

# DESERT SURVIVAL HANDBOOK

by Charles A. Lehman



# DESERT SURVIVAL HANDBOOK

*You were born with a strong will to live  
and you can maintain it in spite of fear,  
loneliness, cold, heat, dehydration,  
illness or injury—  
if you have the knowledge  
to deal with them.*

**DESERT SURVIVAL HANDBOOK** is designed to provide the basics you need to deal with an emergency in the desert. It's full of real-life examples, narratives and illustrations. This text represents over twenty years of research and personal experience. Adventurer, author, educator and survivor, **Chuck Lehman** has operated survival schools that have trained over 20,000 students. He is a pilot, photographer, fisherman, four-wheel-drive buff, and backpacker.



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*Survival situations can and do happen to average folks, as well as to adventurous explorers. You have the capacity to handle these situations if you know and follow the basic principles of survival.*

*This book will get you started. The basics are here. As you project yourself into the scenarios, play the role, and you will find it's fun to learn about desert survival.*

*Finally, carry this book in your backpack, car, boat, airplane, or saddlebag as an extra confidence factor—a security blanket. If you should have a problem, it will be a handy reference as you wait for rescue, for the weather to clear, or the cool of the desert evening.*

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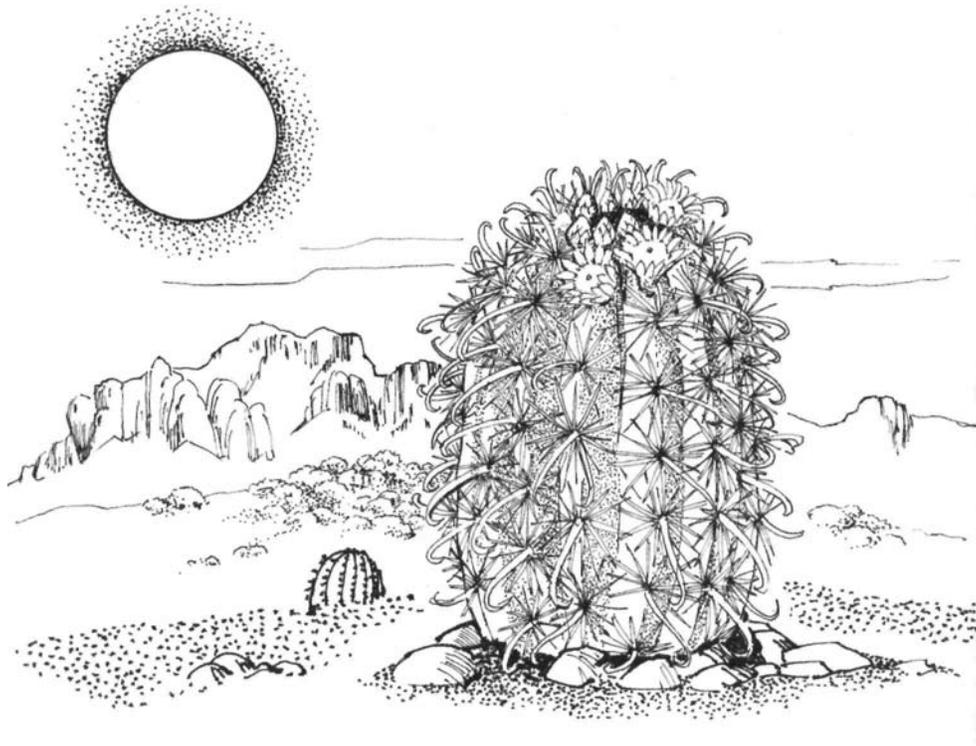
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**DESERT SURVIVAL CHECKLIST**



## *CHAPTER 1*

# *Survival? Who Needs It?*

### *It won't happen to me*

"Desert survival? Who needs it? Nothing's ever happened to me." "I never get more than a few miles from a main highway. What do I care about survival?" These are some typical responses heard on the subject of this book.

