

THINGS YOU NEED TO KNOW ABOUT WATER

Note of the co-author, this file is not finished yet as I write this on June 25 1995, it even needs a bit of translation still, which will be done in the final upload, so please bear with me till then.

However I believe that so far all which is written can be used without too much problem. If you see any glaring mistakes write them to me & I will make the necessary correction. Thanks.

Note add on: this chapter as well as many others will need picture in order to be well understood.

At the present they are not yet included, not having a scanner nor the money but as soon as I can I will do that rest assure and not only for this chapter alone but for the rest of the book. Thanks for your understanding so far.

NOTE OF THE CO-AUTHOR: OUR APOLOGIES FOR THE FOLLOWING TEXT WHICH OFTEN TIMES WILL REFER TO PIX # THOSE PIX ARE NOT IN THIS BOOK YET.

They will be part of the later edition when \$\$\$ comes along for me to scan all of them not only for this particular chapter but the rest of the book. This note is written as of June 1995, lets hope for all that by this time next year if not sooner we will have all that resolved. Thanks.

Hey if you really are mad and have some \$\$\$ to throw me, send it along and I will hire a honey of Secretary who will do the job of scanning plus translation even the coffee, then I will upload it sooner than later, who know I could even end up marrying her to make it a happy ending. Oh well, one can dream. Anyway thanks for your understanding and help. PS I still need help in plants. Cio!!!

WATER:

Associated directly with food is water. These 2 are **ESSENTIAL** to life. Many men died because they did not know how nor where to look for water in apparently dry and arid regions.

WATER IS EVEN MORE ESSENTIAL THAN FOOD FOR SURVIVAL.

Thus one has to know how to find it and fast if one is to survive. Reaaal FASSSTTT!

We know today that you can go up to 60 days without solid food, but you will be tormented by hunger etc., but not without water.

Many different forms of life are certain indicators of water in the near vicinity. The bees **MUST** have water.

Pigeons and all grain eaters **MUST** have water, but the flesh eaters such as the crow and the hawks and eagles can go without water for a long period.

By knowing something of the nature of the insects, birds animals and reptiles you can often find their hidden stores of precious water.

WATER:

Since most of the common diseases in a survival situation are water-born, pollution of drinking water MUST BE RIGOROUSLY AVOIDED.

WATER HAZARD:

It is **only** the most basic common sense!
(Some seem not to have any?)

NEVER! NEVER! EVER TAKE THE SLIGHTEST UNNECESSARY RISK WITH DOUBTFUL WATER.

Any one of us can generally get along a while longer without a drink.

**JUST MOISTENING!
YES! JUST
MOISTENING! YOUR
LIPS!
IN WATER**

1 DROP of which is contaminated can on the other hand, so sicken us that

if nothing worse we will become to weak to travel!

THE SAFEST PRINCIPLE REGARDING PURITY MUST BE USED AT ALL TIME!

How can you tell if water is pure? Short of a laboratory we can not, for even where a mountain rill bubble through sheer mountain fastness, the putrefying carcass of a winter-killed animal may be lying a few yards upstream.

The folklore that any water a dog will drink is pure enough for his master is false. We have often seen dogs drink from toilet water.

The same notion for horse is also false. Smell or no smell is no guaranty, sulphurous water stinks like hell, **yet it is safe to drink** boiled or when not polluted, if you travel you know what I mean.

The fact that natives may assert a water source is pure may mean instead that either they have built up a certain degree of immunity or because of familiarity they can not believe the water is tainted (polluted).

Even the loneliest wild stream can be infected with this so called rabbit fever by such wild animals as muskrats and beavers.

Yet taking chances with drinking water in a well-settled community is in one sense a lot less **dangerous** than trying out water in a wilderness away from medical help.

STRANGE COUNTRIES & CAUTION:

When in strange country it **is also safer not to drink tap water but rather buy and drink bottle water** or get ready for the Tourista which is a mild case of "run" which could cause graver sickness.

So the SAFEST principle in any event is to assume ALL WATER to be IMPURE until proved otherwise, positively & recently!

MAKING SURE IT IS PURE!?!:

Water can be rid of germs by boiling. The exact time required to accomplish this depends on altitude, the nature of impurity and several other factors, so a **safe general rule is at least 10 minutes**, longer is by no means a waste except for fuel.

If there is a reasonable doubt that water is contaminated don't take chances even if in hurry and harried although such a process of purifying water takes time and trouble.

A great deal more inconvenience and delay can result from using just any water.

BOILING TAKES ONLY 10 MINUTES.

Getting sick takes days even weeks some time before getting any better, some time **death** is the end result.

Nor this applies **only** to water that is actually drunk. It is also applicable with equal gravity to any water drop of which may enter the human body.

Ex: The water in which the toothbrush is dipped, water in which food and utensils are washed, and water for cooking except when kept in high enough temperature for a sufficient time to insure purity.

We repeat, that boiled water tastes flat, so air and taste can be restored by pouring the cooled water back and forth between 2 utensils or by shaking it in a partially filled jar or canteen.

Or if one is in hurry and has salt, just add a pinch of salt.

WHY 10 MINUTES BOILING?:

Some Germs could survive even 10 minutes boiling so; you can not take chances unless you are ready to die or to be sick like dog!

STAGNANT WATER & POLLUTED WATER:*

Both can be made safe to drink without equipment.

If time permits such water can be filtered trough a sieve of charcoal.

This will both clarify and to a large extent purify the water, but it is **ALWAYS SAFER TO BOIL WATER BEFORE DRINKING AT LEAST 10 MINUTES**, plus once boiled, swirl the water for a minute or so to give back its oxygen and taste.

MUDDY WATERS CLEANING METHODS:

If the water is muddy, the clay particles in flotation in the water can be precipitated by a pinch of alum which will precipitate the particles and so clarify the water.

This **however requires at least 12 hours to wait**. Lots of wood!

If no artificial means such as IODINE tablets are available, the polluted or dirty water can be filtered by straining through closely woven garments such as a felt hat or a pair of thick drill trousers.

HOT STONES METHOD:

The water if polluted can be sterilised by adding hot stones to the water in the filter. The water will soon boil and so made sterile & safe drink.

In area where there is a likelihood of water being infected with bacteria (near cities or villages), it is **ALWAYS SAFER TO BOIL BEFORE DRINKING** or put a pinch of chloride of lime.

Water which is **very** muddy, dirty or stagnant can be clarified and sterilised through a good filter made from a pair of drill trousers with one leg turned inside out and put inside the other leg.

The cuff is tied and the upper part held open by 3 stakes driven well into the ground. Fill with the dirty water and then drop in the hot stones.

The water will filter through and **MUST** be caught by a container and poured pack until the dirt has been filtered and **the water is boiling at least 10 minutes**. **REMEMBER JUST MOISTENING polluted water will make you sick for days and can even kill you in short term.****

EXTREMELY IMPORTANT EVEN DEADLY NOT TO KNOW OR BE AWARE OF EVEN TASTING IT WOULD DO THAT.

TO CLEAN & PURIFY MUDDY WATER:

- 1) Let it rest during 12 hours.
- 2) Let it circulate inside a bamboo stick measuring 1 metre long which you have filled with sand & the end is filled with grass.
- 3) Dump water in a cloth filled with sand which filters the mud.
- 4) **Boil that water afterward. 10 Minutes minimum.**

WATER PURITY:

Once you have found a water source, you have tow old drinking rules to choose from, depending on how healthy you are, how cautious you are and where you are.

The first is, when doubt about water, purify it. The second is, a lively bubbling stream cleans itself in 30 feet of flowing over rocks and sands.

