present. These animals will be part of the food chain; and if we wish to survive, as individuals and as a species, this fact is going to have to be accepted. The killing can and should be done humanely; but done it must be. Several hunting options will be available in the after-time; and some of these choices are listed below.



Guns

If guns are your weapons of choice, you must ensure that adequate supplies of both spare parts and ammunition are included in your pole shift preparations. For smaller animals, a pellet rifle is probably best; bigger game can be hunted with shotguns or rifles.

Slings

There are various types of slings, and many techniques for using them, and which weapon or technique you decide upon is a matter of personal preference. Slings will be a great method of hunting in the after-time, since they can as easily be used by children as by adults. They are also very portable and can be ready for use in the blink of an eye, once the correct level of familiarity has been attained. Choose your stones with great care, since hitting targets is easier with some stones than with others.

Bow and arrow

There are many who favor this tool, but that, again, is only a matter of personal preference. There are various kinds of bows, and again, which one is used must be your own choice. There will probably be metal scraps lying around in your area that can be used for construction of things like arrowheads.

Traps

There are several ways to trap wild animals, but many of them

are not very humane. One preferred method is to use a specially constructed cage or box, in which food is placed. Wild rabbits, small rodents and maybe even slightly larger things can be caught this way; the problem is that they are still alive, and especially if there are children around, one might not want to kill them. Caution: Many of these animals, notably wild rabbits, can be disease-ridden, and care should be taken when considering consumption.

With diminished sunlight there will be a reduction in plant life, and therefore, eventually, a decrease in the number of plant-eating animals such as deer. It will be essential, therefore, to make every shot count, and to this end it must be again stressed that practicing the art of hunting is a must, while replacement resources are readily available. Remember, too, that whatever your hunters manage to bring back will be a very welcome addition to the table, and a healthy boost to a diet that may become, after a time, bland, boring, or both! Skills in proper handling of these weapons should be learned and practiced by the group's designated hunters well before the catastrophe is upon us. This is particularly applicable in the case of the sling, and the bow and arrow, since materials for their construction will be at hand in the after-time. Guns will eventually wear out, and supplies of ammunition will dry up, and there will be no way of repairing or manufacturing either.

Fishing

Fishing has saved the lives of communities and individuals since time began, and there is no reason to think that a pole shift will change this. The art of fishing can be practiced from a boat in the middle of the water, or from a river bank, and is not only a healthy way to go as far as your dining-room table is concerned, but also can be therapeutic. As even city-dwellers are aware, there are many ways to catch fish. Although countless books have been written on this subject, below are just a few suggestions and ideas which hopefully will encourage you and your group to obtain more infor-

mation, while there is still time to do so. Some of these methods are non-technical and so particularly relevant to the after-time.

Trawling

Here is a description from one of our Troubled times members on how to construct a trawling basket, several of which can be made and taken with you into the after-time. This particular method is effective for crayfish, since they burrow into the mud at the bottom of ponds, etc., but may not work so well with other freshwater fish. However, there are other, well-documented ways of trawling.

To make a basket to trawl them, you just need to shape chicken wire into an open basket and strengthen the top with heavy duty fencing wire in a rectangular shape (to stop it from collapsing while dragging it), attach two ropes to corners, like crossover handles, then attach a long rope to the center of these handles and it's finished. Throw the basket out into the pond and wait awhile then start pulling the basket slowly over the bottom towards you. The basket picks up the yabbies out of the mud.

Bait and Wait

Another innovative way to catch fish is what I like to call the "bait and wait" method. Salt or fresh-water minnows and sprats, for example, can be caught by putting bread in a large jar, filling the jar with water, tying a string around its neck and letting it sink. When you pull up the jar the fish are kept inside by the push of the water—but a great many of them would be needed for an effective meal. Collect meal left-overs, or anything that gives off a strong, pungent odor. Place in a small burlap sack or cheesecloth bag, tie this container to a stout tree, and wait for the fish to congregate; then just use your favorite method to catch them. There is also, of course, chumming, which involves strewing an area with chopped-up dead fish parts, or other scrumptious goodies, waiting for the fish to show up for a good meal, then nabbing them for your

own good meal!

Rods, etc.

Fishing from the bank can be done with a fishing rod, hook and line, etc.. The trick will be to port enough equipment into the after-time so that you can keep your group supplied until such time as other methods can be found to accomplish the same thing.

Boats

There are plenty of small boats which can be taken into the after-time. If properly packaged, these should survive the shift and will prove most useful when it comes to providing fish for your table. A net would be one way to do it; but another effective method would be to use a fishing-otter. This is not an animal, but consists of a board with hooks in it, connected to a fishing line, which can then be either dragged along behind a boat, or from the shore.

Traps

There are some really simple traps, easy to use, which can be utilized to catch fish. A lot of information exists on this subject, but it could be helpful to construct some of these before the pole shift, and practice using them. This will ensure that whatever happens, your group will always have a healthy source of nourishment.

Sewage

Sewage, and its disposal, is probably not a topic to which the average person in the west gives much thought. We go into our indoor toilets, do what we have to do, flush, and for us, that's the end of it. The municipalities take over from there, and sewage is disposed of in ways we don't really care to contemplate. This, of course, will change, come the pole shift. Survivors will have to accord this topic the respect it deserves.

Many years ago, before humans began living settled lives, they would leave their excreta and urine on the ground, in the manner of all other land-based animals. The result was that the soil captured all the nutrients, and a sort of perpetual motion—or recycling process—was achieved. After the pole shift, we will have to indulge in some more organized version of this scenario. Asian societies have never forgotten the value of this kind of "waste" product, and even here in the west we are beginning to realize its worth.

Most solutions concern themselves with electricity, and fancy, highly technical paraphernalia which will mostly be useless unless you are in a really high-tech settlement. If this is going to be the case, then find your books and study them carefully, and fashion your own solutions.

For the average person, one of the simplest methods is the "garden" out-house. A shallow hole can be dug approximately three feet deep, and human wastes layered, often with the ashes from a woodstove (which are a good source for lime), and leftover food scraps, excluding meat. When the hole contains matter to about a foot from the top, another hole can be dug beside it, piling the dirt from the second hole into the first, used hole. Each time a hole is dug, move a lightweight shack-type structure over it. One of our members who actually did this reports that the following year he planted several piles of squash over the sites of the finished holes and the family was rewarded with a fantastic squash crop! So if squash, why not other things? You could make a great garden that way, providing the caveats concerning outdoor gardening after the pole shift are observed.

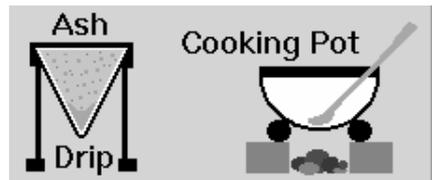
Cleaning Products

There are things we take for granted today which seem to be so necessary to our well-being and so readily available that finding substitutes for them may get lost in the bigger picture, when one is preparing for the pole shift. Soap, shampoo, household cleaning

products - these are but a few of the items which fall into this category. If there can be said to be anything "lucky" associated with this pole shift, it is that it is happening now, so soon after the emergence of the modern counterparts to these staples, so that knowledge of how to get back to basics is not so far behind us that we have forgotten how to do it. After all, people have been washing their bodies and hair for eons without soap in a pretty soap dish, or shampoo in a plastic container! Houses have been cleaned quite adequately without Windex or Mr. Clean. Here below are a few basic tips. As usual there is not too much detail, just enough, hopefully, to point your way along the road to a simpler existence.

Soap

Soap is easy to make, and this can be done using only what will be at hand in the after-time, substances such as ashes from your wood fire, and animal fat. Making lye water from ashes is similar to making drip coffee. Place paper or corn shucks to act as a filter along the bottom of a V or funnel shaped container and simply pour water in the top until it drips out the bottom into a pail.



The soap plant was used by the Native Americans to produce things like shampoo. In the capable hands of these creative people, this plant also rendered up food, and was utilized in ways as diverse as healing and brush making, and can also be a glue substitute! It blooms in dry places, in open woodlands and grasslands from May to July, and can be recognized by its striking blue-green leaves, and small, blue-veined white flowers.

Vinegar

The versatility of this simple, basic household staple is nothing short of astonishing. It can, for example, be used as a meat marinate, a wart dissolver, a pain reliever for Arthritis,

relief for itching and sore throats, as well as the quality for which it is most famous, the enhancing of food, to name but a few of its remarkable properties. Vinegar is comparatively simple to make. Choose a wide-mouthed glass or stainless steel container with a spout. Make sure the air can get to the vinegar, but put something over the mouth of the container to prevent visiting insects from going swimming. Make sure your container is not made of iron, aluminum or even plastic. Some plastics may be all right, but most will not; and in the face of this uncertainty, it is best to keep away from plastic entirely.

While the vinegar is fermenting, store in a dark place at a temperature between 80 and 85 degrees F. Light slows down the process, as do low or fluctuating temperatures, and too much light can actually kill your culture. If you happen to find yourself in an area where fruit—or fruit seeds—have survived and are readily available, then you will have vinegar as fast as it can be successfully made. As well as other uses, vinegar can be an excellent household cleaner. Vinegar can lower the pH in your hydroponics garden; baking soda can raise it.

Household cleaning such as Borax and baking soda are environmentally friendly substitutes for most modern cleaning products, but will not be easy to come by in the immediate after-time. In fact, unless you take them with you, they will be impossible to duplicate, Borax because it is a mineral and must be mined, and baking soda because it is complicated to make, and the ingredients will not be readily available. It might be possible at some point later to mine for Borax; but in the meantime we must go with what is simply available. So back we go to the old stand-by, vinegar. An all-purpose cleaner can be made with a vinegar and salt mixture, and vinegar, mixed with water will clean all sorts of things, and can be used alone for cleaning purposes. If you are in an area where lemon juice can be obtained, this can also be useful as a cleaning solution. The other great cleaner, of course, is ammonia, which comes from urine.

Medical Care

In the hours following the pole shift, there will be many medical emergencies, but no paramedics on hand to deal with them, and no ambulances to call. Therefore it is essential that, before the pole shift, while there is still time, we learn how to recognize and thus deal with certain crisis situations which will certainly be prevalent immediately after the catastrophe. Examples, to name but a few—heart attack, stroke, internal bleeding, various kinds of shock (fainting, allergic anaphylactic shock, cardiogenic, and blood loss), and exposure. No matter how many medical supplies you have stockpiled for use after the pole shift, there is going to come a time when such supplies run out. Thus it will be important for us to find alternative ways of dealing with disease. These are plentiful, and examples include:

Leech therapy

Leeches can be used to improve circulation to an injured body part, helping to prevent sepsis or gangrene. They also produce an anti-coagulant which keeps blood flowing during the healing process.

Maggot therapy

Maggots will eat dead tissue from a wound, which will prevent gangrene poisoning and allow new flesh to grow. The trick with maggots is to prevent them from damaging the new tissue.

Herbal medicine

It seems there are herbs to cure just about every disease known to man, and now, before the pole shift, is the time to study these, learn how they look and where they can be found.

Home remedies

There are many myths concerning what can be accomplished at home; but among these are some tried-and-true remedies such as urine therapy and colloidal silver which are worth

exploring.

Lead poisoning following the pole shift, from volcanic ash fallout and fractures in the ground affecting ground water is a serious issue that must be considered. Bone demineralization in undernourished survivors will add to lead intake. To avoid poisoning, lead should be prevented from entering the body. Dust mask can be used to reduce inhalation of lead containing volcanic dust particles. Drinking water will certainly be a major source of lead poisoning, and distillation is probably the easiest method for removal. When this is not possible, filtered mineral rich water, containing calcium, magnesium and not acidic is preferable.

There are many ways to reduce lead intake from food. Food rich in vitamin C, iron, calcium, and magnesium reduce lead assimilation. Dietary supplements of these components are a good way to reduce assimilation and to help the body to get rid of absorbed lead. If the first measure to prevent contamination is avoidance of lead, the second one is to use mineral supplements. Mineral supplements and vitamins should be stocked and more importantly, natural sources should be identified. Alimentary chelator, either synthetic (EDTA, Succimer) or found in plants (citric acid, oxalic acid) could be used as oral additives to prevent lead poisoning.

Gardening practices and plant selection in outdoors lead contaminated environments can minimize lead incorporation in crops. The addition of organic matter to the soil as well as a pH higher than 6, decreases lead incorporation by vegetables. Fruiting crops should be preferred to root crops and leafy vegetables should only be grown inside. Lead concentration in soil will be higher than in plants, therefore, vegetables should be carefully washed before consumption. Animal food tends to have lower lead levels than plants. Lead is more or less incorporated depending on animal species. When eating animals, poultry should be preferred; pigs, goats and rabbits come next, and finally cattle and sheep. Adult animals are also safer, since young animals concentrate more lead than adults. Lead concentrating organs such as bones, liver, kidney,

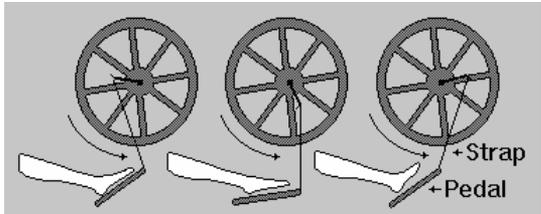
bone marrow, brain and testes should be avoided. Lead in seawater is very dilute and the concentration of lead in seafood should remain low.

Creating Clothing

Before your pre-pole shift stocks run out altogether, mechanisms for their replacement should be up and running, well practiced, with all the "bugs" removed from the system. Once again we will find ourselves returning to ancient arts, such as spinning and weaving. Later, if wool becomes available, knitting will be a factor. The needle and thread will be among the prime bargaining items, so groups would do well to over-stock on these articles for trading purposes. Non-electric sewing machines will also be at a premium, so survival sites should ensure a good supply of these is available, with plenty of spare parts with which to repair them. They will serve your group well, during the transition back to older customs.