Okay, you need the skills outlined here *only* if you:

- Drive through deserts
- Backpack in the desert
- Fish desert reservoirs
- Fly a light plane
- Hang glide
- Live near a desert
- Hike in the desert
- Watch desert birds
- Hunt in the desert
- Ride horseback

People tend to think survival is a primitive "live-off-the-land" skill needed by explorers. Most assume that since they don't fit into that category they don't need the skill.

Survival is really nothing more than managing your own mind and body in an unusual or hostile environment—and you can find yourself in that position, no matter who you are or what you do.

Suppose you are driving from El Paso to Phoenix along Interstate 10. About noon the utter boredom of freeway driving and the haunting beauty of the desert tempt you to take a "short-cut." You take the first exit, drive south about five miles, then turn west on a well-maintained road. Paralleling the freeway is much more pleasant, and your air conditioner keeps you in perfect comfort as mile after mile of colorful desert rolls by.

You check the rearview mirror to insure that this magnificent scenery is yours alone. No cars behind—but there is a white cloud billowing out behind the car. The bright red "HOT" light flashes on the instrument panel. Blown radiator hoses are common in the best of cars.

A blast of oppressive heat almost takes your breath away as you step from the driver's seat. One of the local radio stations mentioned a temperature of 115° just before you shut off the overheated engine.

But it feels much hotter. In the last hour you passed one ranch— about twenty-five minutes back— and met two cars just after you left the freeway.

You are only about five miles from the freeway, but you're quite isolated. This is a bonafide survival situation growing out of everyday life. How would you insure your survival in the searing desert heat? Select the one best answer.

- a. Begin walking toward the freeway and hail a passing car.
- b. Strip off as many clothes as possible to help beat the heat, then walk slowly back down the road looking for help.
- c. Stay in your car.
- d. Get in the shade, wait until dark, then walk out.

The answer is d. You'll find the reasons in Chapters 2 and 3.

Survival situations can and do happen to average folks, as well as to adventurous explorers. You have the capacity to handle these situations if you know and follow the basic principles of survival.

This book will get you started. The basics are here. As you project yourself into the scenarios, play the role, and you will find it's fun to learn about desert survival.

Finally, carry this book in your backpack, car, boat, airplane, or saddlebag as an extra confidence factor—a security blanket. If you should have a problem, it will be a handy reference as you wait for rescue, the weather to clear, or the cool of the desert evening.

## CHAPTER 2

# *Your Body Is Where You Live*

Desert survivors face many hazards, but only four present any immediate danger—heat, cold, dryness and injuries. If you enter your personal survival situation without getting hurt or asphyxiated, there are only three conditions which can pose immediate threats to your life (managing injuries is a separate subject and is covered in Chapter 12).

Hyperthermia, dehydration, and hypothermia, are the three dangers. Prevent them and you are going to come home little the worse for wear. All three boil down to taking care of your body—that is where you live.