Or as one old codger I know, referring to the same quality of stream bed, put it succinctly, "If the cow's around the bend, the water's fit to drink."

Which rule you follow is up to you. We tend to use the second when in mountainous, wooded country.

Our stomachs might not be cast iron, but they are pretty resistant to Montezuma's Revenge and La Turista. Yet as pollution increases we lean more and more to the first rule.

Boiling takes a lot of fuel and a lot of time to cool off but in **dangerous** regions it is better to drink a lot of tea rather than wait for the water to cool off. Halazone 1 tablet per pint of water or 2 if in **serious** doubt.

You **MUST** still let it stand 1/2 hour or more to be safe to drink but it tastes funny like a water from a swimming pool.

Yet aerating the water by pouring it back and forth between two containers several times will eliminate most of the chlorine taste.

This chemical is quite volatile and if you hold your breath while drinking it, you will hardly taste a thing.

SIMPLE CHEMICAL PURIFICATION:

One can buy at most sporting goods and Drug Store a 2 ounce bottle containing 100 Iodine tablets *s/kit.

Since their purifying action depends upon the release of chlorine gas, these should be fresh and the container kept tightly closed and its contend dry.

NO PURIFICATION OF WATER BY CHEMICAL MEANS IS AS SAFE AS BOILING.

But 2 tabs of Iodine will ordinarily make a quart of water safe for human consumption in 1/2 hour.

If the water is muddy or if its integrity seems particularly questionable it is good insurance to double **at least** the amount of halazone and the time as well to be sure.

Care **MUST** be taken with chemical purifier so employed to disinfect all points of contact with the container, so that the water once sterilised will not be easily reinfected.

If a jar or canteen is being used together with Iodine, replace the cover loosely and wait 30 minutes so that the tablets can dissolve.

Then shake the contents thoroughly, allowing some of the water to spill out over the top and lips of the holder.

Tighten the cover then and leave it that way for the time required before using any of the water.

YOU CAN USE CHLORIDE OF LIME:

Chlorine in some form is regarded as the most dependable disinfectant for drinking water.

When introduced in proper quantities it destroys any existing organisms and for as long as enough remains in the water, it prevents reoccurring contamination. It is better to err moderately on the side of over-dosage if at all than not enough.

EMERGENCY CHLORINATING DONE IN 3 STEPS:

- 1) Dissolving one heaping tablespoon of chloride of lime in 8 quarts of water.
- 2) Adding one part of this solution to 100 parts of the water to be disinfected.
- 3) Waiting **at least** 30 minutes before using. The stock solution **MUST** be kept tightly corked in a cool, dark place and even then it should be frequently renewed.

IODINE AS A GERMICIDE:

(Now in pills has replaced the old Halazone pills.)

Tincture of iodine can be used as an **emergency** purifier. A drop of this fresh antiseptic, mixed thoroughly with one quart of water in the same manner as the old Halazone pills will generally make the water fit to drink in 30 minutes.

Both the amount and time may be doubled if this **precaution** seems warranted.

IODINE WATER PURIFICATION TABLETS:

Chlorine-releasing compound **can not be relied upon** in Semi-Tropical and Tropical areas**.

Neither there nor anywhere else incidentally does the addition of liquor to ice nor water rid either of the latter of germs. (Germs keep well in ice, they don't die).

So water in those regions **MUST** be sterilized either by boiling or by iodine water purification tablets.

Containing the active Tetraglycine Hydroperiodine, these have been adopted as standard by the armed services of the USA.

The tablets have been proved effective against all the common water-borne bacteria. Added to water each tablet frees 8 milligrams of iodine which act as a water purification factor.

One tablet will purify one quart of water. These tablets too **MUST** be kept dry. The bottle **MUST** be recapped tightly after opening.

- 1) Add one tablet to a quart of water in container with cap. / 2) Wait 3 minutes.
- 3) Shake water thoroughly, allowing a little water to leak out and disinfect the screw threads before tightening the cap.
- 4) Wait 10 minutes before drinking or adding beverage powders and if water is **very** cold wait 20 minutes.
- 5) If water contains decaying vegetation or is murky and discoloured use 2 tablets for every one quart.
- 6) **MAKE CERTAIN** that the iodine disinfects any part of the container which will come in contact with your lips.

OTHER CHEMICAL TO STERILIZE WATER:

- 1) **JAVEL:** You add 5 drops of Javel per 4.5 litres of water **NEVER pass that dosage**. Its inconvenient is that water taste acid.

2) #Permanganate de Potasse#: Drop a piece of it in the water in a way that the water is **HARDLY** tainted & **WAIT 1 hour before drinking.**

3) In South America people purify water ponds with copper sulphate 1 million part to one part of water.

HOW TO RECOGNIZE POISONOUS WATER HOLES?:

A few water holes as in the southwestern deserts of North America contain dissolved **poison** such as arsenic.

Once can recognize these easily, partly because of bones of unwary animals scattered about but mainly because green vegetation will be conspicuously absent, **so avoid any water hole around without green plants.**

HARD WATER:

If the area travelled has hard water which we are not accustomed, severe digestive upsets may result if while getting used to it we absorb more than small amount at any one time.

Boiling may be of some help, but that is all one can do, until one gets used to it. Sorry to be so hard on you.

HOW TO MAKE A FILTER:

Water can be cleared by filtration although this process will neither affect any dissolved minerals nor will it ensure purity.

Water is polluted by animal and mineral matter rather than by discolouring vegetable substances such as grass roots and dead leaves.

The first two can not be removed with any sureness by ordinary filtering. The filter is to clear water by straining solid material from it.

A wild filter can be made without too much trouble particularly in sand by scooping a hole a few feet from the source of supply and using water seeping into it.

POISONED RIVER:

While fighting the Boers, Baden Powel came across this problem, and resolved it this way, having learned that the water had been **poisoned.**

He simply dug a hole **at 9 feet from the river bank** and let the water seep through thus eliminating the **poison. However the hole MUST be dug deeper than the river bed.**

A WAY TO SWEETEN WATER:

Camping in a swamp or by a pond which has an unpleasant odour you will want to sweeten and purify the water in a single operation.

Just drop several bits of charred hardwood from the campfire into the boiling pot. 10 or 15 min of simmering will do the job.

Then you can skim away most of the foreign matters and then strain the water through a clean cloth or if plenty of time and pots, merely allow it to settle.

WATER HAZARDS and SICKNESS:

DISEASES FROM WATER MAKE ONE OF THE GREATEST THREAT TO SURVIVAL IF NOT THE GREATEST AFTER INJURIES COLD AND MAN!

Among them which we find: Dysentery, Cholera, Typhoid, Douves.

DYSENTERY:

This sickness causes a general diarrhoea, painful and long duration with bloody shit and weaknesses.

If you think you suffer it, eat frequently and drink if possible coconut milk, boiled water.

As for coconut milk being a laxative drink **only** small dosage. Boiled rice is strongly recommended as food in that case.

CHOLERA AND TYPHOID:

Even with vaccine you stay vulnerable to those diseases if you don't take proper care of your water drinking habits.

DOUVES: *

They abound in stagnant and polluted water especially in the Tropics. When you swallow them, they infiltrate the blood **causing severe sickness and often death.**

Those parasites worms penetrate even the body through the skin. Thus don't walk or bath in contaminated waters.

LEECHES & HOW TO RID OF THEM:

The small leeches abound most particularly in water streams of Africa.

When swallowed they cling to throat and nose passages. They suck the blood and cause wounds.

Those parasites move and each time they cause new open wounds which open the way to infection.

Clean your nose as quickly as possible by sniffing **very** salted water or remove those leeches with improvised tweezers or with the heat of a cigarette an old jungle trick or rubbing salt on them will make them go away.