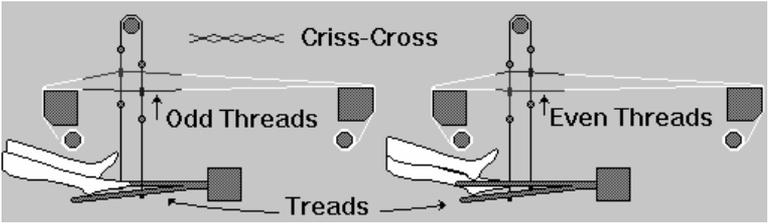
There are plants which will help with the clothing process. Flax is one such. Soaked in water and beaten, it produces long fibers which can then be made into linen. One project for interested group members before the cataclysm could be to assemble patterns for clothes-making. Animal skins will be another resource, but as any hunter will tell you, proper tanning and preparation of these skins before use is extremely important. There are different methods of doing this, and all are well documented. Heavier needles will be best for leather—and don't forget the thimbles! Depending on where you are, natural needles can be made from thorns or cacti.

Note: It is important not only to gain an understanding of how to use spinning wheels and such, but also to have a good grounding in their construction



and repair. Many books have been written on the subject, and this

could be a good project for some of the interested members of your group.



Appliances

Some may be transferring from a highly technological structure to a primitive existence, with all the physical and psychological upheaval that that implies. Even if you think you are mentally, spiritually, and physically prepared for such a cataclysm, the adjustment will still be a difficult one. From putting laundry in a washing machine and subsequently into a dryer, you will be faced with the daunting prospect of washing clothes in a river or stream, and even if there is one around, the water is likely to be polluted. There will no longer be any question of walking into a room and turning on a light, or using a toilet and just flushing it, of controlling the temperature with a thermostat, of cooking on an electric or gas stove, or of performing a myriad tasks with the ease to which our high technology has led us to become accustomed.



There are appliances which, if they—or their disassembled parts—survive the shaking and quaking associated with a pole shift, will help with this transition, provided you have a power source that can run these appliances. However you must remember that these are still machines, and sooner or later—and it will probably be sooner—they will wear out. Below are some examples of things you could use.

Hot Water

One of the things that will be prized after the pole shift will be the ability to heat water without a lot of fuss and trouble.

From Lehman's comes a practical suggestion. Burn wood

kindling and wood scraps for instant, on-demand, energy-efficient hot water. A thin water jacket surrounds the firebox. As the water heats it rises to the top, and draws in replacement cold water at the bottom. As long as the fire burns, you have plenty of hot water. From Jade Mountain comes a steam engine. Their smallest size, the 5 HP Liberty, produces 50,000 Watts and heats 50 gallons of water from ambient to boiling each hour. This is a power source, and these steam engines can be powered by firewood.

Water Cooling

Also from Lehman's, a clay water cooler will keep your water cool without insulation or electricity.

Washing Clothes

From Jade Mountain comes a washing machine that works on a unique pressure system. Hot water heats trapped air, which then expands further, increasing pressure that forces water and soap at high speeds through fabrics. Super clean wash with a tiny amount of detergent, and no electricity. Also the James hand-washing machine. Hand-washing sounds like a chore, but compare this machine to the daunting prospect of dragging your laundry to the nearest river or stream, even if you could find a non-polluted one, or, in the alternative, preparing your water for washing, then still having to scrub everything clean by hand. The secret behind this machine is to soak your clothes in hot, soapy water for a few hours, then the swishing of a lever backwards and forwards for a few minutes will take care of the remaining dirt. There are also ringers for both of these machines, which need no electricity.

Kitchen Help

There are things which can make life easier in the kitchen, as an example, hand mills which can grind grain into flour. It also is worth checking out Jade Mountains range of emergency cooking stoves, and while



you're at it, their emergency heating systems. Although some of these are meant for camping, they could probably be used on a fairly permanent basis after the pole shift.

Light

An ongoing source of concern is how to handle the lack of light after the pole shift. Not only will the nights be dark, but the days also will be dim, due to the volcanic ash and other junk thrown up into the Earth's atmosphere by the shift. There are lighting products from both Jade Mountain and Lehman's, and providing you can port some of these into the after-time they will serve you for a while. A power source must be available to you in order to use the charge options; and the bulbs, though durable, will not last forever. Sooner or later, other ways are going to have to be found to light up our lives.

While there is still time, and if you are interested in making a slower transition from our technically-oriented modern society to a less hospitable world, these alternative options deserve looking into. It would be a good idea to study the catalogues from both Lehman's and Jade Mountain, since therein, marvels abound! And the surface of what is really available has not even been scratched here. But—and this cannot be over-stressed—sooner or later you are going to have to come to grips with the facts of your more primitive world; and maybe the sooner you decide to do that, the better.

12 Volt / DC

Once your group has decided to go with an electrical setup, your next question should be: A/C or D/C, alternative or direct current? A/C can be difficult to handle, especially if you are dealing with devices which are to be run by waterwheels, windmills, or generators, since in many cases a converter will be needed to convert back to D/C. It would therefore be much easier, and make more sense, to begin by using D/C devices and save yourself all that trouble. Once your group has decided to go with an electrical setup, your next

question should be: A/C or D/C, alternative or direct current? A/C can be difficult to handle, especially if you are dealing with devices which are to be run by waterwheels, windmills, or generators, since in many cases a converter will be needed to convert back to D/C. It would therefore be much easier, and make more sense, to begin by using D/C devices and save yourself all that trouble.

After the pole shift, even the most primitive electrical installation is going to require some pretty high-tech equipment; and if this is the road down which your settlement chooses to walk, you *must* have some experts who understand completely the way electricity works, and who know how to deal with it. If this is not the case, if no experts in this field are available to you, then perhaps it would be best for your group to find another energy source to fuel its needs. If an electricity-based survival site is in your future, there are a few factors of which you must be aware. Some of these are listed below, since to make this summary into a technical lecture on electrical power would be futile, and in any case impossible, due to the vastness of the subject.

Power

The power consumption of any device can be obtained by multiplying its voltage by its current, if this is not already written on the label. All the devices together, connected to a generator, must not require greater power than the generator can produce. This also applies to an accumulator.

Voltage

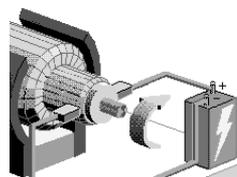
Regardless of the source, whether off the grid or from an inverter, any device, be it A/C or D/C, has an “assumed” voltage. Your computer, for example, operates on 120V, and this is its “assumed” voltage. This “assumed” voltage is important. Use a higher voltage, and the device will burn; use a lower voltage, and it won’t work. Low voltages are most appropriate for after-time living, as the likelihood is that any installation will be more or less primitive, and under such circumstances, fiddling around with high voltages could be

fatal. Equipment operating at 12V D/C would be a good compromise. Good sources for the procurement of such equipment are the marine and camping industries, and one of our Troubled times members has suggested that although pricier, the marine gear is a better buy, since it appears to last longer.

Generators

To power most equipment in a stand-alone situation (i.e. where transport is not necessary) one would need a large generator. This would be hard to build and maintain, and since high voltages are not needed, the best approach would be to obtain a 12V generator, the kind used in windmills. Bike generators are usually 6V, but two can be connected to produce 12 Volts. Now car parts—such as lights (which are quite bright)—can be used. While other generators are integrated into a power source module, bike generators or those from cars are usually separate parts which can be driven by wind, water, or human power. Generators must be sized for the load they will carry. From one of our Troubled Times members come these guidelines:

A current surge of short duration can be supplied by a generator, but a current demand of longer duration, such as a heavily loaded motor starting a high inertia system, can overload a generator possibly damaging both the generator and motor. For this reason, when determining the power your generator is to provide, it is important to calculate electric motor requirements at three times the running watts to compensate for the surge needed to start the motor.



- *Total the wattages of all small appliances, tools and light bulbs to be operated at the same time. Most appliances have labels showing wattage (if volts and amps are given volts x amps = wattage).*
- *Next determine volt-amperes (wattage) requirement of electric motors to be operated, remembering that the*

starting requires two or three times the nameplate or running (rated) watts. The starting (max.) V.A. can also be determined by referring to the motor code listing which indicates starting KVA per horsepower.

- *Total the watts and V.A. from these two steps to get total requirements, and allow for anticipated future needs or use of extra equipment by adding 25% to the total load.*

What must be remembered about D/C devices is that D/C cannot travel over long distances; therefore the source of the current must be near to the receiving device. D/C can be stored in batteries, which means you can generate it at your convenience, to use as needed. From the point of view of simplicity, 12V D/C systems are the most practical. They are also cheaper, and require less maintenance, voltagewise at any rate, than A/C based systems.

Batteries

At least for a while after the pole shift, batteries are going to be the mainstay of most settlements. Whether they will be used merely to power a few lights during the long, haunted post-pole shift nights, or to run some random appliances until the batteries themselves wear out; or whether indeed they will be part of a greater power network, used they will be, and given this fact, there are things you should know about batteries, how to maintain them so that in some cases they could last for 20 years or more. To judge by current research, it would seem that 12V batteries would be the way to go. They can power everything from water pumps to lamps.

Vehicular Batteries

Every vehicle is equipped with a 12V battery, and these are, and possibly will be, in the immediate after-time, the most readily available. Car batteries will become like currency after the pole shift, so stock up soon with “dry charge” 12V car batteries that can be activated later by adding the removed acid (which is why they are called dry), but will remain dormant until needed.

Dry Cell

You may want to purchase these dry-charge batteries new from auto parts shops, and store for later use after the pole shift. The acid is stored in a bag-in-a-box, and obviously this method of containment is safe. This would have to be carefully packed, and basic precautions should be taken to ensure that the acid storage containers are not crushed or punctured, and when stored, the boxes should be placed in a well-ventilated area.

Deep Discharge Batteries

The difference between a car battery and the deep discharge variety is that the auto battery is designed to supply a large amount of electricity in a short burst, whereas deep discharge batteries are designed to give a moderate amount of amperage for a long period of time. Thicker plates also allow them to withstand more discharge/charge cycles, hence making them more effective for renewable energy systems.

Golf Cart Batteries

The other problem with car batteries is that, once fully discharged, they never take a full charge, and are therefore less reliable than, for instance, golf cart batteries. Golf cart batteries can be drained down to zero, and still subsequently take a full charge. They can be connected in series to form a large storage unit for electrical power. Therefore, car batteries should really only be used as a stopgap until a community can collect and prepare enough deep cycle batteries.

Lead Acid Batteries

Deep cycle, lead acid batteries are the batteries of choice for over 90% of the off-grid homes. These work very well, and coincidentally—and fortunately—are cheaper than other batteries. They need to be kept warm and, as with all batteries, require to be kept in a good state of charge, and must be “vented” to the outdoors. Ways to maintain and rebuild these resources are still out there, and if this is the way your group

is going to go, then find that information and use it to your advantage.

Nichol-Cadmium (ni-cad) Batteries

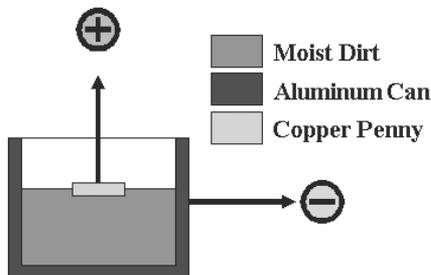
These are five to six times more expensive than other batteries, and have trouble copying the voltage range and charging characteristics of a lead acid type. Also, the fact that most inverters are designed for lead acid batteries makes it difficult to truly gauge the state of charge of the ni-cad.

Lithium

These batteries have a long life, and unlike ni-cad, do not have to be “bled” flat before re-charging, but can be charged at any time without damage.

Earth Batteries

Yes, you can make batteries out of such simple things as dirt, preferably wet, acidic dirt. If your soil is not acidic enough, then use urine. Several of



these batteries would have to be connected in series to obtain any useful voltage, but it's free! The downside is—they would not last long. You would have to do a lot of work for very little return; but if it is all you have, it might be worth the effort.

If you are planning to rely on deep cycle batteries for 20 years, you must either take enough with you into the after-time, or, if possible, collect enough after the pole shift so that when batteries wear out—and they will—they can always be replaced. For the long run, and for storage for a later time, forget auto, and even heavy-duty, heavy-equipment starting batteries. They are designed to provide lots of current for a short time, and will not hold up to deep discharge. Collect deep discharge marine-type batteries, and batteries found in cell phone relay stations.

Fully charge your salvaged batteries by any means possible, then completely drain off the acid and store it in tightly closed glass containers (providing you can find such after the pole shift, or bring some with you, very, very well packed) in a dark place. Rinse out your battery with distilled water, and store. Once separated, both the acid and the empty battery will keep indefinitely. Simply replace the acid to put the battery into service. Keeping a good store of acid will prolong the life of your aging batteries. Keep a careful watch on the fluid levels of all the batteries in service, and add distilled water if the levels drop. Do not charge batteries over 40 amps, and 20 amps is safer. A discharged battery left in this state for more than two or three months loses a great percentage of its full-charge capacity.

Even though a battery looks as if it is dead and totally finished, don't give up on it yet! There are many ways to bring such batteries back to life. The key words here, as far as ensuring that your batteries have a long life, are "constant maintenance".

Bike Gen

After the pole shift, there will be no electricity unless we make it ourselves. One method could be pedal power. You can build and power a generator using merely an ordinary bicycle—probably an exercise bike would be best—and, taking turns at this, your community could pedal its way to a healthier lifestyle, and a higher standard of living. This could either be done in order to charge batteries with energy for later use, or to produce energy for some occasionally needed appliance.

It is cheap, portable, can be used any time, at any location, and all that is necessary is your own strength. The suggested standard is 12V DC, and a slow-speed, permanent magnetic DC motor is favored over the car alternator, since this would make the more efficient generator. The car alternator wastes a lot of generated current making a magnetic field in the field coils. Any continually needed appliances should not be hooked up to such a power source.

Neither would it be wise to make this your primary source of energy, but rather use it as a backup to run essentials in the event of a main power failure.

Here is a description by one of our Troubled Times members showing how to build such a generator. Remember, though, that if this is one of the options chosen by your community, you must ensure that sufficient spare parts are brought along for repairs, also the tools with which to accomplish such repairs, and enough batteries. How to make an effective bicycle generator:

Amp Meter

Put an amp meter (from a car or another source) in series with the alternator. This allows the person pedaling to see how much output is produced.

Front Wheel

Take the front wheel (tire, rim and spokes assembly) off and mount the remaining yoke on a stable platform made of wood. Use the same bolt holes that held the wheel on.



Rear Wheel

Raise the rear wheel about 1"-2" above the platform so that the rear wheel turns freely. Bolt this to the frame of the bike about 3"-6" in front of the back axle. This allows 2 support pipes on each side to bolt or strap it to. Could use 2" x 4" wood for the front and back supports. Use triangle supports cut from plywood or any other wood to make it stable (side to side motion). If needed carefully cut a notch in the back right wood support, so that the chain, and cables have plenty of clearance.

Belt

Purchase a V-belt or V-ribbed belt big enough to go over the alternator and back rim. I have found it easier to find the

Serpentine or 5, 6, or 8 V-ribbed flat belts in the lengths needed. A 5 ribbed belt is 45/64" wide. A 6 ribbed belt is 27/32" wide. An 8 ribbed belt is 1" and 1/8" wide. These are more expensive and cost about twice as much as the 11MM or 15MM wide single V-belts. However, they should last longer and will transfer more power. Also the alternators that use these have smaller diameter pulleys. Which is an advantage. Flat belts should work better on the bare bicycle rim. They would be less likely to turn over.

Alternator

The alternators that use flat belts are more expensive, deliver more amperage and typically have an internal voltage regulator. The older alternators have the voltage regulator separate and are a lot less to purchase. Typically local rebuilt prices are estimated to be \$20-\$40 for the older 60 amp (Ford, GM in the 1970's) type and \$110 to \$170 for the newer 70 amp and higher amperage. All of these types from time to time can be picked up at yard or garage sales.

Mounting

Mount the alternator on a piece of wood that is hinged (door hinge) to the platform (plywood, plank, etc.). This would be behind the back wheel. The weight of the alternator helps to give it belt tension. A spring could be attached to add more belt tension if needed.

The result would take no welding, and no great modification of the bicycle, so that if you wanted to unbolt it and put the back tire and front wheel back on you could still ride the bike. It does take wood and a long enough belt.

Crank-Up

Crank-up is a technology of the recent past—when the telephone was first invented, a call could only be made after an energetic cranking.

Below are a few examples of what is available, and it is up to your group to research this subject and expand upon the possibilities.

Radio

From Baygen comes a wind-up AM/FM/Shortwave radio. There are no batteries. 30 seconds of cranking yields 30 minutes of playing. Since there will be no AM or FM after the pole shift, shortwave radio is our primary concern here; and shortwave reception is excellent with an optional, retractable antenna. If you have nothing else, this radio may aid you in communicating with other sites that maintain some kind of shortwave communication. The Freeplay 360 global shortwave radio will give 45 minutes of play for 30 seconds' crank-up; however, this does need some kind of power source to make it work.

Light

The Freeplay flashlight needs a 30-second crank-up for two to three hours of shine time. The 2020 houses two independent systems in one compact unit. The first is a wind-up flashlight offering maximum dependability for times when light is needed immediately. The other is a rechargeable flashlight providing an intense beam for everyday use. The wind-up system is a battery-free source ideal for situations where recharging is not an option. The power generated by the wind-up is used to energize a cluster of white light emitting diodes (LED's) which have a life exceeding 100,000 hours. It takes 60 turns to generate approximately ten minutes of light; but still, there will probably be times when our gratitude for this light source will be infinite. With just the same options as the flashlight comes the Freeplay lantern which, if it is cranked up and the switch left off, the energy generated can be stored for use as soon as the switch is activated.

Generators

Human-powered pedal or hand generators will also be a useful plus for any settlement in the after-time. A 12V D/C

generator is about the best we can do at this time; and for 120V A/C it will be necessary to use an inverter off a battery. For 220V A/C, plan on a 120V to 220/240V transformer. From one of our Troubled Times members come these calculations as to what kind of power can be expected from such a system:



Keep in mind, cranking by hand will probably get you a sustained rate of about 50 watts. Pedaling you can average about 125 Watts, or 1/6 hp At a sustained clip, a maximum of 350 Watts can be achieved for short bursts, or up to 1500 Watts if you use a flywheel. For large loads this is not practical without a battery or battery bank.

At this point, you and your group have established a settlement akin to 3rd World countries or life 100 years ago. But with more planning and time, a technological existence is possible.

It is this setting that the next topics address.



Domes

One of the more permanent housing options before, after-and even during-the pole shift, could be a dome. Wind-resistant, fireproof, almost earthquake-proof, the dome shape is widely recognized as the most economical of structures, once the initial expense of building has been accomplished. The dome has the reputation, in fact, of being almost indestructible.

The monolithic dome has been described as "probably the most disaster-resistant building that can be built, without going into a mountain, or underground". The shape can withstand tornadoes and hurricanes, although blowing debris could cut the surface membrane. A large enough object could also puncture this dome, but the puncture would be very local, and would cause little serious damage. The worst disaster for a monolithic dome would be an earthquake. It would take an earthquake many times more powerful than any that we know, to even approach the design strength of this dome. However, we must keep in mind that during the pole shift earthquakes as high as 15 Richter must be expected. Mostly fireproof, this dome can only be burned if a flame is put right up against it. Without a blowtorch, or maybe a forest fire, it would just smolder. Bodes well for weathering the firestorms that will occur during the pole shift.

As previously mentioned, the shape of the dome makes it energy-efficient, and unlikely as it may sound, the larger the structure, the more



economical it is in this regard. This shape can enclose the maximum amount of space with the least surface area, but any concrete used in the building must be reinforced to prevent collapse. Another virtue-and key, as far as we are concerned-is the suitability of such a building for hydroponics. The viability of hydroponics is dependent upon an ability to control energy costs, and the dome structure is ideal in this respect.

A continuous-form dome, partly laid into the earth, will not be cracked by the sharp jolt of an earthquake, and an oval with a bit of a plate-shape on the bottom will also settle into its pre-quake position when the moving and shaking is over, readjusting itself on loose earth. Made of metal, such a structure would protect from firestorms and hailstones. Nevertheless, an escape route of some sort may still be needed. This should be placed at or near the highest point in the structure. In the worst case scenario, if trees or other debris were to pile up against all the normal exits, this additional hatch would allow the occupants to dig or cut their way out, so that the normal doors could be cleared from the outside. In the case of a large dome, three outwardly opening doors around the base perimeter would probably be a good idea, since they can withstand more wind pressure than inwardly opening doors.

Materials: Plastic would be one way to go, but you probably wouldn't want to risk staying in it during the pole shift. If you really want something built from plastic, then take it apart before the pole shift and rebuild it, once the cataclysm is passed. Rastra would seem to be another possibility for dome construction, being resistant to almost anything that we may encounter before or after the pole shift. Much has been written on the subject of the construction and durability of domes. The advantages, apparently, far outweigh the disadvantages. It is certainly a topic worthy of research by any survival group. There is still time to take advantage of this knowledge before the cataclysms come upon us.

Geodesic domes differ from monolithic in that, whereas the monolithic dome is contiguous, the geodesic is constructed of triangular-shaped pieces. This type of construction does give great strength to the geodesic; but opinions seem to differ on whether this strength is actually any greater than the monolithic.



One of the advantages of the geodesic dome could be that it can be easily added to as needed, for growing families or communities. However, the caveat here has to do with the fact that the pieces for

geodesic construction must be so precise that unless you remember to bring very specific tools with you, it may not be possible to measure properly after the pole shift. There are, of course, kits available which can be ported to the after-time, and this would appear to be the best way to go, since only a really professional carpenter could build such a dome from scratch. There are many geodesic dome kit manufacturers available, and prices range from \$500.00 to \$18,000.00, but that may not be the highest price. The point is for one of your group to do some in-depth research before you pick your manufacturer, your price, and your kit.

Insulation

Whatever type of permanent building you decide on after the pole shift, whether it be for living or storage purposes, or something else, insulation is going to be extremely important. Fire retardation is always an essential part of insulating, and in some parts of the world, the cold climate is going to be a factor. However, of paramount concern after the pole shift will be the ability of your insulation to combat the dampness that is going to be so prevalent in the after-time.

It is not easy to recommend any particular insulating product, although the foam types seem to be widely regarded as superior. Even here, caution must be observed. On one hand there are recommendations for the spray foam type of insulation; however, you must be careful to make sure that you don't use a product that will outgas, immediately or eventually. So far, prefabricated foam sheets would seem to be best, but your group must do some serious investigating in this regard. Unless you bring enough of this product with you, a serious disadvantage will occur when you are trying to insulate.

One suggestion is natural insulation. For instance: when dealing with sudden and temporary shelters, moss was found to be a good insulator. From Tom Brown's *A Field Guide to Wilderness Survival* comes the information that: *The material doesn't make any difference, as long as it's light and airy. Use whatever you can find:*

Leaves, ferns, moss, grass, etc. These materials will insulate a structure even when wet. Then there is always straw, as has been discussed in an earlier summary, and straw bale homes were built with great success approximately 150 years ago, and are even now being recognized once more for their viable qualities.

Other Natural Insulators: Fibrous, loose-fill insulators, such as rock wool, slag wool, and cellulose are mentioned here, just as, again, ideas that are "thrown into the pot"; but I find myself unable to really recommend them. Though there will be plenty of basalt rock and probably some glass which could be ground up after the pole shift, the creation of both rock wool and slag wool depend upon your settlement being able to produce great heat, which ability may not be available to you for quite a while into the after-time. Cellulose is made up of shredded waste paper treated with chemicals, and how much waste paper will there be? Also there is the problem of working with these fibers, which are irritants to the skin, the eyes, and the respiratory passages, and one needs protective clothing when dealing with them. Special equipment would also be needed to blow such insulation into whatever building it is intended for, and batts and rolls are apparently rather difficult to make, even if your settlement should have the equipment to do this. Cheaper and easier to handle would be the tires filled with dirt, and there will likely be plenty of both around.

The solution to this problem? Well, after the moving and shaking is over and things have settled down, your group could relocate to a more temperate climate, where little if any insulation would be needed. There are going to be many such temperate zones in the after-time. If, however, you are stuck in the colder climates and cannot move, remember that the pioneer settlers did pretty well in log cabins, and if the terrain is right, you could build into the side of a hill.

Circulation

If you are heating your living space with a wood stove, for example,

you are probably going to need help with circulating the air so that your heating is more even, and you don't, for instance, walk around with cold feet while the heat at head level is oppressive. A simple way to accomplish this is a fan placed on top of your stove. This fan is powered by the heat coming from your stove, and as it spins, circulates the air and distributes your heat more evenly. It does mean bringing parts to make this fan with you to the after-time; but the fan is not electrical and should therefore be fairly easy to construct. If you are living in a cold area, this is a simple way to heat your shelter, ensuring adequate air circulation, but at best this is a short-term solution, because sooner or later the fans will wear out. This could be a good area for study by your group while there is still time. Other ideas for air circulation have been suggested, but they all concern themselves with technology which, although simple by modern standards, will seem complicated in the after-time. One of them involves the sun, and there will not be much of that after the shift.

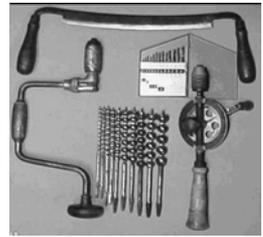
Tools

After the pole shift, civilization will have to be rebuilt from the ground up-even, it might be said, from under-the-ground-up-which means that all types of tools will be needed. The work to be done will include everything from gardening to radio repairs, making little wooden toys to constructing a shelter. And keep in mind that assembly will not be the only use to be found for tools. What about that old car that has landed near your site? There may be some useful survival aids there, and you won't be able to take it apart unless you have the specific tools to do so.

If you are sure of an abundant energy supply, then by all means bring your power tools along; but the importance of our prized modern power tools will likely fade into insignificance as compared to the essential nature of pre-power hand tools. It is not the intent of this summary to give a specific run-down of what you should take with you, for the doctrine here is very simple-bring everything. Too much may not be enough. Therefore this synopsis will be limited to a bit of advice, some cautions, and a few reminders.

If your group does not contain some experts in construction, or at least a few jack-of-all-trades, then get some! There won't be any point in taking all these tools into the after-time, if no-one can figure out how to use them. And at the risk of getting too basic, or preaching to the converted, it must be stressed that not only essential, every-day tools must be brought along, but also each variable. For example: nothing will be gained by bringing one round-shaped screwdriver, in all its different sizes. There are star-shaped, square-shaped-and possibly other-shaped-screwdrivers to consider, in all their sizes. As a total layman in such matters, one who cannot tell the difference between a chainsaw and a lawn mower, it is highly possible that I would remember to bring a drill of some kind, with metal bits. But would I remember high quality wood bits? I might also remember to bring along a quantity of nails and screws-but would I include wood screws, or "sheetrock" screws?

Some cautions—don't buy a drill with a plastic gear assembly. Our modern world is designed for obsolescence, and there won't be a hardware store around the corner. Don't forget things like rope, chains, wire, plenty of adhesives, and



waterproofers. A fiberglass ax handle seems to act as a "spring", and you could actually injure yourself when trying to work with this, as the ax has a tendency to bounce back, if the wood is very hard. Where to find them—garage sales, pawn shops, and estate sales are good sources for the more old-fashioned type tools. People tend to just throw them into boxes, and treasure-troves can be had for a mere pittance. Take advantage, and gather what you can. Don't court disaster for your group by arriving in the after-time without something crucial; for at that point, nothing can be done about it.

Gardens

Because our atmosphere will be saturated with volcanic ash, and our soil will not be good for growing things immediately after the pole shift, other methods must be found to provide your community

with enough natural produce to keep it healthy. Below are some examples of things that can be done in this regard, but you are urged, while there is yet time, to consult the extensive information contained on the Troubled times web site, or visit your local library and book stores to expand your knowledge of this subject.