WHERE TO FIND WATER?:

One is **ALWAYS** learning from nature. Several principles serve to aid one; water flows downhill.

So we are not surprised to find water near the tops of mountains indicated by a lush area or a thread of green **#verdancy#** coming down a slope.

Water is also prone to lie near the base of hills where it can often be recognized by the intensity of vegetation.

When country is flat and open, long meandering tangles of such brush and shrubs as alder and willow will tell us their tale.

WHEN TO FOLLOW GAME TRAIL:

Those trails often indicate water presence and a usually reliable indication being a marked increase and a progressively deepening and widening thereof.

So follow these. If travelling in the North you will come to recognize that such trails commonly mean a muskeg lies ahead and that the easiest procedure will be the following of the animal thoroughfare around it.

DESERT WATER:

Water seeks the lowest level available and on the desert these may be underground.

If you see hills, head toward them, for the likeliest place to find water is at their base.

Perhaps you have come across the thin shallow bed of a stream. Even though it is dry, water may lie beneath the surface. Hunt for a low place in the cut and dig.

The same procedure applies in the case of a dry lake bottoms. The presence of any water will soon be indicated by damp sand.

Game trails in desert country usually lead to water. Follow them downhill if the land so slopes that you can do this with certainty.

Otherwise scout around till you can **MAKE SURE** in which direction the paths have become more frequented and this will be the way to go.

If you happen upon a palm, you can depend on water being at hand generally within several feet of the base of the tree. **Reed grass is also a sound sign that moisture is near.**

However in general it is futile to search water near desert plants, for this one has already taken it, so use the plant itself from its roots which you dig, pull and section off. As seen above.* As for the cactus you cut off the head.

In the Arizona desert there is a cactus in a bottle shape which contains near 7 quarts of water but **only** in Arizona.

But with a good knife it will take you some 40 minutes of hard work to cut the **very** tough and prickly skin.

The water is in the plant not in the soil. The **only** danger comes from milky sap as seen from cactus in African desert, yet the Barrel cactus is the milky exception.

DEW:

Which settles after cold nights in many stretches of deserts has also been a life saver. Survivors have mopped it up from the metal of their wrecked plane or collected in tarpaulins.

DEW MUST BE COLLECTED BEFORE THE SUNRISE, FOR IT EVAPORATES FAST.

An abundant dew can give a little more than 1 litre of water/hour. Thirsty Bedouins sometimes dig up cool stones just before sunrise and wait till dew settles on them, then lick it up.

In many desert regions according to Israeli scientist Shmuel Duvdevani dew falls in a quantity which would amount to 25 inches in a year.

During the war one of the strangest source of water were the wreck of burned out or shot up jeeps and tanks and trucks.

Airmen after crash walked 20 miles a day filling up their water bottles regularly from the radiator of such vehicles.

BEDOUINS WATER EXPERTS:

Survival experts have taken great interest in the methods of the Bedouins with their amazing sixth sense which again and again leads them to sources of water.

Morning and evenings for instance they listen to the twittering of birds to locate where the birds get their drink.

They also find water holes by watching the direction in which the birds are flying or by following animals trails.

Flock of birds circling over one spot unless vultures usually indicate a drinking place in the desert.

Of course the water there is not **ALWAYS** pure said a survivor who found such a water hole, there was such a stench of shit that he was almost sick.

But his thirst was greater than his disgust, he has no iodine to disinfect water nor anything to make a fire with and boil it, but he drank it and was none the worse.

I should point out, that one should have dug a hole near by (**9 FEET**) and let the water seep through thus safer in some ways. **9 FEET** would also get rid of water contaminated by radiation.

Dense clouds of flies swarming over a place in the desert show **Bedouins** where there was water **only** a short while before and they **ALMOST ALWAYS FIND IT WORTH DIGGING THERE.**

Bedouins also have discovered fairly large supplies of water either on the edge of a desert **very** near salt lakes or in the middle of deep dune valleys.

The rain water collects there, seeps into the ground and settles between different layers of soil.

If while digging they hit upon wet sand with a dry layer underneath it, that is a sign that the water here has already drained off farther downhill or evaporated in which case they start digging again in a lower lying spot.

ALMOST EVERY DESERT HAS WADIS, WHERE SOMETIMES WATER IS STILL FOUND ONLY A FEW FEET UNDER A SURFACE WHICH IS APPARENTLY BONE DRY.

Of course there is often no more than a layer of mud left, but thirsty people have pressed it into a cloth and drunk the water unharmed. Those who died from it never told their stories.

AFRICAN BUSHMEN:

They however dig a small hole in the mud, stick a suction pipe into it, then suck the moisture out of the ground drop by drop, a grass filter stops any sand getting into the bottom of the pipe.

Water not needed at once is stored in blown-out ostrich eggs in which quite a large amount of liquid can be carried.

If water taste very soapy or salty it may be poisonous, In the GOBI desert for instance there are springs which contain alkali.

In Arizona several springs contain arsenic and a spring in Sahara contains so much chlorine that it corrodes clothes.

DESERT WATER PART 2:

- 1) Where you see damp soil, dig in surface.
- 2) One can find water just under the surface of a dry river. The water goes down at the lowest point of the river bed, in the exterior part of the elbow of its bed.

Digging under the concave bank of the exterior side of the river curve is the place whereas the convex side is nil. Photo* Help the water to flow by digging small holes.

- 3) Often desert people know many sheet of water which emerge from the bottom of lower land, they cover them up and hide them in many ways.

To discover them, look under slope or bank or hidden corners most particularly in semi-arid regions.

4) Look behind rocks, in trench and small ditches, on the flank of canyon or under the sharp edge of cliff and maybe you will find natural reservoirs.

Often in those places, the soil is made of solid rock or **very** hard soil well packed that collects water.

If you can't find those clues search water where the animals leave their traces.

5) In desert **REMEMBER** to observe the flight of birds particularly at dawn and dusk.

The birds glide and hover around these marshes. * #La grouse des sables de l'Asie, l'allouette huppee, l'oiseau zebre# * go there every day, parrots and pigeons are rarely **very** far from it.

6) In the GOBI desert, don't count on plants to quench your thirst. In the SAHARA, the Wild Gourd or Pumpkin* can quench thirst.

The pulp of the Barrel Cactus in USA is safe and will give 1 litre of milky fluid. (This is the exception to the milky rule) but it is tough to get to it, with a good knife you cut the upper part, you use this cactus as last resort.*

7) The roots of certain desert plants are found **very** near the surface soil. The Australian Water tree*, the Desert Oak* and the Blood Wood* are examples.

Remove these roots and cut them or better break them in length of 60-100cm. Remove the skin & suck the water contained in it.

8) The Madagascar Travelling Tree* #Le Magnolier parasol# of Western Africa * and the Australian and African Baobab* are among the plants capable of supplying water.

Don't attach too much importance about stories of contaminated wells. The acid taste of certain salty or alkaline waters rich in magnesium are the cause.

Desert waters by the nature of their surge are generally better filtered and clear than your city water. Yet better boil that water or add Iodine or Halazone pills especially in native villages or near habituated places.

WHERE TO FIND WATER IN ROCKY SOILS:

Water easily disintegrates lime stone and digs caverns which you will find springs and water sweating.

LAVA ETC.:

Because of its porosity LAVA retains much water, so you will find springs along valleys which crosses old lava flow.

When a dry canyon cut across a sandstone or gritstone layer there is water which sweats on its walls.

In region rich in granite, dig a hole in the green grass and you will discover water coming up.

IN SOFT SOILS:

Water is ordinarily more abundant and easier to discover there than in rocky soils. The phreatic sheets often come to surface in valleys and slopes.