Seeds

One of the most essential things you must take with you into the after-time is a good collection of non-hybrid seeds. Save seeds from your best parent plants, guarding against hazards such as cross-pollination, which can ruin your genetic selection. Preserving seed from year to year will be important, and there are various ways of doing this, and of course, proper storage is essential.

Hydroponics

If you are well set up and have a reliable energy source, hydroponics is the way to go. There are many good reasons why this type of agriculture might be preferable, post poleshift, to any outdoor gardening. Hydroponics uses nutrient-enriched water instead of soil as a growing medium, and as an experiment conducted by Troubled Times has demonstrated, the liquid fertilizer collected from watering composted earthworm beds is an effective nutrient solution, and the acid pH can be balanced by water from soaked ashes.

Humidity and temperature, as well as the amount of light and carbon-dioxide received by the plants can be easily controlled. Because of this, and the fact that there are no “seasons” associated with indoor agriculture, crops can be grown all year round. Absence of weeds and insects make pesticides unnecessary. Pollination and

PPM	ELEMENT	
96	N	Nitrogen (as nitrate)
48	P	Phosphorous
264	K	Potassium
132	Ca	Calcium
48	Mg	Magnesium
412	SO	Sulfate
3.0	Fe	Iron
0.5	Mn	Manganese
0.08	Zn	Zinc
0.06	Cu	Copper
0.5	B	Boron
0.1	Mo	Molybdenum

plant stressing will need assistance in order to increase the yield and/or produce seed. Of paramount importance in this kind of setup is to maintain the right pH balance of the water.

Indoor Gardening

If you have managed to bring some soil with you into the after-time (wood or river bank soil is best), indoor gardening with such soil is also possible. Containers such as barrels, or buckets, with a drainage hole at the bottom, could be used. Things that cannot be grown hydroponically, such as some of the tropical fruits, and certain plants, can be grown this way, provided your community is equipped to produce extensive quantities of fluoride or halide lighting.

Covered Gardens

Depending, once again, on the availability of soil, you may think about starting a covered garden, which can actually be situated outdoors. A cover can conserve moisture, protect from heavy rains, harsh winds, insects, and birds, while still allowing water, fertilizer and light to penetrate, and ventilating heat on excessively sunny days—though there will not be any of those immediately after the pole shift. Tents can be used as portable greenhouses, and can be another way to shelter gardens from the harshness of the environment after the pole shift.

Soil and Fertilizer

Outdoor gardening after the pole shift will not really be a viable option. But later, when the pollutants have stopped falling and things settle down a bit, covered and sheltered gardens may be possible. To this end, here is a description of what might be expected with regards to soil, in a non-technical settlement.

Because of the pollutants in the atmosphere there will be very little sunlight, and this will impact heavily upon the condition of the soil. There are concerns, even in our present society, about the depletion

of the soil, and when this happens in the after-time, the technological fixes available to us now, will be absent. So, it's back to basics. If your group ever gets some sort of an outdoor garden going, crop rotation, and returning all your wastes to the garden, are options that can help. It is apparently best to avoid farm land, and go to ranch land, as long as it isn't ranch land where nothing will grow on it, despite present-day technology. Even after the pole shift, improvement of your soil may be possible.

It might be feasible, for example, to gather it from another location (woodlands or river soil is best), or even, if its survival intact could be assured, bring some loam with you into the after-time, although this would be a prodigious undertaking, and there would be no guarantee that this, too, would not be rendered inferior by the after-time conditions. If you can find a copse of old-growth trees near your survival site—"old" meaning around 50 years—whether or not they are still standing, earth from around and under such trees will be more viable than, say, soil from an open field. Look particularly for trees of at least 18 inches in diameter. Also plan to obtain firewood from such a grove. This will provide you with mineral-rich ashes to use in your fertilizer. As well, the top eight to 10 inches of soil from the bank of a river would be safe to use. This type has a high amount of sandy silt.

Obviously there will be no commercial fertilizers available after the pole shift, but soil can still be replenished from many sources. An easy fertilizer would be one made of blood and bone meal. This would work very well, but does not supply potash; so add wood ash or gypsum pellets to your mix. Here, from one of our Troubled Times members, is a description of how to make such a fertilizer: "One and a third pounds of blood meal, two and a half pounds of bone meal, four pounds of wood ashes (or gypsum). This is to be spread over 100 square feet and mixed into the top one or two inches of dirt. This mix is organic and will not burn plants so it could conceivably be spread around existing plants without fear of over saturating the soil." Gypsum has several properties that make it a good substitute for wood ash, one of which is its ability to break

down heavy soil. Thus it mixes well with clay, allowing water to percolate more freely. Gypsum will be available in some areas after the pole shift, and blood and bones for the fertilizer meal will, of course, be abundant. Nothing should be wasted post pole shift, not even the blood and bones of our beloved families and friends. Some psychological barriers may need to be overcome; but to ensure the continuation and future growth of your group, the blood and bones of fellow humans, as well as dead livestock, must be collected, dried, and ground into meal for your fertilizer. Drying may be difficult, but not impossible, and the method could involve fire, which would make more wood ash for the mix. Putting these otherwise wasted products back into the earth will reduce depletion of precious minerals.

Honey and Bees

If a way can be found to preserve and keep bees after the pole shift, honey would be a wonderful source of both food and healing. One of its most useful properties is that it can, if not exposed to extreme temperatures, be stored without preservatives. It contains a lot of nutrients such as 35% protein, half of all amino acids, and is also a highly concentrated source of things like carbohydrates (sugars), B-complex vitamins, and Vitamins C, D, and E. A great energizer, honey is also a healer. Its antiseptic properties guarantee its effectiveness as a salve for burns and wounds. Caution: raw honey contains spores that can cause botulism in infants.

Honey will not be the only benefit derived from keeping bees. There is bee propolis, one of the best natural antibiotics available; nectar, for energy and strength; and royal jelly, which will be an aid to women during pregnancy and nursing. Then, of course, there is bee-keeping therapy, a science in itself, only to be practiced by those in your group who really know what they are doing. The problem will be that sunlight, which is essential for the well-being of bees, will be in short supply after the pole shift, so the challenge will be finding ways for bees to live indoors, possibly in a hydroponic setting.

Fish

If your group is part of a high tech settlement, aquaponics may be the way to go. If this can be made to work, you will have prodigious amounts of high protein food. A combination of hydroponics and aquaculture, aquaponics, simply described, is a symbiotic interaction between plants and fish, where the humans feed the fish, the fish wastes feed bacteria, the bacteria wastes feed the plants, and the plants clean the water for the fish. In this setting, advantage can be taken of the nutrient-rich run-off from your hydroponics setup. If this system is going to work properly when it is needed, it is essential that you do some practising beforehand. After the pole shift will not be the time to have your first experience with aquaponics. If your settlement is not high-tech, obtaining fish will still be possible. An important fact to remember is that fish do not accumulate lead from polluted water. This means that outdoor ponds can be used to farm them. Salmon, perch, catfish, crayfish, shrimp, and carp (with certain reservations, and if treated correctly and properly filleted), are good prospects for the after-time. Care must be taken to protect your precious fish stock from the shock of the pole shift. Note—and if all else fails, there is always the old rod and tackle!

Flocks and Herds

There really is not too much to be said on this subject. Animals like chickens, sheep, goats and rabbits have obviously survived prior pole shifts, and it doesn't take a great stretch of the imagination to realize that they will probably come through this one. Some animals have been raised from the earliest times with no technology, and will serve us well in the after-time. Once things have settled a bit, these animals should be easy to handle, providing one can keep them disease-free, and their meat, eggs, milk and cheese will be most welcome at the community table.

Chickens

Can be raised for meat and eggs. There are not too many

health cautions to be aware of when it comes to eggs. Eaten raw, they can be a cholesterol hazard. The trick, according to one of our Troubled Times experts, is to cook the egg whites hard, leaving the yolks soft, as in some boiled or poached eggs. This will help neutralize the cholesterol risk.

As for the feed, chickens, like all the animals mentioned here, are pretty hardy and can eat almost anything. Eggshells can be recycled back to them in their food for calcium, helping to produce stronger eggs. They will scratch outside for bugs and worms. If you are in a more technically-oriented settlement which does have electricity, a 75- to 100-watt bulb in their coop will be helpful for heating purposes; but chickens have been around for eons, and have survived many cold winters without electricity. There is no reason to suppose they will not do so now. The only problem with chickens is that they are extremely noisy, and may attract unwanted attention to your survival site.

Goats

Are known for their ability to eat almost anything. They will provide milk and later, when facilities are available to produce it, cheese. They will bond to their herdsman so that, whether settled or on the move, your goats will be with you.

Rabbits

Have a very high reproduction level, so that there will always be meat for your stew pot. They are easy to feed, munching leftover vegetations, eating the fibrous part and recycling this bulky trash into droppings for the humus pile. Best of all, rabbits are quiet, and won't announce your presence to the world! As they will probably be kept in cages, eventually you can be fairly sure of a disease-free rabbit population.

Sheep

Will provide meat, and wool for clothing. They are hardy, will graze on sparse grass, and are well equipped to survive cold winters. Excrement from all animals will fertilize your garden.

Cattle

Beef cattle are an "iffy" option, since they are big, and therefore need a lot of grazing, which, in most areas (and particularly immediately post-pole shift) will be sparse.

Food Preservation

Food storage and preservation are going to be of paramount importance, particularly just after the pole shift, and most particularly if you are not practiced in hydroponic methods. Outdoor gardening will be impossible, and a good supply of stored food will take you beyond the actual catastrophe, and serve you well while you get both your hydroponics equipment and skills up and running. Below are a few examples of how it can be done, using both the time-honored, tried-and-true storage means, as well as modern technology.

Canning

It will certainly be possible to take some canned foods with you into the after-time; but remember, as soon as the can is damaged, so is the product inside it. Cans particularly should be kept in cool, dark places, since food will deteriorate more quickly if stored in hot cans. Canned food can last a long time, but caution is advised; for example, rotate your cans and use the oldest ones first, so that you go into the after-time with the most recent canned products. Some acidic foods, like tomatoes, need to be carefully watched, since the acid will eat into the cans. Canned food, from a nutritional point of view, can last for quite a long time (no time is specified here because there seem to be differing opinions about exactly how long) but after that time it may not taste as good as when first packed.

Freeze-Drying

Like canning, this will obviously have to be done before the pole shift, but will be well worth the effort. To reconstitute

freeze-dried food, add boiling water to it or, if you are in a high-tech settlement, add cold water, and microwave. One of the great benefits of freeze-drying is that the reconstituted product often looks and tastes pretty much like the original.

Salting

Salting, especially for meat, is a tested technique. Moisture is drawn out by the salt, and an environment which is hostile to bacteria is therefore created. If the meat is salted in cold weather so that it does not have time to spoil while the salt takes effect, it can last for years. The ancient technique of salting is briefly described in John Steinbeck's *The Grapes of Wrath*: "Cut meat into small salting blocks. Pack the salt in. Lay meat piece by piece in kegs (wooden barrels), making sure the pieces do not touch each other. The meat is laid out like bricks, and salt is pounded into the spaces".

Pickling

Although pickling is not widely used today, it is still a viable storage method. It uses the preservative powers of salt combined with the preservative qualities of acids, such as acetic acid, found in vinegar. Acids inhibit the growth of bacteria. Just an example: to make the pickles that are used on your hamburger, cucumbers are soaked in a 10% saltwater brine for several days, then rinsed, and stored in vinegar. This preserves them for years.

Vacuum Packing

This is a really good way to store food. A little caution must be used, though. One of the Troubled Times members has experimented with this, and reports that while elbow macaroni, for instance, was still good after eight years, other things (such as peanuts in salt and oil) will go bad after only a few years. A vacuum pack is similar to—but not exactly like—a seal-a-meal bag. Absolutely anything can be stored this way, from batteries to clothing, to food. When the bags are packed and your goods safely stored, drop them into 30-gallon Rough Neck containers, then label the containers and seal with duct tape. They can be

used for hydroponics growing at a later time.

Pasteurization

This applies, of course, mainly to liquids. This may be good for the after-time, if you are not sure that your stored products are still viable. Pasteurization is achieved by boiling food or liquid at very high temperatures, which does sterilize the food, and which kills certain—but not all—bacteria, and disables certain enzymes. Unfortunately, though, the taste and nutritional value of foods treated in this way are greatly diminished, and this method is more or less a compromise.

Alcohol

As a preservative, this will certainly kill bacteria.

Dehydration

This is another excellent way to store food for a long time. Some products, like powdered milk and soup, dried fruits, vegetables, and meat, instant rice, and pasta, would be great to take with you into the after-time. Powdered sauces would add taste and variety, and for the sake of morale, should probably be included. Soup and milk are particularly easy to dry, and will last for years.

Diatomaceous Earth

This is the hard shells of sea creatures, the sharp edges of which can tear up an insect from the inside out. It is not harmful to humans or large animals, since the pieces are too small to do any damage if ingested. If you are planning to can or bucketize your food for storage, mix in a cup of diatomaceous earth. It is particularly good for storing grain, because it will keep your product pest-free. Do not use it in soil, since it will slice up your earthworms; and do not use it near flowers, since it will cut up what few honey bees we will have left.

Heavy Duty Buckets

A great way to store food. These buckets can be found thrown out by some restaurants, and can be cleaned with bleach, then air-

dried for a day, rendering them good as new. They have rubber-sealing tops that close tightly. One of our Troubled times group has tested this by dropping a bucket filled with stored food from a third-floor window. He reports that sometimes the tops became dislodged, but everything inside was fine, and undamaged. Particularly good, of course, for storing dried foods such as grains and beans.

Plastic Containers

It is said that water stored in a plastic container has a shelf life of approximately six months, or a year. If you must use plastic containers, be aware that it has been scientifically proved that plastic "leeches" some of its properties into the food within it. Since no-one is exactly sure which plastics are guilty of this, they must all be suspect. There are various methods to kill bacteria, one of which is to put a little chlorine into the water before you drink it, if it has been stored more than six months. Your stomach will thank you, even if your taste buds don't! Read about the merits or otherwise of plastic containers before you decide to use them, and be aware that a plastic container may not survive the G-Force of a pole shift unless uniformly supported on all sides.