The springs and sweating are found in the high level line of the river waters after those have retracted away.

BEFORE DIGGING TO FIND WATER, TRY TO DISCOVER THE SIGNS WHICH INDICATES ITS PRESENCE.

The bottom of a valley, at the foot of a sharp slope, a corner of vegetation which has sheltered a spring during rainy season, a low forest, sea shores are among many places where the hydrostatic level lays under the surface.

There is no need to dig deeply in order to find water. Above the level of the phreatic sheet there are small streams and ponds however those waters are contaminated and **dangerous** even when far away from any civilization. Ex. Springs below towns.

ON MOUNTAINS:

Dig in dry spring beds, for water often hides itself under the gravel. Mountain slopes usually hide springs at their feet.

OTHER SOURCES OF SUPPLY:

Creosote plants*, Willows, Elder Berry, Salted Herbs grow **only** where water is near surface.

By a starry night one can with a handkerchief mop up and gather up to 1 quart of water per hour from damp soils where you see flies.

INSECTS INDICATORS OF WATER:

Bees in an area are a certain sign of water. Rarely will you find a hive of wild bee more than 3 or 4 miles from fresh water. A bee flies a mile in 12 minutes.

So you can be sure if you see bees that you are not far from fresh water, but you will probably have to look for further indications before you find the water supply.

ANTS:

Many ants need water, so if you see a steady column of small black ants climbing a tree trunk and disappearing into a hole in a crotch it is highly probable that you will find a hidden reservoir of fresh water stored away there.

This can be proved by dipping a long straw or thin stick down the hole into which the ants are going.

If wet, then water is there. To get the water, do not on ANY account chop into the tree. If the hole is **very** small enlarge it with your knife-point at the top.

Make a mop by tying grass or a rag to a stick. Dip the mop into the water and squeeze into a container.

Another method is to take a long hollow straw and suck the water you need from the reservoir.

These natural tree reservoirs are VERY COMMON in Dry areas, and are often kept full by the dew which condensing on the upper branches of the tree, trickles down into the crotch and so into the reservoir inside the tree.

Water reservoirs are **very** common in the She-Oaks* (casuarinas) and many species of Wattle.*

MASON FLIES:*

These large, hornet-like creatures are a certain indicator of water. If you see a mason fly's building in an area you can be sure that you are within a few hundred yards of a soak of wet earth.

Search around **carefully** and you will see the mason fly hover and then suddenly drop to the ground.

If you examine the place where she landed, you will find the soil is moist and that she is busy rolling a pellet of mud for her building.

By digging down a few inches or at most a couple of feet you will surely find a spring and clear, fresh, drinkable water.

BIRD INDICATORS FINCHES:*

All the finches are grain-eaters and water drinkers. In the dry belts you may see a colony of finches and you can **be certain** that you are near water, probably a hidden spring or permanent soak.

WILD PIGEONS:

They are a reliable indicator of water. Being grain and seed eaters they spend the day out on the plains feeding and then with the approach of dusk, make for a water hole, drink their fill and fly slowly back to their nest.

Their manner of flying will tell you the direction of their water supply.

If they are flying low and swift they are flying to water but if their flight is from tree to tree and slow, they are returning from drinking saloon. (Hic!) Being heavy with water they are vulnerable to birds of prey.

GRAIN EATERS:

All the grain eaters and most of the ground feeders require water, so that if you see their tracks on the ground you can be fairly certain that there is water within a few miles of your location.

An exception are parrots and cockatoos which are not seen as reliable indicators of water.

CARNIVORES BIRDS:

Being flesh eaters they get most of the moisture they need from the flesh of their prey thus not reliable water-drinkers.

So don't regard flesh eating birds as indicator for water. Nor should you regard the water living birds as indicators of fresh or drinkable water.

MAMMALS: Mama Mia!

Nearly all mammals need water at regular intervals to keep alive.

Even the flesh eaters **MUST** drink, but animals can travel long distances between drinks and therefore unless there is a regular trail you can not be sure of

finding water where you see animals' trails. This is a general rule.

However, certain animals **NEVER** travel far from water. Ex. A fresh track of wild pigs is one sign that there is water near by.

Also fresh tracks of rooster and most of the grazing animals, whose habit is to drink regularly at dawn or dusk. In general water is found by following these trails downhill.

FROGS ETC.: (French???)

Frogs, salamanders, weevil charancons* **ALWAYS** look for a damp place to rest and usually if we dig under them you will find water points even springs.

REPTILES:

Most of the land-living reptiles are independent to a **very** large extent on water. They get what they need from dew and the flesh of their prey thus not indicator or water stool.

WATER FROM VEGETABLE SOURCES: *

The roots and branches of many trees contain sufficient free-flowing fluid to relieve thirst and this can be collected by breaking into 3 feet lengths the roots or branches and standing these in a trough of bark** into which the collected fluid will drain to the container.

In some plants the amount of stored water is truly unbelievable. The water gushing out literally when the plant is cut.

WARNING!:

THESE VEGETABLE "DRINKING-WATERS" CAN NOT BE KEPT FOR MORE THAN 24 HOURS.

The fluid starts to ferment or go bad if stored and might be **dangerous** to drink if in this condition.

The nature of the plant if judged by the properties of its foliage is no guide for the drinkability of the fluid which are its sap.

For ex. The Eucalyptus* whose leaves are heavily impregnated with oils of Eucalyptus and in many cases **poisonous** to human beings, contain a drinkable fluid, easily collected from the branches or the roots. The

fluid is entirely free from the essential oils & with no taint of the Eucalyptus.*

Its roots measure from 12 to 25 metres, crawling under low depth. Pull them off, remove the bark, and the sap will sweat at both ends which you have put containers.

The **Liana or Monkey ropes found in tropical region* are an example of a prolific abundant source of water.**

There are certain **precautions** and a few danger signs with regard to vegetable fluids.

If the fluid is milky or red or coloured in any way it **MUST** be regarded as **DANGEROUS**, not **only** to drink but also to the skin.

Many of the milky saps except those of the ficus family** which contain latex or a natural rubber **are EXTREMELY POISONOUS.**

One exception known = Barrel cactus USA.

The milky sap of many weeds can **poison** the skin and form bad sores and if allowed to get into the eyes cause blindness.

With ALL vegetable sources of fluid even though the water itself is clear, taste it first & if quite or almost tasteless or flavourless, it is **safe to drink.**

For vegetable sources of water in arid areas, the best volume is generally obtained by scratching up the surface roots.

They are discovered close to the ground and if cut close to the tree, may be lifted and pulled, each root yielding of from 10 to 20 feet. These **MUST** be cut in 3-4 feet lengths for draining.

Many persons who have tried to obtain drinking water from vegetable sources failed to get the precious liquid to flow just because they did not break or cut the stalk or root into lengths.

UNLESS THESE BREAKS ARE MADE, THE FLUID CAN NOT FLOW and the conclusion is that the root, branch or vine is without moisture.

In general water is more plentiful from plants in gullies than on ridges. And the flow is wasted if the roots are broken into sections & **NOT CUT.**

Cutting tends to bruise and seal the capillary channels.*? **seems to be some kind of error here?*****
To investigate....

DEW COLLECTION:

In barren areas where there are no trees, it may be possible to collect sufficient moisture from the grass in the form of dew to preserve life.

One of the easiest way is to tie rags or tufts of fine grass round the ankles and walk through the herbage before the sun has risen, squeezing the moisture collected by the rags into a container.

Many explorers saved their life that way.* Pig-face and *Ice plant and *Pig weed contain large proportion of drinkable moisture.*see below as well.

WATER ON SEA COAST:*

FRESH WATER CAN ALWAYS BE FOUND ALONG THE SEA COAST BY DIGGING BEHIND THE WIND BLOWN SAND HILLS WHICH BACK MOST OCEAN BEACHES!

These sand hills trap rain water and it floats on top of the heavier salt water which filters in from the ocean.

Sand hill wells **MUST** be **only** deep enough to uncover the top inch or 2 of water.

SAND WELLS:

If dug deeper salt water will be encountered and the water from the well will be undrinkable.

It will be noticed too that the water in those wells rises and falls slightly with the tides.

THESE SAND WELLS ARE COMPLETELY RELIABLE SOURCE OF WATER ALL OVER THE WORLD.

When digging it is necessary to rivet the sides of the well with brushwood, otherwise the sand will fall into the well.

On coastal areas where cliffs fall into a sea careful search along the lower edges of the cliff will generally disclose soaks or small springs

These in general follow a fault in the rock formation and frequently are evident by a lush growth of ferns & mosses.

I also Perronally found that near the cliff at the bottom of them where you find fallen rocks meeting the sand beach, if you dig there yet not to close to those rocks, you will find water within about 1 foot down.

And as much as you want even for 20 persons and it keeps filling up every day, from time to time you scoop up the sand which fills the well.

MAKE SURE you rivet the side also and just cover the hole with some planks or drift board and mark it well so that it keeps animals away, for sand will cover it fast after a while from the nearby sand hill.

I know about them I survived on them for 5 months on a deserted island. Brion Island. QC.

SEA! MOISTURE FROM FISH FLESH:

Another source of liquid sufficient to sustain life at SEA*, when no fresh water is available any more comes from flesh of the fish.

The fish are diced and the small portions of flesh are placed in a piece of cotton cloth and the moisture wrung out. **This moisture is not excessively salty and can sustain life for a long period.**

CONDENSING SALT WATER:

It is possible to condense sea water without equipment and obtain sufficient fresh water.

A coolamon is made or alternatively a hole is scraped in the ground and lined and the salt water is put into this hole. A fire is build and stones are put into it to heat up.

These when hot are put into the salted water which soon boils and then water vapour is soaked up by a towel or thick mat of cloth.

In time this will become literally saturated and may be wrung out, yielding a fair quantity of fresh drinkable water. Once the cloth is cool the collection of water vapour is fairly rapid.

MOISTURE CONDENSATION IN ARID AREA:

This still produces about 1/2 more water between 8pm. & 8 am. than during the day. But it still works day and night for you.

Yet don't wait to drink this water **immediately** for it takes 24 hours before collecting 1 quart of water sometime 1 litre.

A simple still for water condensation in arid areas can be made from a piece of light plastic sheeting about 4 foot's square. A clean garbage bag which has been fully cut & open will do.

A hole is dug in the ground in a sunny position. The hole should be about 3 feet across and 15 inches to 18" deep or deeper if possible.

The site should be preferably in a moist ground, a depression in a creek bed is ideal if one can be found.

If green material such as shrubs or succulent herbage is near by, the hole should be lined with this and the materials pack down.

It may be necessary to weigh down the material with a few flat stones. In the centre of the hole and in the deepest part a container is placed to catch the moisture from condensation.

Lay the sheet of plastic and use some of the earth scooped from the hole to seal the edges lightly.

Place a stone in the centre of the upper side of the plastic sheet above the approximate centre of the water container to weigh it down to just over the container below.

Moisture in the soil and in the greenery placed in the hole will be drawn off by the heat of the sun and condense on the underside of the plastic.

The condensed moisture will collect into droplets, coalesce and trickle down the underside to the lowest point where it drops off into the container.

If the underside of the plastic sheet is slightly roughened with fine sandpaper or similar fine abrasive such as a piece of finely grained stone, the droplets will coalesce & run off more cleanly than if the underside is absolutely smooth.

Body waste such as urine, waste food, moist tea leaves etc. can be put into the hole.

The pure moisture **only** is condensed. From one to 4 pints of water a day can be collected by this method.

If the stay in the area is likely to be of some duration the top few inches of the hole can be removed and fresh green material replaced and the still will continue to work when this is done.

FRESH STILL SITES MAY BE NECESSARY EVERY 2ND OR 3RD DAY.

This still can also bring you food! Since water under the plastic will attract snakes and small games which will crawl under the still cone but can not go out.

This effective method was first evolved by the Water Conservation Laboratory in Arizona.

It is not necessary but **very** useful if you have a flexible plastic tube of about 1.5m long which will permit you to drink from the bottom bucket without having to remove it and stopping the recuperation.

OTHER WAYS TO FIND WATER:

EXPERIENCE WITH A OIL LAMP (ALADDIN?) (Light my water?)

At night dig a hole 2 feet deep, cover the bottom with **very** dry wood and place an oil lamp which has **very** little oil, just that the wick is imbibed, light it up and place it on the wood floor.

Cover up the hole with branches and wait till the morning to see if you oil lamp is still burning? If so, then there is water at a certain depth, dig and you shall find it. Why is that?

Because the dampness of the under water sheet increases the air condensation furnishing more oxygen thus makes the oil last longer thus keeping the flame to your oil lamp.

If however it has died, then its of lack of dampness, the oil alone has not suffice for the night duration having burn faster than the air which was too dry.

WATER FROM A LANTERN?: ALADDIN part 2:

If all other means of getting water have been exhausted, any metal container and lighted lantern may be used to obtain water.

Remove one end of the container and submerge the close end in a foot or more of salt water.

Place the lighted lantern inside the container on the bottom. Cover the open top, allowing **only** enough air to enter to keep the lantern burning.

The heat will cause moisture to form on the inside container. This can be soaked up with a rag and squeezed into a cup.

EXPERIENCE WITH A WOOL BALL!: (ASK LUCIE, you'll have a ball?!)

Do as for the oil lamp but replace it by a wool ball, put a **very** dry wool ball on the dry wood and cover the hole.

The following morning look at your ball and press it strongly, the quantity of water will tell you if its worth digging and have a water ball?

RAIN WATER:

ALWAYS SAFE TO DRINK and easy to collect with any tarp but unfortunately there are 3 exceptions, a chemical or atomic or bacteriological warfare would render this water unsafe unless filtered and boiled. Man has created its own worst problems.

CACTUS ADD ON:

One may not find Barrel Cactus if in the wrong region, yet if you need that juice, you will cut off sections of that Cactus and being wary of spines. Mash them in a container.

You will drink any resulting fluid on the spot or pour it into a second container as often as needed. If you have no utensils you will mash segments of the cactus one by one & suck the pulp.

WATER IN COLD CLIMATE:

Snow: Clean snow can be eaten any time one is thirsty. The **only precaution** is to treat it like ice cream and not to put down too much at once when overheated or chilled. Rather let it melt down in your mouth.

One of the most pleasant wilderness desserts is ice cream made with snow. You just pour milk into a container, add a sugar and some flavour such as chocolate and stir in preferably fresh light snow till taste and texture are satisfactory.

Snow drawback is that it a considerable amount is needed to equal a glass of water. Packed snow gives more water of course, ice even more.

So particular care has to be taken when melting snow to burn the pot, so melt the snow until the bottom of the pot is safely covered with several inched of water before adding more snow.

Use any tool to pack the snow as it melts to **avoid** the bottom of your pot to dry up and burn thus giving your water a taste of burn.

This nuisance is compensated for by the fact that snowfall makes water readily available throughout wilderness.

One needs a lot more water in cold weather than one expects, because the kidneys have to take over much of the process of elimination otherwise done by the sweat glands.