The Ice House

Finally, unless you are in a high tech settlement, refrigeration is not likely to be available. Do what our forebears did—build an ice house!

Choice Foods

If there are any doctors around after the pole shift, an apple a day will do more than keep them away! The pectin in apples will help to lower blood pressure and is a cancer fighter, and there are other common foods which, under the right circumstances, can be grown after the catastrophe and which can also help humanity in its fight against diseases. Some of these are listed below; but because it is impossible to list everything here, recommended books on this

subject can be found in the book list.

Spirulina

Is actually a blue-green algae that has been living on the planet for 3.6 billion years, and has been a source of food for many cultures. 60% protein, it has been known to assist recovery from malnutrition. Also contains beta-carotene, and is rich in iron, and vitamin B12; has more calcium and magnesium than other foods, and is another immune system booster.

Onion

Insects will be everywhere in the after-time, but help is at hand! The juice of the onion is a good way to ward off these biting pests. Grated onion has been used externally to treat rheumatoid pains. On cotton wool, onion juice can be used to treat earache and toothache. Urinary infection and infections of the airways succumb to treatment with honey and onion. Onion lowers the blood pressure, stimulates the digestive tract, and heals wounds, eases coughing and colds. Rich in vitamin C, and other vitamins and minerals. Caution: If you don't have much light for growing, do not try raising onions. The more growing light that an onion has, the healthier it's going to be; with much less light the plant will be not so healthy, a lot less tasty, and less medically useful.

Cabbage Family

Eating vegetables from the cabbage family reduces the risk of cancer.

Potatoes

Mashed Potato used topically can draw out toxins from boils. Raw juice improves functions of digestive system and alleviates constipation, heartburn, and gout, and diluted in warm water and taken in the morning, alleviates peptic ulcers. Raw slices applied to the skin can relieve eczema, and alleviate red, puffy or swollen eyes. The skins, cleaned of all pulp after boiling, can be used as a dressing for burns.

Pineapple

Can be an effective treatment for high blood pressure, clotting, heart conditions, stroke, and much more, including the core, as it is enzyme-rich in bromelain. Bromelain treats angina breaks down the atherosclerotic plaque that is implicated in atherosclerosis; inhibits abnormal blood clotting, thus can prevent thrombosis; helps to prevent and treat cardiovascular diseases; helps to dissolve foreign proteins (antigens) that are responsible for many allergies; interferes with the growth of many forms of cancer. Taken in the right dosage per day can: accelerate the healing of bruising; reduce the inflammation associated with rheumatoid arthritis; alleviate the edema and inflammation associated with wounds.

Although it is admitted that this is a tropical fruit and will not grow in certain parts of the world, one could always dehydrate some pineapple before the shift, or, better still, grow it hydroponically, since its medicinal qualities are so many and varied.

Beets

Beetroot juice alleviates anemia, constipation, disorders of the bladder, and many kidney disorders, lumbago, ailments of the nervous system, and amenorrhea (which is suppressed menstruation). Beetroot stimulates the production of red blood cells and helps to prevent gallstones. Prevents—and possibly reverses—some forms of cancer, improves the function of the liver, and alleviates jaundice and gout.

What does all this indicate? It means that you don't have to fall victim to all kinds of nightmare diseases since, with a good hydroponics setup (gardens will not do well immediately after the shift) you will have a weapon with which to fight back. You can increase your armory by doing further research on this subject before the cataclysms are upon us, and in this regard a visit to the library would be in order.

Low-Light Foods

Sprouts are fast-growing, easy to store, and will be a welcome addition, a few weeks after the pole shift, to the canned and dried supplies which survivors will no doubt be consuming. Some recommended seeds are: alfalfa, mung bean, lentil, sunflower, wheat, radish, and broccoli. They don't need much growing light; they are packed with vitamins, and are another good source of amino acids. They must be kept in a cool, dry place. No light is required to sprout these seeds, just a moist, warm, disease-free environment. A couple of ideas from Troubled Times members:

- When storing seeds, put some cinnamon in each storage container. Cinnamon has been found to inhibit the growth of mold and bacteria, thus giving the stored seeds more than three times the germination capacity than the two years they otherwise seemed to have.
- Spray or wash any seeds intended for storage with colloidal silver, and allow them to air-dry (don't put them in the sun). Where mold and bacteria are concerned, the inhibiting properties of colloidal silver are quite amazing.

Though mushrooms are of little nutritional value, they do have a lot of flavour and would certainly be a welcome addition to what could otherwise be a dull meal. However, there seems to be no single test—other than eating them—to distinguish between the safe mushrooms and the poisonous ones, so at first glance, avoidance of these fungi seems to be the safest bet, unless there is someone in your group who knows what to do in this regard. What could make the risk worth taking—if much caution is used—is the fact that mushrooms do contain Vitamin D, which will be in scarce supply after the pole shift. The need for caution, however, cannot be overstressed.

Vitamins

After the pole shift there will be no running to the store to obtain

milk or orange juice. Milk and orange juice—and other nutritious substances—may be possible after a while; but before that, we will have to make do with whatever we can find. Since vitamins do have a long shelf life it will be a good idea to stock up on supplements which can take you to the time when your group has attained a measure of self-sufficiency. The list below does not include dairy products such as milk or eggs, the meat of large domesticated animals such as beef or sheep, or long growth cycle foods such as fruits and nuts which require mature trees. Where these items provide vitamins and minerals, more easily grown foods prove to be equal if not superior sources of vitamins and minerals.

Noted below are vegetables and fruits that can be grown hydroponically or have a short growth cycle, or protein sources from aquaculture that can be nourished from algae grown in sewage effluent or with garbage scraps, which is simply nature's way.

Vitamin A

Vitamin A is fat soluble. Abundant in fish and fish oils and in animal fats, especially in the livers. Can be manufactured by the human body from components in fruits and vegetables, especially from beta-carotene found in yellow and green leafy vegetables. Carrots are an excellent source of beta-carotene.

Vitamin B

The B Vitamins are water soluble. Thiamin is most abundant in cereal grains but beans and legumes are a close second. Riboflavin is most abundant in animal hearts and livers followed by soybeans and vegetables such as sweet potato. Pyridoxine and related compounds are most abundant in cereals, followed by fish and fowl and then yellow and green vegetables. Niacin is abundant in cereals, fish and fowl and stewed rabbit, liver, mushrooms, and vegetables such as peanuts, peas, soybeans and potato skins. Cyanocobalamin is abundant in clams and oysters, liver, and cereals. Folic acid is abundant in beans and legumes, brewer's yeast, cereals, and liver.

Vitamin C

Vitamin C is water soluble, and is destroyed by heat or exposure to oxygen or alkaline substances. Abundant in cranberries and quite high in broccoli, cauliflower, cabbage, kohlrabi, and sweet red or green peppers, tomatoes, and melons, especially where these fruits and vegetables are eaten raw. The new buds in the spring from a pine tree when boiled will make a good tea that can treat scurvy. Scurvy grass is also high in Vitamin C.

Vitamin D

Vitamin D is fat soluble. Vitamin D is manufactured by the human body in adequate supplies with no more than 15 minutes a day exposure to ultraviolet in sunlight. Cloud cover or pollutants in the air interfere with ultraviolet penetration, and during winter or in urban areas, exposure to sunlight often does not suffice. Cereal grain bran, liver, meat, and eggs contain Vitamin D.

Vitamin E

Vitamin E is fat soluble. Abundant in wheat germ oil, sunflower seeds, peanuts, kale, and sweet potatoes.

Vitamin K

Vitamin K is fat soluble, and is found in the leaves of all plants.

Calcium

Abundant in soybeans and other beans, oysters, and fish, and quite high in amaranth, sesame seeds, broccoli, kale, turnip greens, spinach, pumpkin, leeks, mustard greens, okra, parsley, and collards.

Copper

Highly abundant in oysters and abundant in crabs, liver, sesame seeds, peanuts, lentils, beans and peas, mushrooms, potatoes, rice and cereal grains, and fish.

Iodine

Found in algae and seaweed, where it is extracted from sea

water. Iodized salt should be stocked in preparation for the pole shift for those living inland.

Iron

Abundant in soybeans, bulgar wheat, lentils, liver, spinach, sunflower seeds, pumpkin seeds, squash seeds, and sesame seeds.

Magnesium

Abundant in spinach, Swiss chard, navy beans, peas, peanuts, beet greens, broccoli, okra, and leeks.

Potassium

Abundant in carrots, beans and lentils, Swiss chard, beet greens, cauliflower, kohlrabi, and potatoes. Potassium is key for maintaining proper nerve and muscle function and helps your cells maintain proper fluid levels. Adults need about 3500mg of potassium daily. However, since potassium overdose can be a problem, it is not recommended that you take potassium supplements.

Zinc

Zinc is found in great abundance in oysters, and is abundant in poultry, cowpeas and black-eyed peas, beans, and peanuts.

Once again, the surface of this subject has not even been scratched or dented by what is in this summary. This is just an example of what can be used in the after-time to improve the chances of your group's survival.

Besides the plants and foods mentioned above, things like kelp, moss, mushrooms, algae, and alfalfa are good sources of vitamins and minerals, particularly alfalfa, which sometimes grows down to 40 feet below the Earth, and can extract vitamins and minerals unreachable by other plants. Oxalic Acid in foods such as spinach and rhubarb, and Phytic Acid contained in things like dried beans and peas can have a somewhat "depressive" effect on the absorption

of their own calcium. Such foods, however, do not interfere with the absorption of calcium from other substances eaten at the same time. Wheat bran, on the other hand, can actually block calcium assimilation from other foods.

The Pine tree has long been a source of vitamins, and also has many medicinal qualities. Scotch and White Pine are best in this respect, the most useful parts being needles, inner bark, and sap. Spruce tea can be made by steeping fresh evergreen needles in water, and this drink is as potent as orange juice. New needles can be chewed. Pine needle and evergreen tea are high in Vitamin C, and will prevent (or cure) scurvy. Caution: Large amounts of evergreen tea can be toxic, and it should never be taken by pregnant women. Rose hip fruit contains more vitamin C than most of our cultivated food crops, including citrus. It keeps well, and can be harvested in winter. Other sources of Vitamin C include blood (obtained by eating raw meat), broad-leafed (garden) sorrel, and watercress.

It may be possible to erect a UV-B light within your residence to increase the intake of Vitamin D. The main role of Vitamin D is to help absorption of calcium, and this vitamin will also prevent the occurrence of rickets, a disease mostly affecting young, growing bones. Trace minerals such as selenium are also important. Water used to cook food is high in vitamins and minerals, and should not be discarded, but used for soups, etc. Small, frequent meals allow the body to absorb nutrients more efficiently. Absorption of vitamins and minerals can also be aided by eating foods in the right combinations.

Protein

In the after-time it will be necessary to overcome some of our psychological barriers regarding food, if we are to achieve a healthy diet. For example, in the quest for protein, bugs will have to be consumed, as well as snakes and frogs. Large snakes are preferable. The "rib eye" tenderloin can be removed along the spine. If it

is necessary for survival (and if calcium is needed) one could boil the rest of the carcass in a stew to soften the bones. Smaller snakes would not be much of a problem. Frogs' legs, considered a delicacy now, could become essential to good health after the pole shift. Frogs are easy to raise, and would probably do as well in indoor lighted tanks as in outdoor sunlight, particularly since sunlight will be scarce for the first few years. Caution: the skins of frogs are poisonous, and since it would be possible for some of the poison to leech into the meat, it would probably be best to stick entirely to the legs. If kept in a clean, safe, and healthy environment, rats can also be a good protein source.

In the vegetable department, legumes are an excellent source, the soybean having highest protein content. If it can be adapted to your area, amaranth is another winner; but the prize probably goes to buckwheat, which not only has an extremely high protein content but is rich in potassium and phosphorus, and also contains 50% more vitamin B than wheat.

Amino acids are just as important as are vitamins and minerals. They are involved not only in protein synthesis, but are key to other biological processes such as the forming of neurotransmitters. There are 20 amino acids, and of these, eight are classed as essential and needed by adults to maintain good health. These are: phenylalanine, valine, threonine, tryptophan, isoleucine, methionine, lysine, and leucine. The 12 non-essential acids can be manufactured by the body from other substances, although children, to be healthy, do require the addition of histidine and arginine. Situations can occur where non-essential acids suddenly become necessary, such as in the case of a physically traumatized adult, where arginine is required in order that optimal reparation can occur. Amino acids are found in foods such as meat, milk, eggs, fish, mushrooms, plants, brewer's yeast, cashews, beer, chocolate, potatoes, cola drinks, peanuts, barley, serials, peas, etc., many of which will be available in the after-time. As with most of life's essentials, too much can be as bad as not enough; and negative effects can occur if a healthy balance is not maintained.

Herbs

Herbs will play a great role in our future in the after-time. For those of us who are on medication, the likelihood is that there are herbs out there that can replace the drugs we now take, which will not be available after the pole shift. Below are just a few examples of what can be done with herbs. This is a vast subject, and much information is at hand. It would certainly be advisable to have several people in your group make a study of herbs and their uses, and have stocks available against the time when modern medical supplies have run out.

Stomach Ailments

Can be dealt with very nicely by using slippery elm. A blessing for ulcers, especially if coupled with a digestive herb. Small intestines and colon can also benefit from the use of this herb. Slippery elm tea can help with dysentery, which will probably be very prevalent after the pole shift.

The Heart

Fresh hawthorn berries are great for the heart. Cayenne works on heart attacks, stroke and shock. Cayenne tincture and powder also increase circulation.

Liver and Gallbladder

Milk thistle and barberry can protect against liver damage, and diseases such as hepatitis. Bitter herbs stimulate the digestion, stimulate the liver, and promote the secretion of bile which flushes the gallbladder.

Kidney and Bladder

Parsley and juniper berries can increase the flow of urine and destroy bacteria in the kidney and bladder. Even kidney stones can be dissolved.

All Purpose

Garlic can destroy practically anything that ails you, from athlete's foot to ear infections and everything in between. A garlic oil can be made that can be used either internally or externally.