It is better not to eat snow when **extremely** cold, for it has the tendency to dehydrate the body and provoke chill. Let it melt slowly into your mouth in small quantity.

ICE & FRESH WATER:

This is the water supply of many an Arctic establishment but the tasks of cutting and melting is sufficiently inconvenient that when it is feasible most prefer to chop or chisel holes in lake or stream to get water.

Such holes **MUST** be covered to discourage their freezing. **Also preferable method since you waste no fuel.**

To obtain water you need twice the amount of fuel to melt snow than if you melt ice for the same quantity of water.

To break ice it is better to use a pointed tool. You first hit a few light strokes to create a split then a hard blow to break an ice piece the length desired.

On a great lake or long river, cut toward an already existing split to **avoid** making **only** small bits.

If one wants to dig a hole in a lake or river to obtain water, one **MUST be carefully do it to avoid splashing:**

First start to axe all around your hole but make **very** sure not to puncture the ice all the way to the water, until all your hole is deep and wide enough for your bucket.

Then and **only** then once you are near water on all sides you give 4 sharp blow to break the ice totally.

If you don't do this, the water will seep into your hole and you will get **dangerously** wet while trying to enlarge your hole.*

However, as far as purity is concerned, ice and the water obtained from melting ice differ in no respect from the water originally frozen.

HEAT KILLS GERMS, COLD DOES NOT. SO BEWARE & BOIL IT.

WITH THE DANGER OF GERM WARFARE:

This not becoming less in this civilization. We have to tell:

- 1) Thousands died from an especially virulent contagion of influenza that followed WW1.
- 2) Recently bacteriologists wanting to study the flu organisms journeyed to the Arctic to disinter Eskimos who had died during that epidemic.
- 3) The scientists thought that they might be able to secure live cultures from the cadavers which had been buried in the cold regions for more than half a century.
- 4) They were successful. (End of this sad story!)

SALT WATER ICE BECOMES FRESH:

The soundest reasoning leads to the wrongest conclusions when the premises are false. We are certain that the ocean is salt, so it is logical than that the ice of salt water **MUST** also be salted

Wrong! It so happens as Dr.V.Stefansson notes, the sea ice becomes fresh during the period intervening between its formation and the end of the first summer thereafter. Flat earth till Galileo!

If during freezing weather you are ever in a position where you have no other source of water but salted water as a matter of fact, you'll want to catch small amounts of the available brine and allow ice to form in

it. The slush and any remaining liquid should then be removed.

The ice you'll find fresh enough to use in the **emergency**. Ocean ice loses its salt so rapidly that ice over 1 year old is nearly fresh.

And ice formed 2 or more years old can not be distinguished as far as taste goes from river ice unless waves have been breaking over it recently or spray has been dousing it.

Melted hollow otherwise will usually be found to contain ample fresh water. Salted ice is grey and opaque whereas unsalted ice is bluish and of crystal colour.

FINDING DRINKING WATER ON OCEAN:

Rain water will often furnish drinking water at sea, when it starts to fall, the **precaution** is **immediately** taken to let it wash any accumulated salt from everything that is to be used for catching it and storing it.

Dew is heavy enough in some areas to merit being caught in a sail or tarpaulin stretched with sufficient sag to allow any condensation to collect.

One may be out of sight of land and yet so near the mouth of some great river that even far at sea the water will still be fresh.

OBTAINING WATER FROM FISH:

The proportion of water in fish is so particularly high that at sea, except when large enough **emergency** water supplies can be secured from ice or rain, fish are the most dependable source.

They can be caught in many different ways and in some waters many a fish will even leap freely aboard at night especially if a light is shown to attract them.

Most sea life can be used although crabs and sharks are excessively salty.

Sea snakes which unlike eels have no scales are edible but have poisonous fangs & 10 times worst than the land ones.

Unless the fish you catch has ordinary scales and looks like most fish you are used to seeing, a good rule especially in warm waters is to leave it alone. EX; Jelly fish should neither be handled nor used.

WATER FROM FISH:

WATER CAN BE OBTAINED FROM FRESHLY CAUGHT FISH IN SEVERAL DIFFERENT WAYS.

THE MOST FUNDAMENTAL METHOD IS:

To divide the fish into small portions and to chew each of these thoroughly spitting all solid matter before going to the next morsel.

The fish can also be sectioned and twisted within a cloth, the thus freed juice is either sucked or caught.

One primitive way of dealing with a large fish is to hack holes in its side & allow moisture from the lymphatic vessels to ooze into these.

If you like the juice of raw clams or oysters you are apt to find all this surprisingly pleasant.

At any rate you'll be able to satisfy thirst as long as you can catch sufficient fish for your need.

REMEMBER that it will take you several hours to obtain 1/2 litre of this liquid, so be patient while squeezing the fish. (OUCH!)

SALTED WATER TO DRINK OR NOT TO DRINK???:

BOMBARD EXPERIENCE!

The following chapter has created waves of screams, but the fact remains that, **YES!**

YES! You can drink salt water! BUT!**

But you have to do this as soon as possible and in small quantities. As you will see below, those experiences were done first by Alan Bombard, Poom Lim and a team of survival expert from the French NAVY. In some ways we repeat the Galileo principle, what if they were wrong? For centuries sailors have said, salt water drinking = **death**.

Alain Bombard went alone as a voluntary shipwreck survivor, its raft was called L'Heritique".

Its purpose somewhat different from the Kon-Tiki was to prove that one can survive at sea although in some

ways Poom Lim already had done it but not as a volunteer.

*Bombard wanted to convince sailors not those in laboratories that drinking salt water was all right up to a point.

People have pretended that Bombard drank **only** salt water for weeks, and this is false. Salt water permits **only** to support for a few days the absence of soft water.

BUT; IT WAS TO START DRINKING SALT WATER IN THE FIRST HOURS AFTER SHIPWRECK & IN SMALL QUANTITIES.

Because the organism is still hydrated and the tolerance is greater and it quenches thirst. The more you wait the worst it is.

Some may pretend that one can drink too much. This argument does not stand, salt water is not that great to drink first of all.

It is said also that drinking salt water gets you crazy, lets not reverse the picture, it is those who were gone crazy from thirst that drank inconsiderate amount.

Bombard drank sea water during 14 days in total in consecutive period from 3 to 6 days maximum. The fish liquid also was used and permitted him to wait for rain which came after 23 days.

He **NEVER** lacked fish although it was said the opposite, maybe the noise of motor scares the fishes, whereas he was in a raft.

Starting from Canaries he reached Barbados even if in a weak condition, he was still able to walk and had not suffer from his salt water drinks, the liquid from fish & rain water.

Bombard **NEVER** pretended that he would reach Barbados in perfect health but that he would reach it alive and so he did.

As he points out, if he had been a true shipwrecked he would not have stayed so long at sea for many times while at sea he was seen by different ships and refuses their help to prove his point.

He spent 64 days at sea. Bombard also stress this fact; the moral influence being a first if one wants to survive in those desperate situations. Poom Lim had shown that as well with 153 days at sea!

Yet despair has killed many a man from shipwreck long before starvation did its job and even in temperate even warm waters and even within 36 hours after shipwreck.

Which shows that hope and will to survive and to fight will get you out most of the time even in drastic situation.

Bombard: After a few trials, it appears preferable to limit the volume of salt water intake to 50cm cubic each time, about 3 mouth full total.

The first one goes is easy, no sweat, the second goes down fairly easy, the salted flavour starts at the third gulp.