Burns

Aloe is the miracle healer in this regard. It has been known to bring dead tissue back to life. Best species is aloe vera, but in a pinch, use any plant you can get.

Depression and Related Problems

St. John's Wort is a natural anti-depressant. No side effects have been noted with low dosages, but this herb can be toxic if used improperly. If you are taking this, make sure you have a list of foods that must be avoided since St. John's Wort is a MAOI (monoamine oxidase inhibitor), and could cause hypertensive crisis. Therefore, caution must be exercised in its use.

Antibiotics

Golden seal is a natural antibiotic. Parsley and Oil of Oregano also have antibiotic properties.

The Immune System

Herbs such as Echinacea will boost the immune system, a "must" after the pole shift, when at least for a while, infection will be rampant.

Blood Pressure

The kudzu root can reduce blood pressure.

Diabetes

Stevioside, which is an extract of Steevia, can stimulate insulin secretion, and Gymnema and Asian Ginseng enhance pancreatic function. It is reported that the Jerusalem Artichoke can act as an insulin substitute.

Antioxidants

Pine and grapefruit seed are antioxidants, and pine has antiseptic and anti-inflammatory properties.

E. Coli

Cinnamon is effective against this.

Parasites

Can be killed with Wormwood, and black walnut tincture.

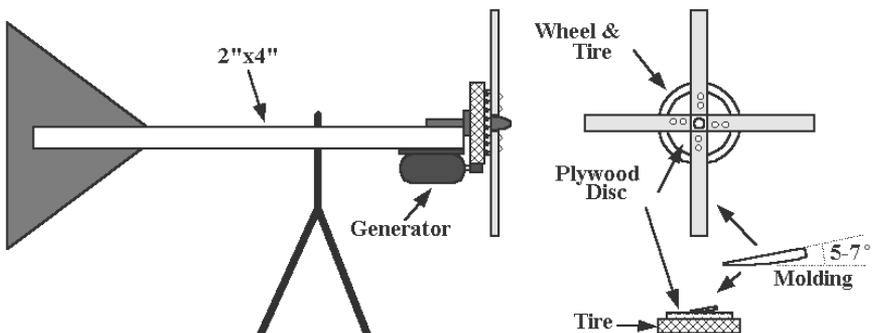
Overactive thyroid

Can be treated with lemon balm.

In most cases there are other herbs that can substitute for the ones mentioned here, but to list them all would take up too much space. This summary has not even scratched the surface of what can be accomplished with the use of herbs; but is included here so that you will have hope, and be encouraged to find some answers for yourself. Chances are that if you have any kind of a medical problem, there is an herb for it!

Windmills

A very viable alternative energy source after the pole shift could be the windmill. Even in our modern society, with all its high-tech advantages, people are looking back into the past to discover that the windmill is a pollution-free way to obtain electricity ... back into the past for the idea; but forward again to the present, where we find the imagination and ingenuity, as well as the technology, to expand on this idea. Some high-tech marvels have been constructed, and wonderful aids for their creation have been fashioned; but unless your settlement is rich enough to go that way, your group will likely be looking at some home-made alternatives, and there are plenty of these available.



The subject of windmills and how to build them is a vast one; and for this summary to undertake descriptions of all the products available would run counter to our attempt to keep this booklet brief and portable. As an example, included above is a sketch showing how such a windmill might be constructed from a lawn mower.

There are, however, certain factors worthy of mention. For example: no matter which windmill you choose to go with, it will likely require battery power.

- Golf cart batteries are recommended, since they are long lasting, are eminently salvageable (because they are all over the place), and can be easily recharged.
- Placing your windmill on top of a ridge will lead to better performance; however the caution here is that it may be seen by others who do not necessarily have your group's best interest at heart. Recommended height, whether for a tower or ridge placement, is 70-80 feet.
- Wind speed, wind focus, and blade size are factors which should be taken into account.
- Ensure that your windmill meets the community's requirements. Check exactly how many watts each connected appliance will need, and how many watts it will take to run essential appliances at the same time.
- Ensure that your windmill can be manually maintained, easily disassembled and stored in a safe place, or otherwise equipped to combat continuous high winds, or microbursts. Microbursts can contain short-duration winds of up to 200 miles per hour). When high winds occur, smaller machines could be disassembled; larger ones could be equipped with a braking device which will automatically lock the blades.
- If you are in a colder climate, ice will be your enemy.
- A downwind generator is less subject to stress.
- Replacement spare parts are going to be needed to keep your energy source viable. If it moves, it's going to eventually wear out; but spare parts for windmills will also be a great bartering tool in the after-time.

Caveat: Ensure that the area around your windmill can be accessed only by those who are responsible for maintenance. Propellers are dangerous things which could be responsible for severed fingers, limbs, or worse, lost lives.

Hydroelectric

Possibly the cheapest form of renewable energy is going to be some type of waterwheel. There are different kinds, but all will do the same thing—provide your settlement with a reliable source of electricity—hydro power steadily charges 12, 24, or 48V batteries working 24 hours a day, every day. Depending on the geography of your particular site, different systems may apply to you. For example, if you are living near a small mountain stream, or in a hilly area with streams abounding, the “high-head” system can take advantage of the altitude drop and may be the one for you.

The Micro Hydro-electric System

One of our Troubled Times Members has worked up the requirements for such a system, but one other raises cautions against connecting batteries in this way, since cells in a series for charging can actually decrease efficiency and if one cell becomes shorted the other will be exposed to excess charging voltage, and this could result in failure of the whole system.



Pelton Waterwheel

There are four systems: High Head Turbines, Medium Head Reaction Turbines, Low Head Turbines, and Flow-of Stream Turbines (gear pumps). As mentioned above, the geography of your particular site must determine which system is right for your settlement. It is recommended that your group research this area thoroughly, since there is a lot of documentation on hydroelectric systems. Sites with higher head are most desirable because they need less water, smaller pipe, fewer

nozzles, and fare better in low water years; plus system installation is cheaper.

Amazon Aquacharger

This would also be something for your group to take a look at. The Aquacharger is a turbine, generator, and control system designed to operate on an ordinary open, moored boat, and can run for 24 hours a day, unattended. Power generated is stored in batteries to handle 12V appliances such as lighting, refrigerators, etc., and inverters to operate 240V applications. According to its web page, this is a system which is simple to assemble, dismantle, and transport for relocation, a definite plus for the after-time.

Aquagens (Water Generators)

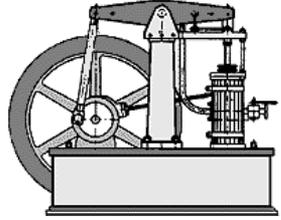
These are towed, water-driven generators; but before you start assigning people to flip around your site towing these things along, observe the diagram below. This portrays a method for building such a generator on an anchored, floating platform. It would be worth at least looking into a system such as this one.

Once again, it must be pointed out that this is a vast subject, and that much documentation is available therefor, and there is still time to carry out the research to determine which particular energy source would be best suited to your site. Keep in mind that Hydro power is more stable and easier to set up than wind. All one needs is an induction motor run pump (run it in reverse with enough pipe to run up stream to get sufficient head pressure); a proper size AC capacitor to tune it for AC generating, and a battery to zap it to get it started.

Steam

We must put our faith and our resources into more tried and true energy-producing methods, and one of these is the production of steam. The use of steam engines is an old concept whose time, in a

smaller package, may come again. Just as an example, from Jade Mountain comes the 5HP Liberty which produces up to 2000 Watts and heats 50 gallons of water from ambient to boiling each hour. If your group has decided to opt for wind power, such a boiler could be used as a backup for cloudy days when there is no wind, or it could be your main energy source. This boiler is cited merely as an example. There are many others available on the market which could be better suited to your purposes.



There is nothing very complicated about setting up and using a steam engine. Components could be stashed until after the pole shift, and then be reassembled by the mechanically minded of your community. We tend to think of steam engines as the heavy monsters that run things like locomotives. If steam power is to be used to supplement other forms of energy, a low-pressure boiler system is more than sufficient to drive, say, a waterwheel. There would be another benefit: steam engines require distillers, so that a byproduct of its use would be distilled, “safe” drinking water, a must after the pole shift.

Remember, though, that steam production itself is dependent upon another form of fuel, and in the absence of coal and/or oil, this is probably going to be wood or something alcohol-based. There will likely be a lot of wood available from downed trees, and this may be abundant on your site. Alcohol, which is a bio-fuel, could prove more difficult.

Lubrication

Keeping your steam engine lubricated is going to be important. Mineral- and naturally-derived oils were used with some success in circumstances similar to pole shift conditions, although it is unlikely that mineral oil will be available, at least in the immediate after-time. The use of Gulf Coast filters, which will recycle the oil that you use, should extend your lubricating power for a few more years.

Caution

The invisibility of steam does make it dangerous to handle, but hopefully only experts will be engaged in this activity.

Spare Parts

As well as the chief components for your steam system, remember to bring as many spare parts as you can. If you know what you are doing, boilers can be assembled from scavenged car parts and other such scrap metal after the pole shift.

Bio-Fuels

After the pole shift, gasoline will not be available; therefore we are going to have to get creative. There are replacements for gasoline, alternative fuels which, though some of them are clumsy to produce and may very well be put into the category of “backup” sources, are mentioned here in the interests of “throwing ideas into the pot”, ideas which may spark the imaginations of some of your group members, so that maybe more innovative ways of producing such fuels, or at least making them more viable, may be forthcoming.

Methane Gas

This is a gas produced by all kinds of biodegradable waste. It burns hotter than, say, natural gas, therefore less gas is required to perform the same energy tasks. Technology exists to store and capture this gas, and care must be taken, when doing this, NOT to let oxygen mix with it. This is a form of fuel used quite extensively in the Third World, and there is plenty of documentation for research by your community. Remember, too, that the muck which causes methane can be used as fertilizer after its utilization in this regard is over. If enough gas can be produced, it will run your generators and provide electricity. Very little needs to be done, for example, to a Diesel motor to make it run on methane gas. Tough to compress, methane is better used to run stationary motors. Page 123 of the Readers’ Digest book, *Back to Basics*, shows a

methane digester, and a small methane storage tank.

Bio-Diesel Fuel

A most useful resource in this regard is the book by Joshua Tickell, *From the Fryer to the Fuel Tank, how to make cheap, clean fuel from Free Vegetable Oil*. This contains all you will probably ever need to know about making bio-Diesel fuel.

There are many presses available for pressing seeds to make oil for these fuels, and as much information to demonstrate how it is done. This is a proven technology that will, however, depend on the ability of your group to produce enough vegetables and oil-generating enough seeds to make bio-Diesel fuel a viable reality.

Wood Gas

Wood gasification, also known as producer gas generation, is considered to be possibly the safest way to create alternative fuel. Producing gas from solid wood is a



simple technological step. There is much documentation concerning both production and use, including cautions that must be observed. Wood gas is conveniently handled and can be burned in various existing devices. A properly designed burner combining wood and air is one relatively safe way of doing this. Production of wood gas can be achieved in two ways – incomplete combustion, or destructive distillation. With the destructive distillation method other forms of fuel are generated (albeit in smaller quantities), chief among these being methane gas, which might make up 75% of the mixture thus produced. Either production route will yield an easily handled fuel quite capable of replacing fossil fuels, natural gas, or liquefied petroleum gases. Wood gas can also be stored at low pressure – 3 to 5 psi – in a simple tank. This fuel has been very successfully used to run a car, as the car with attached burner in the photo above; so why

not a good-sized generator, particularly as there will be a lot of charred wood and dead trees lying around after the pole shift. Another benefit of this setup is plenty of charcoal, which can be used for cooking, heating, and firing the wood gas maker.

Alcohol

The technology for making fuel from alcohol has long been available, and as of now, alcohol is relatively easy to make. Rendered more difficult, however, by post-pole shift conditions, making fuel grade alcohol will be even harder. For use as a motor fuel, alcohol needs to be 180-190 proof.

Ethanol

Of the alcohol-based fuels, Ethanol seems the best for our purposes. In this society, Ethanol is mostly used to make an Ethanol/gasoline blend, but Ethanol is a fuel in its own right, and has been used in Brazil in its pure form for the last two decades. Although Ethanol is clean-burning and environmentally friendly, all alcohol-based fuels are corrosive. This corrosiveness can be offset by the modification of engines to better accommodate these types of fuel, but this will likely have to be done before the pole shift, so your plans must be pretty specific in this regard. Some yeasts have been genetically modified (such as *Saccharomyces* yeast) to ferment both glucose and xylose simultaneously into Ethanol, rendering the process of making Ethanol both faster, and less expensive. However, the trick will be to obtain a culture of such yeast before the pole shift, if alcohol-based fuels are going to be important to your group. This yeast still produces some bi-products that must be removed from the Ethanol; but the ability to ferment glucose and xylose simultaneously enables more fuel to be made from an amount of plant material.

Methanol

This has also been suggested as an alternative fuel, however it is quite poisonous as well as being corrosive. It is also not the easiest thing to ferment, particularly as the process of manufacturing alcohol-based fuel is in any case problematical.

Another benefit: Although alcohol is going to be difficult to make, both for drinking purposes and fuel production, there is an added benefit which would make the effort worth your while. Mix alcohol (the drinking kind!) with herbs, and you have a great medicinal tincture. Use any part of an herb (but roots are especially good), cut into pieces and place in a closed container with just enough alcohol to cover it. Let it sit for a minimum of 14 days (but the longer you leave it the stronger it will get), shaking it one or more times a day. Using some kind of filter (a fine mesh cloth is good), squeeze out as much of the liquid as possible, filtering out the larger particles. If the first batch is not strong enough, you can do a second batch with the results from the first, using the squeezed-out liquid as if it were fresh alcohol. Echinacea is a good immune system booster, and a good candidate for this kind of tincture.

It must be pointed out that the subject of alternative energy is vast, and there are other fuels, and methods of making them, which have not been mentioned here. Your community is urged to research this topic thoroughly, and keep an eye out for future developments.

Alternatives

In the matter of fuel, there is not much which is conveniently available now that will be so after the pole shift. For example:

Solar

Due to the lack of bright sunlight for at least two decades, this fledgling technology will also be useless to us. Particularly in the case of solar energy, much hope is being pinned on its use, and it is time to look reality squarely in the face and realize that any such hope in this setting is false and misleading.

Coal

Unless you are sitting on top of a coal mine, and have the technology and resources to access it, this will not be a viable form of fuel after the pole shift.

Oil

The same goes for conventional oil. Even if there is a well smack in the middle of your site, the likelihood of your group having the technology to refine the crude is not great.

Geothermal

Let's be very clear about this: you don't want to be anywhere near today's known geothermal sites when the pole shift hits. They are likely to get much more than their fair share of "rock 'n roll", and will be dangerous places in which to be. Because the pole shift will break up tectonic plates into smaller fragments, new geothermal sites will be created. However, even in countries riding a fault, like Iceland, there are only a few places where this heat surfaces. Mostly you have to dig and drill for it, and without today's machines, accessing geothermal heat, if it is not already present, is going to be impossible. Should chance or foresight put you near a usable geothermal source after the pole shift, its most common use will be water distillation.

At this point, you and your group have established a high tech settlement, self sustaining and secure.

Communications with the outside world,
to check on loved ones elsewhere
and to share information with other communities,
will now become your focus.

It is this setting that the next topics address.



Communications

Given the distances between settlements, the difficulty or nonexistence of transportation, and the dangers inherent in traveling around after the pole shift, ways must be found for settlements to communicate. The Internet as we know it will be dead; there will be no phones, no satellite links, nothing of our modern communications network will be left, and it is up to us now, while there is still time, to devise a way for people to keep in touch, when keeping in touch could mean the difference between life and death for some, or all, of your community. Here below are some of the ways in which this could be accomplished; and these ideas, plus anything else your group can come up with, should be implemented and practiced upon, so that all in your group having charge of communications can familiarize themselves thoroughly with their use.

Shortwave Radio

Used extensively for emergency communications when the grid has been rendered useless, this means of interaction between various communities is the primary source of hope for the after-time. This will be difficult, especially in the beginning as the atmosphere will be full of junk thrown up by the aftermath of the pole shift. The ionosphere, upon which a lot of ham radio communication relies, will be ripped away; and because of all the turmoil experienced by the Earth, communications will be disrupted immediately after the pole shift. However, by the time radios are working, the ionosphere will have re-formed, but will be nearer to the Earth. Because of this a different angle of bounce will have to be achieved for shortwave communication to be effective.

But ham radio operators are resourceful, and there are methods which, with a little tweaking, could be used to compensate, things such as groundwaves, moon

bounce (although this would require fairly sophisticated equipment, and some scheduling since both the transmitting and receiving stations must be able to see



the moon), and meteor scatter propagation. This does depend, though, on knowing when and where the meteor trails are going to occur, so it may not be quite as useful post pole shift. However, since the Earth's atmosphere will likely be bombarded with meteor debris as the 12th Planet is passing, in the time just pre-pole shift, this will be a good means of communication. This is a vast and fascinating subject, and all ham operators are familiar with ways to compensate when preferred methods of communication are unavailable. Ensure therefore that you have a few ham radio operators in your group; this will save your lives, probably more than once.

Morse Code

Easiest of all transmitters to build is one that will generate Morse code; so that if, for any reason, telephony cannot be supported at your site, communication with other sites can be achieved with Morse. As a matter of fact, if you have any old TV's or other wireless equipment around, a one-valve AM transmitter which operates in the low end of HF (say 80 meters) could be built. It will transmit globally, and would require no shielding from electromagnetic pulses, as valves are not particularly sensitive to EMP. Also, a valve is a lot easier to unplug and store than is a solid-state radio, if EMP is a source of concern. Morse code is simple to learn but does take a good deal of practice, but it is certain that the effort will be well worth your while.

CB Radio

Simple to operate and requiring no license, the CB radio looks good for local communications in the after-time. Having a range of approximately 15 miles, the only problem with this could be if you have a site with a lot of hills, since hills would block your transmissions. If you have a license, a 2-meter handheld radio would be useful in this regard.

Packet Radio

This is going to be one of the best ways to communicate. A

terminal node controller sits between the radio transmitter and a computer, enabling either CW or digital communication. There are many advantages here. Packet radio needs no external controls, and your station would not have to be listening all the time. Keeping the radio on at your site could be a serious drain on power resources, plus this could facilitate your whereabouts being traced. Messages could be sent with the packet radio's email facility, followed by a fast shutdown of the system. Digital mode would probably mostly be used to send information from one settlement to another, such as medical texts, etc.

Towers, Antennas, and Repeaters

Each of these three components has the ability to "stretch" radio communications, but each could also be a source of danger. High towers and long antennas could stick out like sore thumbs in an empty landscape, and would declare your presence loudly to any interested party. Repeaters, requiring their own power sources and also needing to be placed at some distance from the base station, would necessitate trips from the settlement for equipment maintenance, which increases the likelihood of running into undesirables. Direct settlement-to-settlement communications using a rotating antenna could be a more viable proposition; but this would not diminish the likelihood of your community being detected.

Also, we must remember that to be most effective, arrangements concerning radio communication should optimally be made between communities before the pole shift occurs, since, due to the difficulties inherent in any after-time communication, the chances for spontaneous location of other settlements on the air are not good.

Self Defense

When we think about self defense, two concepts mainly spring to mind: one is defense by the use of the martial arts; the other, a plea at a murder trial. But when considered in conjunction with the pole

shift and the after-time, self defense must take on a much broader perspective, and must literally mean “self defense”, as in defending oneself and one’s community against everything from wild animals to looters, from inclement weather to out-and out assaults upon the land by nature; from the threat of disease, to the onslaughts upon our persons of life itself. In a way, this whole booklet could be considered a self defense handbook; here below are some simple pointers through which communities and individuals can defend themselves from the more obvious and prevalent dangers.

Low Profile

This is one of the best self defense mechanisms that could be employed by a community. This should be cultivated even before the pole shift comes upon us. Do not go around telling people who don’t share your views (or even those who do, but are not planning membership in your community) where your location is, what kind of supplies you are going to stockpile, where those supplies are going to be hidden, or give any details at all concerning your preparations. Falling into the trap of boasting to perceived friends could get you and your group into an awful lot of trouble, should these persons survive the pole shift and, either through sheer laziness or just plain disbelief, have failed to make their own preparations. After the pole shift, keeping a low profile will mean camouflaging your site to the best of your ability— windows that can be heavily shuttered are one option. It has been suggested that a building with no windows at all might be a good idea, but not if some members of your group are claustrophobic; however, having windows that can be uncovered at safe times may or may not contribute a lot to the morale of those inside the building, depending on whether or not they can face what is out there, both weather wise, and with respect to the changed landscape. This is a decision your group will have to make beforehand. And especially in the time right after the pole shift, being careful about communication with the outside world could be most important.

Diversification

As far as it is possible, do not put your eggs in one basket; in other words, divide up your supplies and cache them in different places. Thus if one cache is found and looted, your community will not be left with no life options. If, in the present, you are ordering supplies by mail, do not have them sent to the address of your survival site. If a backup survival site is feasible, this would be another ideal solution, but for most, setting up one survival site is going to be difficult enough. Whatever your situation in this regard, ensure that you have a planned escape route in the event that disaster strikes. Provide each member of your group with a survival package and make certain that these are always kept close at hand. In the event that your group should become separated, at least survival will be possible until you can find each other again.

Alarms

If you have a fairly high-tech settlement, there are motion detection devices which could be adapted to emit a sound to alert those inside to the arrival of intruders. Low-tech, but just as effective, would be a perimeter alarm—something as simple as a trip wire attached to something noisy, such as one or more tin cans filled with stones. A constant patrol of your camp would be a great idea, as would a night watch. Also, if you have people in your group who have an aptitude for espionage, scouts could be sent out every so often to see who or what is near, so that the threat to your community could be assessed and planned for, before it comes upon you.

Weapons

This is something that will have to be discussed by communities, and discussed thoroughly. Once you have committed yourselves to an option, it will be too late to change it after the pole shift. If you do decide that weaponry is a must, then consider the “silent” option. A noisy battle could attract helpers or rescuers, but could also bring other enemies. Ensure that those who will be handling your weapons are thoroughly familiar with them, and

well trained in their use. Failure in this regard could result not only in destruction of your community through outside forces, but in some circumstances, destruction from the inside by those who do not know what they are about. Remember too that children and weapons do not mix or that, if they do, the mixture usually produces tragic results; so that particularly if guns are your choice, keep them in a secure place, but one with easy access.

Site Selection

The location and layout of your site could be extremely important. Besides roving gangs of hooligans, there will probably be military types around, with only their own best interests at heart. These soldiers may have vehicles, and it might be wise to choose a survival site into which these vehicles cannot penetrate. Superior firepower is also a good possibility; so that if your site is invaded by the military, and no other course presents itself, abandon the site so that you and your community can live to build another day. In other words, discretion is very definitely the better part of valor. Be totally familiar with your site, even though the layout may be changed after the pole shift. The more familiar you are with it before hand, the better your grasp of such changes will be. Be very aware of all your supply caches. Such familiarity will give you the upper hand when it comes to your own survival, even if escape is the only thing that you can plan.

Transport

Imagine a world where there are no bus stops to wait for that handy bus; no subways or trains to quickly transport us to where we need to be; no planes to whisk us to the other side of the globe in a hurry; and, perhaps worst of all, no cars! Bad as the transportation system in your city might be, it will appear, in retrospect, as a model of perfect scheduling and blinding speed, as you are perhaps slogging through the mud and debris of a post pole shift world. Not only will

there be no fuel available to run any kind of transportation system, but the nature of the terrain itself will render such a system impossible. Roads will be torn up, bridges down, and your highways a muddy mess. Traveling around post pole shift will not only be extremely difficult and hazardous with regard to the terrain, but, at least in the beginning of the after-time, because of the roving gangs intent on perpetrating all kinds of assaults upon the unwary, will be downright dangerous. If, however, you must travel, either because you are on foot, or because there is somewhere you absolutely have to be, there are ways to go that will render this exercise, if not easy, then at least a viable proposition.

Tires and Wheels

Tires, obviously, are going to be a problem. Automobile tires are too heavy; bicycle tires too light. Fix flat tires by stuffing as much stiff foam rubber (tight cell is best, but open cell works) into the tire as you can get, and still have the ability to put the tire back together. Foam may have to be cut into smaller pieces in order to accomplish this. Also, stuffing the small pieces into the tube first, stuffing the tube into the tire, and prying it onto the rim would be another way. Not as easy as it sounds; but the results would be worth the effort. Easier right now to purchase pre-shaped foam tube replacements from stores such as Wall Mart, put in just like the tube. Tube-type tires can probably be made near-puncture proof by filling with two parts foaming rubber, or flat fix, available at auto-parts houses, or, alternatively, a 2 part epoxy mix (the softer, more rubbery type). Theoretically you could wear the rubber off and still keep going. No matter what decision you make, patches for tube tires should be kept in stock. Generally, things with larger diameter wheels are easier to push or pull by hand, especially over rough ground. Wider wheels work best for mud and sand, and although larger diameter wheels would be best for our application, one must take into account the mass and weight of these wheels as compared to the mass to be moved so as to keep the unit light and efficient. For stability, wheels should be a good distance apart, with the

load close to the ground, and near the center of the axle.

Carts

One way to move things around in the after-time could be provided by carts which could be adapted for use over rough ground. One of the best suggestions is an old military cart used to carry ammunition, if you can find such a thing. These are expensive, but would take a lot of abuse, and have solid tires. Garden carts, large-wheeled furniture dollies, and large red wagons are also good possibilities. Another great option is a double-wheeled hunting cart. These vehicles are rugged, and will go through any terrain, easily pulled by one or two people. An added benefit here is that when not being used for transportation, this will serve as a cot! And then there is always the “pack trailer”. Can be purchased now from recreational or camping suppliers, but could easily be assembled, should the need arise, likely with things just lying around after the shift. One of our Troubled Times members, five foot six and 150 lbs, claims she has no trouble pulling one of these trailers on camping trips, and documentation on their construction is out there for your group to follow.

Boats

There will be a lot of water around after the shift, and it would be well to be prepared for this. There are many boats that could be taken with us into the after-time, which could now be cheaply bought and stored against the need. Besides all of the rubber dinghies, canoes, rafts etc. that would fill this bill, there is one boat which would be great for this application, and this is the paddleboat. Using no gasoline and no oars, all it requires is strong leg muscles, and there you have your local transportation! Of course if you wish to live on the water, you could have built-in transport with a houseboat.

Bicycles

These may not be able to be used immediately after the shift, but should be taken into the after-time, in whole or in part, for use

later, when perhaps, in some parts of the world at least, the mud and debris will have settled down a little. One of the suggested vehicles which may work is an off-road mountain bike with puncture-proof tires. The Quadra cycle, or quad recumbent pedal car, looks like a really interesting mode of transportation, at least over flat terrain.

Electric

Electric tractors and off-road vehicles become practical if a power source is carried for recharging or, alternatively, if the traveler can stay close to a fixed-location generator. The advantage of an electric tractor would be its ability to pull behind it a trailer for family and possessions. Primarily suitable for flat, windy terrain, there are some interesting ideas out there right now for the design of a “sailboat” type car, and your community would do well to mount some research in this area.

Motor Homes

It appears that motor homes may be too lightly constructed to be of much use during or after the shift, and although this could be remedied, one or two domes could probably be built for the same cost.

Snow

If you are in a winter climate, snowshoes and skis would facilitate traveling.

Birth Control

This is a very tricky issue under any circumstances, but one which must be addressed thoroughly by your group before the pole shift comes upon us. There will be young women in your community eager and willing to have children, but the pros and cons must be very carefully weighed. What are your present resources? How sustainable are those resources, and what is the prognosis for adding to them in the future? What is the state of health of your

group, and are conditions on your site optimal for supporting children? These and many other questions should be asked and answered before a decision is made as to whether or not your community should bring children into the world, and as to when this should be done. It will not be a question of one family deciding to have a child; the whole community must be involved. Here below are a few different methods of contraception; but whether or not you decide to use them, or any others, is entirely up to you.