My stomach starts to rebel when I try to drink a superior quantity in one shot. So I manage to absorb 1/2 litre of sea water during the whole day, spaced in 10 different intakes. **Actually 900 ml. or 32 oz. after that, trouble starts.**

THE FRENCH CONNECTION:

Other interesting observation made from the French Navy experiment after the Bombard experience was:

That all they had to do was to drink 1 1/2 litre of soft water to eliminate all the salt and recover normal hydration, the organism retaining then most of that soft water.

No one had at any time through the experience suffered from thirst, nor was there any digestive trouble either among their 10 volunteers. (18 to 43 years old).

THEIR CONCLUSION WAS THAT SEA WATER IS AN ACCEPTABLE DRINK FOR MEN UNDER CERTAIN CONDITIONS AND THAT OF A SHIPWRECKED IF HE HAS ONLY A SCANTY SMALL SOFT WATER RATION.

HE MUST DRINK IT ONLY THE THIRD OR 4TH DAY AFTER HIS SHIPWRECK, AND TO USE SALT WATER AS SOON AS POSSIBLE IN THE BEGINNING AS SEEN

ABOVE. (START WITH SALT WATER FIRST THEN SOFT).

The French Navy showed that the **dangerous** step was **only** crossed after the (6th day) of straight sea water diet, yet Bombard **NEVER** had to cross that step since he **ALWAYS** found enough fish from the first day.

Both experiences Bombard and French Navy concluded and proved that any one can be at sea for 6 days and drink only sea water without any trouble for health nor putting your life in any danger.

One **only** has to drink in frequent small dose before the starting of dehydration and repeat the process throughout the day.

BOTH also stresses the necessity to drink sea water as soon as possible in the First day. Even within the First hours after shipwreck.

Since the organism supports much better this trial being still richly hydrated.

If the subject has drank nothing during the first 3 or 4 days, they conclude that it is then **dangerous** to drink sea water.

The ingestion of sea water brings at the same time a solution to the buccal and stomachal factor which are **very important** to determine the thirst. So drink first and worry later.

Some will say that the experience was not carried long enough! Well, Bombard had been strucked by the fact that 3 days seemed to be the limit before people dying from thirst or went mad.

He had decided to try going over that 3 days **death** call and succeeded. Examples were not missing of men dying without any apparent cause within 6 days.

This is why Bombard and the French Navy went above and beyond the call of duty to try to save future life.

We **MUST** also note that any shipwrecked **MUST** use all means to get soft water as well, from fish flesh, alembic or rain water and not to stick **only** to sea water, we have mentioned that one can do it but put also all the chances on your side by using your head???

BODY WATER PRESERVATION:

Even when you have found water, you **only** have won **only** half of the battle. You **MUST** make this reserve to last and for that you **MUST** not sweat or as little as possible.

You MUST know that your body exits the heat either by evaporation or sweating. As soon as the body fluid volume lowers, the sweating diminishes, the body temperature rises and you exhaust quickly.

An increase of only 6 degrees of your normal body temperature is of lethal consequences.

Even though you seem to be less hot when you remove clothing; you also lose quickly your organic fluid that way. If you stay clothed; you will prevent the heat to penetrate and this will also slow down the evaporation.

YOU MUST BOTH DRINK AND AVOID SWEATING TO AVOID DEHYDRATION.

Experience proves that a man on normal working condition spends 3,000 calories a day and that a man in good health can subsist for a long time on **only** 500 calories per day without bad effects on his organism.

Of course in condition of great fatigue or cold exposure one has to eat more to maintain his body temperature.

But water is still much more necessary than food. One generally needs **at least** 1/2 pint per day minimum or 2 cups.

Once exposed to desert heat one needs a minimum of 3.8 litres of water per day.

This will enable you to cover a distance of 30km as long as the sweating is well controlled and the moving is done at night. During the day it would give you 15km on the same amount.

DESERT TRAVEL HINTS:

(TRAVEL AT NIGHT! AS MUCH AS POSSIBLE!)]

1) Cover yourself as much as possible. Clothing stops sweating to evaporate too quickly and help you to benefit from its cooling effect.

If you remove your shirt, you will feel more at ease but you'll also sweat much more beside risk of sunburn.

- 2) Keep your clothing on, don't worry, you will walk further if you don't sweat too much.
- 3) Unless you have much water, don't waste it washing.
- 4) When drinking, don't swallow big gulp in one shot, rather in small quantities, if low in water then damp your lips **only**.
- 5) Keeping a few small pebbles in your mouth will ease your thirst, breath through the nose and don't talk.
- 6) Absorb salt **only** with water and **only** if you have a lot of water.
- 7) Drink as often and as much as you can, the saving of water will not get you much farther, yet don't waste it.
- 8) When **extremely** thirsty any liquid is tempting but don't drink any alcohol aside from its effects it **only** dehydrate the body..
- 9) Urine is harmful and **only** increase thirst.
- 10) **SMOKING!** Dehydrate your body & heightens the need to drink.

Sluggishness of the digestive system is a natural consequence of going without normal amounts of water and nourishment.

This condition need not cause concern and will readjust itself when normal conditions resume. So don't take any laxative under such conditions for it depletes the body of further fluid.

WHAT TO DO IF WATER IS SCARCE: (DRINK COLD ICY BEER!?)

If you have ample water at the moment but may have little or none later, the soundest procedure will be to drink as much as we reasonably can before quitting the source of supply. Filling up before abandoning a ship or a plane.

If in dry country; drink a lot while and just before leaving the water hole unless there are extenuating circumstances.

Every effort **MUST** be made to take adequate water with you when leaving what may be an isolated supply, water comes first.

We repeat that unbelievable amount of water is exuded through the pores of the skin & the rate of perspiration is markedly increased both by heat and by exertion.

The need of water intake can be much lessened by your keeping as quiet as possible and as comfortably cool as one can.

Keeping the clothing wet will help at **SEA** in hot weather although it should be rinsed during the later part of the afternoon to prevent too much salt and to dry out before evening if the nights are chilly.

If in **DESERT** without sufficient water and obliged to depend on your own resources to get out, your best chance will be to stay as relaxed and cool as possible during the torrid hours, and travelling done at dusk, night and dawn.

If on flat shelterless **DESERT**, one can **ALWAYS** scoop a narrow pit in which to lie while the sun is blaring down.

The utmost shade will be secured as everyone appreciates, if this trench extends East and West.

2 or 3 feet of depth can result in as much as 30 degree or more difference in temperature between its shadowy bottom and ground level.

Before you take such a refuge, you should leave some sign of your presence in case help passes near by. Weighting a shirt over one of the excavated piles may serve this purpose.

WHEN WATER IS REPLENISHED:

When water has missed for a long while, you **MUST NOT DRINK A GREAT DEAL AT ONCE**; once you find it. It will cause nausea beside the body will not retain it, thus wasting much of it later.

DESERT SURVIVAL ADD ON WALKING:

In the Desert, adapt yourself to it, rather than try fighting it.

Desert natives refuse to do any violent effort during the hottest hours of the day and as the animals do; they drink and drink as soon as possible.

It has been registered desert walking of 140 to 350 miles between 10 to 20 days; while walking **only** at night and with **only** a little water from plane crashed survivors.

Here is another illustration to prove the point. An American called Rodger Jones, in August 1953 was stranded on a road in the Great Salt Lake Desert, when an axle of his car broke down.

As a former marine he had taken a short survival course and he did the right thing, he lay down in the shadow of his car (outside) and slept through the hottest part of the day.

Around 6pm when the sun had lost its full impact, though the temperature was still around 95; he set off along the road. He knew there were steel water tanks for tourists at regular intervals.

Twice that evening he came to one of those tanks painted bright red and drank as much as he could, also filling up his water bottle. Wherever he found any shade he stopped for a rest.