Herbal Contraceptives

Queen Anne's Lace is the herb mostly mentioned in this regard, but from a reliable source comes the information that results, when using herbs as contraceptives, are not consistent.

Plug and Play

From the Aborigines of Australia comes this method which is crude, but effective. It requires some primitive surgery. A hole is made in the base of the male penis, into which a wooden plug can be inserted. During intercourse this plug is removed, enabling ejaculation to take place through the hole in the base of the penis. When conception is desired, the plug is left in place. Not exactly an attractive solution, but desperate situations do require desperate measures.

The Acid Test

One suggested method is to insert a vinegar-soaked sponge into the vagina, prior to intercourse. A piece of string attached to the sponge will ensure retrieval after some hours. The acid will cause an environment hostile to sperm. It must be assumed that the juice of any citrus fruit will have the same effect.

Modern Contraceptives

If you are planning on taking supplies of anything into the after-time, things like birth control pills and condoms aren't going to take up that much space. Just as an example, 48 condoms would take up less space than a small roll of toilet

paper; a year's supply of birth control pills would occupy the space of a 16-ounce jar of peanut butter. Your biggest problem could even be collecting such pills, unless you have a physician who is willing to prescribe a year's supply. But certainly for the immediate after-time it might be as well to have these things available.

Sterilization

More drastic than some of the above-mentioned methods and likely to be safer, would be sterilization. But both vasectomies and tubal ligations have been known to fail, and if this is going to be done, it should be performed at least a year before the pole shift, since if these methods are going to fail, they usually do so within the first year.

Modern means of contraception have not always been available, and any that you take with you into the after-time are not going to last forever. Cultures previous to ours must have had their own methods of dealing with this situation. And remember, the safest of all birth control methods—but the least fun—is total abstinence.

This concludes the offering by Troubled Times, Inc.
of solutions to problems that would be
presented by a catastrophe such as a pole shift
and life immediately afterwards.



Book List

This book list is intended to be a suggested start, not a comprehensive list of the resources available in print. Books can be carried with you, shared with others, and researched when you are most desperate for information. Buy them and treasure them.

Pole Shift

The 12th Planet, by Zecharia Sitchin
Avon, ISBN: 038039362X

Earth in Upheaval, by Immanuel Velikovsky
Amereon Ltd, ISBN: 0848814991

Worlds in Collision, by Immanuel Velikovsky
Amereon Ltd, ISBN: 0848815009

Peace of Mind in Earthquake Country, by Peter Yanev
Chronicle Books, ISBN: 0877017719

SAS Survival Handbook, by John Wiseman
Collins Publishers San Francisco, ISBN: 0002171856

No Such Thing As Doomsday, by Phillip Hoag
Yellowstone River Publishing, ISBN: 1888865016

Being On Foot

Camping and Woodcraft, by Horace Kephart
Univ of Tennessee Press, ISBN: 0870495569

*Primitive Wilderness Living & Survival Skills:
Naked into the Wilderness*, by John and Geri McPherson
ISBN: 0967877776

Edible Wild Plants, by Oliver Perry Medsger
McGraw-Hill, ISBN: 0071364439

Handbook of Edible Wild Plants and Weeds, by Fern J. Ritchie
Ritchie Unlimited Publications, ISBN: 0939656264

Insects as Human Food, by Dr W. Junk, The Hague

Handbook of Edible Weeds, by James A. Duke
CRC Press, ISBN: 0849342252

Honey from a Weed, by Patience Gray
Foodword, ISBN: 0907325300

Man Eating Bugs: The Art and Science of Eating Insects,
by Peter Menzel and Faith
Ten Speed Press, ISBN: 1580080227

Introductory Mycology, by Alexopolous
John Wiley & Sons, ISBN: 0471522295

Housing

The Fifty Dollar and Up Underground House Book
by Mike Oehler, Mole Publishing Co, ISBN: 9991096922

Adobe: Build It Yourself, by Paul Graham McHenry
University of Arizona Press, ISBN: 0816509484

The Owner Built Home, by Ken Kern
Owner Builder Publications, ISBN: 0686312201

The Rammed Earth House, by David Easton
Chelsea Green Publishing Co, ISBN: 0930031792

The Straw Bale House, by Athena and Bill Steen,
David Bainbridge, and David Eisenberg
Chelsea Green Publishing Co, ISBN: 0930031717

The Cobber's Companion: How to Build Your Own Earthen Home
by Michael G. Smith, Cob Cottage, ISBN: 0966373804

Carpentry & Construction,

by Rex Miller, Mark Miller, and Glenn Baker

McGraw-Hill Professional Publishing, ISBN: 0070420521

Crafts

The Potter's Dictionary of Materials and Techniques,

by Frank and Janet Hamer

University of Pennsylvania Press, ISBN: 0812234049

Foxfire, edited by Eliot Wigginton, ISBN: 0385073534

Anchor Books

Foxfire 2, ISBN: 0385022670

Foxfire 3, ISBN: 0385022727

Foxfire 4, ISBN: 0385120877

Foxfire 5, ISBN: 0385143087

Foxfire 6, ISBN: 0385152728

Foxfire 7, ISBN: 0385152442

Foxfire 8, ISBN: 0385177410

Foxfire 9, ISBN: 0385177445

Foxfire 10, ISBN: 0385422768

Foxfire 11, ISBN: 0385494610

*The Handyman's Book: Essential Woodworking Tools and
Techniques*, by Paul N. Hasluck

Ten Speed Press, ISBN: 1580082262

Handy Farm Devices and How to Make Them, by Rolfe Cobleigh

The Lyons Press, ISBN: 1558214321

How to Make Primitive Pottery, by Gibby, Amazon.COM

Practical Blacksmithing, by M.T. Richardson, Astragal Press

Part 1, ISBN: 1879335816

Part 2, ISBN: 1879335824

*Back to Basics: How to Learn and Enjoy Traditional American
Skills*, Reader's Digest Adult, ISBN: 0895779390

Hunting

The Traditional Bowyers Bible, by Jim Hamm (Editor),
Glenn Parker, Jay Massey, Al Herrin, Bert Grayson
The Lyons Press, ISBN: 1585740861

First Aid

*Book for Midwives: A Manual for Traditional Birth Attendants
and Community Midwives*, by Susan Klein, Suellen Miller
Hesperian Foundation, ISBN: 0942364228

The Complete Book of Dental Remedies, by Flora Parsa Stay, DDS
Avery Penguin Putnam, ISBN: 0895296578

Ditch Medicine: Advanced Field Procedures for Emergencies,
by Hugh L. Coffee, Amazon.COM

Emergency Care and Transportation of the Sick and Injured,
edited by Bruce D. Browner and Lenworth M. Jacobs, and
American Academy of Orthopaedic Surgeons,
Jones & Bartlett Publishers, ISBN: 0763707961

Emergency War Surgery, edited by Thomas E. Bowen
DIANE Publishing Co, ISBN: 0788102915

Special Forces Medical Handbook, by the US Army
Paladin Press, ISBN: 0873644549

Where There is No Dentist, by Murray Dickson
Hesperian Foundation, ISBN: 0942364058

Where There is No Doctor, by David Werner
Hesperian Foundation, ISBN: 0942364155

Herbs

*Dian Dincin Buchman's Herbal Medicine: The Natural Way to
Get Well and Stay Well*, by Dian Dincin Buchman
Random House Value Publishers, ISBN: 051714767X

The Complete Guide to Medicinal Herbs, by Penelope Ody
DK Publishing, ISBN: 0789467852

The Herb Book, by John B. Lust
Bantam Books, ISBN: 0553267701

Herbally Yours, by Penny C. Royal
Sound Nutrition, ISBN: 096092261X

Energy

Lejay Manual, Lindsay Publications Inc., Po box 538,
Bradley IL 60915-0538, (815) 935-5353

Windpower Workshop, by Hugh Piggott, and Tim Kirby
New Society Publishers, ISBN: 1898049203

Direct Current Fundamentals, by Orla E. Loper and Edgar Tdsen
Delmar Publishers, ISBN: 0766809595

Electrician's Pocket Manual, by Rex Miller
McGraw-Hill Professional Publishing, ISBN: 0071360263

Electronics the Easy Way, by Rex Miller, and Mark R. Miller
Barrons Educational Series, ISBN: 0812091442

MacHinists Library, by Rex Miller
Audel Books; ISBN: 0672233800

All About Hydraulic Ram Pumps, by Don R. Wilson
Atlas Pubns; ISBN: 0963152629

Independent Energy Guild
Backwoods Home Magazine, (800) 835-2418

Living on 12 Volts with Ample Power, by David Smead,
Ruth Ishihara, Ruth Ishihara, and Nancy Overman
Rides Publishing Co, ISBN: 0945415052

Motors as Generators for Micro-Hydro Power, by Nigel Smith
Intermediate Technology, ISBN: 1853392863

Gardening

Build Your Ark!, by Geri Guidetti
Ark Institute, ISBN: 0938928015

Earth Food Spirulina, by Robert Henrikson
Ronore Enterprises, Inc, ISBN: 0962311103

Rodale's All-New Encyclopedia of Organic Gardening,
by Marshall Bradley, Barbara W. Ellis, and Fern Marshall
Bradley, Rodale Press, ISBN: 0875965997

Humanure: A Guide to Composting Human Manure, by Joseph
C. Jenkins, Chelsea Green Publishing Co, ISBN: 096442584X

*Hydroponic Food Production: A Definitive Guidebook of
Soilless Food-Growing Methods*, by Howard M Resh, Ph.D.
Woodbridge Press Publishers, ISBN: 0880072229

*The Organic Gardener's Handbook of Natural Insect and Disease
Control*, edited by Barbara W. Ellis
Rodale Press, ISBN: 0875967531

Permaculture, A Designer's Manual, by Bill Mollinson
Tagari Publications, ISBN: 0908228015

The Secret Life of Plants, by Peter Tompkins, Christopher Bird
HarperCollins, ISBN: 0060915870

Seed to Seed, by Suzanne Ashworth
Seed Saver Publications, ISBN: 0961397772

Mycology in Sustainable Development,
by Mary Egdahl Palm, Ignacio H. Chapela,
Parkway Publishers, ISBN: 1887905014

Cooking

Stocking Up: The Third Edition of the Classic Preserving Guide,
by Carol Huppig, Fireside, ISBN: 0671693956

The New Book of Whole Grains, by Marlene Anne Bumgarn
St. Martin's Press, ISBN: 0312156014

Dead Doctors Don't Lie, by Joel Wallach, Dr. Ma Lan
Legacy Communications, ISBN: 1880692406

Diet for a Small Planet, by Frances Moore Lappe
Ballantine Books, ISBN: 0345321200

Making the Best of the Basics, by James Talmage Stevens
Gold Leaf Press, ISBN: 1882723252

The Doctors Book of Food Remedies, by Selene Yeager,
Prevention Health Books
St. Martin's Press, ISBN: 1579543626

Enzyme Nutrition, by Edward Howell
Lotus Press, ISBN: 0895292211

Short Wave Radio

ARRL Handbook for Radio Amateurs 2001
American Radio Relay League, ISBN: 0872591867

Now You're Talking, by Larry D. Wolfgang and Joel P. Kleinman
American Radio Relay League, ISBN: 0872597970

Technician No-Code Plus, by Gordon West WB6NOA
Master Publications Inc, ISBN: 0945053169

Internet

The Troubled Times web site contains pertinent information over a hundred TOPICs which has been contributed by hundreds of volunteers. These individuals are not necessarily members of the non-profit corporation, as the nonprofit corporation was formed from a subset of these individual, to increase the educational outreach. The home page of the Troubed Times web site is at:

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These TOPIC's are categorized into Energy, Food, Shelter, Health, Teams, Information, and The Word. These categories can be readily accessed from the Hub page. The Troubled Times TOPIC reference and link to almost a thousand other web sites, within the TOPICs.

Mailing lists are maintained for working groups (tt-forum), discussions on current earth changes (tt-watch), discussions on the emotional adjustments (tt-social), and a welcoming list for newcomers with questions (tt-welcome). Joining one of these open mailing lists is facilitated by the Membership page.

Troubled Times, Inc. supports operations such as the seed growing (tt-seeds) and short wave radio with packet relay (tt-radio), and offers an Adobe PDF version of this booklet online. The home page of the Troubed Times, Inc. web site is at:

<http://www.troubled-times.org>



Addendum to the Troubled Times Survival Booklet

In the course of constant review and continual updating of the material in the electronic version of our booklet, the following errors have been found in first edition of our printed version. These errors will have been corrected in any subsequent editions of the booklet should they be published. Please accept this addendum to your booklet along with our sincere apologies for any confusion these errors may have caused.

On page 32, in the Adobe Brick section, add “clay” to the list of ingredients for adobe bricks in the first sentence.

In the first sentence of the 12 Volt/DC section on page 50, and on in the first sentence on page 51, replace “alternative” with “alternating.”

On page 55, the heading “Nichol-Cadmium (ni-cad) Batteries” contains a misspelling of “nickel.”

In the last paragraph on page 69, delete the parenthetical phrase “(or gypsum).” Also add “Though is contains only trace amounts of potassium and phosphorous,” to the beginning of the last sentence on that page, which begins with “Gypsum has several properties that make it a good substitute for wood ash...”

On page 70, in the Honey and Bees section, replace “...nutrients such as 35% protein, half of all amino acids...” with “...nutrients such as 3.5% protein, from 11 to 21 free amino acids...”

On page 71, delete the following sentences in their entirety. “Eaten raw, they can be a cholesterol hazard. The trick, according to one of our Troubled Times experts, is to cook the egg whites hard, leaving the yolks soft, as in some boiled or poached eggs. This will help neutralize the cholesterol risk.” (Recent scientific studies show that eggs may actually contain less cholesterol than originally thought, and there does not appear to be any evidence showing that raw eggs have more cholesterol than cooked eggs.)