Every so often he collected large stones and laid them out on the road to spell the word **HELP** with an arrow showing the direction he was walking in.

The next day a car driver saw one of those signs, at once followed the arrow and caught up with Jones after a 4 hours drive.

He was resting in the shade of a rock & his condition was excellent despite a midday heat of 110 F.

Another family who also got stranded did survive by laying close to the car shadow, applying lipstick to the blisters and swollen lips of the husband and children and covering everyone's cheeks and arms with rouge.

Discovering that the ground was cooler a few inches below the surface, she and her husband buried the children up to the neck in sand and applied sand to the children's faces, then they did the same for themselves.

In most deserts the temperature a foot below the surface is less than 72 F and on hot summer day; it may be 18 degree cooler than at the surface directly above.

Using urine collected earlier during the day, they dipped some bit of clothing in the can and pressed them on children's face, the smell was unpleasant, but the moisture was refreshing cool.

They were later rescued in good health, but if they had decide to walk off in bright day, they would have been either dead or in **very** bad conditions. It pays to learn the tricks of survival.

WATER FROM OLD HAND PUMP: T"RICK" OF THE TRADE

Many of us have seen those old water hand pumps but few of us **REMEMBER** or know how to use them to start them pumping water.

Before one starts to pump himself crazy and not get any water coming forth, one has to **REMEMBER that water MUST be added to the upper cup at the base of the crank.**

The reason is simple the addition of a cup or 2 of water will create the suction needed to pump the water.

So if you don't add this water, you will pump air and think there is no water underground which would be false.

Every morning or after a couple days without use this same process **MUST** be repeated in order to create the vacuum.

So better leave a jug near by which contains enough water to get the machine going. This might sound silly or childish to say such a note but one would be surprised of how few of us know this tip.

WATER PRESERVATION AT SEA TIPS:

Precautions to take to save fluids of your organism are equally **important** as your necessity to drink water.

- 1) If you don't have water to drink, don't eat. Since food needs water to be digested especially protein.
- 2) In hot countries, **avoid** as much as possible to sweat thus you will **avoid** loosing body water faster.
- 3) Damp your clothes in the sea, wring them and wear them and take advantage of any cooling wind. If your body covers itself of salt crust, remove it with a cloth.
- 4) Stay in the shadow as much as possible.

- 5) Sleep and rest as much as you can, you will thus reduce to a minimum the loss of body fluid.
- 6) Prevent if you can the sea sickness, there are some pills for it.
- 7) Don't drink any alcohol, for it increases the dehydration process.
- 8) If you smoke you will increase your thirst, if you **MUST** smoke make it in the evening or at night.
- 9) To remove the thirst temptation, suck on a button, it will make you salivate more.

FINDING WATER:

There are no handy kitchen faucets in the wilds--- except in the larger campgrounds with their trailers & recreation vehicles bumper to bumper, & six-man tents guy line to guy line.

If you're not in one of these, and don't happen to be hiking along the course of a river or canoeing over chains of lakes, where do you find water?

Your map will help if it's detailed enough. Almost any water source of any size, including annual spring freshet, will be marked on a geodesic map.

Even so, it's a good idea to be aware of where water is most likely to be found, just in case you left the map at the last log rest stop.

Besides, knowing nature, being familiar with its habits, gives you a real sense of understanding & accomplishment that is **very** much a part of the joy of camping.

In mountainous and forest regions such as Eastern and Western Canada, and the United States, and most of Northern Europe, water rarely presents a problem.

Almost any downhill country, be it a long slow valley or a deep gorge, will lead to it. These natural formations developed through water erosion, and the sculpture tells the tale.

As you walk, keep your eyes open for a change not **only** in terrain but in vegetation as well.

If you see a crooked line of Willows or Willow like trees in the distance, **IT'S ALMOST A SURE BET**

YOU'LL FIND A STREAM WHEN YOU GET THERE.

The mountain ahead is bare, with no water or greenery in sight. One side comes down steeply to a heavy rock formation; the other side slopes gently down to a valley and gently up to another mountain.

Head for the sloping side rather than the steep escarpment. It has a much slower run off larger surface area, and thus a greater likelihood of retained water.

COTTONWOODS:

**pix. in arid country serve much the same purpose as willows in country more hospitable.

A chain of Cottonwood in the distance indicates a river bed. Whether that bed turns out to be wet or dry is another question.

But if its dry, examine the ground by one of the largest and most ancient of the cottonwoods, on the inside bank of the old river's curve; you will usually find a small pool of water.

At least there should be enough ground moisture so that if you really need water you can dig down a foot or so and find seepage.

REMEMBER THOUGH THAT USUALLY IT DOES NOT PAY TO DIG FOR WATER.

With the amount of energy used, the moisture lost in sweat usually far exceeds that gained from the hole you have dug.

ANY LUSH VEGETATION IN ARID TERRAIN INDICATES WATER IN ONE FORM OR ANOTHER.

Birds, such as Doves* or* Blackbirds, in flock on the ground, quail in any quantity, are other signs of a water source nearby. ck for repeat**

You will need 2 quarts a day under average conditions but in the desert or during periods of heavy activity this rises to 4 quarts or more per person per day.

IF WATER BY THE BARREL:

If water is plentiful as well as woods then **MAKE SURE YOU ALWAYS HAVE SOME HOT WATER** boiling or close to the flame to keep hot and

REMEMBER that to sterilise water it takes boiling for 10 minutes long no matter what some may say, be safe.

THIRSTY: (Beer time?)

Drink when thirsty often and in small amounts.

DON'T ATTEMPT TO RATION LIMITED QUANTITY OF WATER, LIFE WILL NOT BE PROLONGED.

DON'T gulp water, swish first mouthful around mouth, swallow slowly, otherwise you will be sick and vomit this precious water.

Avoid unnecessary activities that cause perspiration. Seek shade. Less you perspire the longer you'll live without water.

SURVIVAL TIME CHART NO WATER:

Here are some ex. Of expected survival times: Fahrenheit 50 F. temperature without water, with minimum exertion- life expectancy is 14 days, with 1 gallon = 16 days. 120.F. Under same conditions = 3 days with 1 gallon = 4 days.

Those are rough estimate for adults, children & sick = 1/3 lower. As you see water is more **important** then food.

Limit food & salt intake when water is limited, **especially** protein foods * which absorb much more water from your body.

FINDING WATER & PURIFYING:

Under hot, dry conditions where little possibility of finding water exists, searching of water will cause greater fluid loss than amount of water (if any) is found. Best to stay in shade, move as little as possible, wait for help.

BASIC ELEMENTS OF LIFESAVING:

The core of water lifesaving is the slogan adopted by RLSSC!

REACH - THROW - ROW - GO - TOW.

This means that the rescuer should begin with the safest methods and proceed to higher risk action only if necessary:

REACH: Stay in a position of safety if possible, on shore or in a boat. Extend to the victim a pole, paddle, life jacket, towel or article of clothing.

THROW: Toss a buoyant object to the victim to allow him to stay afloat while he is pulled or kicks himself to safety.

ROW: Help the victim from the safety of a boat.

GO: Enter the water and go to the victim with a buoyant object. With it, he maybe be able to kick to safety.

TOW: If the victim cannot swim, he **MUST** be towed or carried- **dangerous** procedures because they involve direct contact with someone who may panic.

FLOATING NOTE:

A human being who will have the presence of mind to clasp the hands behind the back and turn face toward the zenith, may float with ease, and in perfect safety, in tolerably still water -- aye and sleep there, no matter how long. From the Old Farmer's Almanac.

Note from the compiler: It does not work for me nor would it work for everybody since one's own buoyancy is different from another, but it works for some people, one has to try to find out for himself.