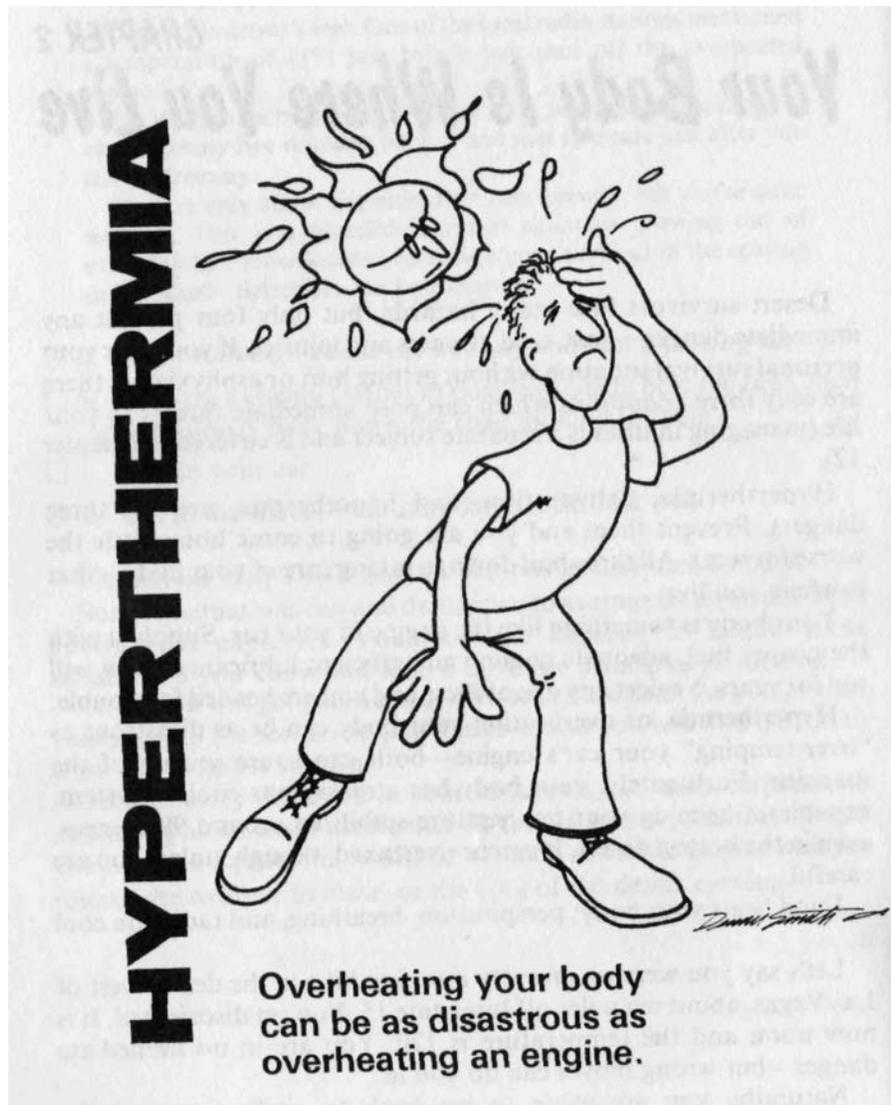
Your body is something like the engine in your car. Supply it with the proper fuel, adequate cooling and efficient lubricants and it will run for years. Neglect any one of these and you are headed for trouble.

**Hyperthermia**, or overheating your body can be as disastrous as "over-temping" your car's engine—both can cause seizure of the machine. Fortunately, your body has a marvelous cooling system, capable of keeping your temperature stabilized around 99 degrees, even in the hottest desert. It can be overtaxed, though, unless you are careful.

Food heats your body; perspiration, breathing, and radiation cool it.

Let's say you were on an early morning hike in the desert west of Las Vegas, about ten miles off Interstate 15. You get disoriented. It is now noon and the temperature is 120? You are in no immediate danger—but wrong moves can do you in.

Naturally, you are eager to get back to civilization and the excitement and tables of Las Vegas. However, if you rush around trying to find your way or set out for the highway, you can easily overtax your cooling system. If you work so hard that most of your



sweat is running off rather than evaporating, your temperature will begin to rise. As it does, your body's heat-regulating mechanism in the brain ceases to function and you stop sweating. Your skin flushes and becomes dry. Suddenly, you collapse—the classic "heat stroke." Without treatment, death may follow.

It's quite obvious that you cannot treat your own heat stroke. You have to prevent your temperature from getting too high. In hot weather that means severely limiting your physical activity, wearing your clothing loosely (but wearing it), staying in the shade, and drinking plenty of water.

The trouble is, survival conditions can impose serious limitations on your ability to do these things. You may have to build your own shade and you may not have "plenty of water." Still, you should be aware of the danger of heat and keep heat management high on your list of priorities.

Although heat stroke is the most dangerous form of hyperthermia, heat can also cause other problems unless you act to prevent them.

Heat cramps can be painful and disabling. They are not true hyperthermia, because your body temperature may still be normal when they occur. If you have been working hard and sweating a lot, you are losing more than water. Even if your body can maintain its temperature, it will deplete its supply of water and salts (also called electrolytes, because when dissolved in water they form the conductive medium for electrical nerve impulses). You may drink plenty of water, but unless you also take in food or salt, the change in electrolyte balance may cause your muscles to cramp.

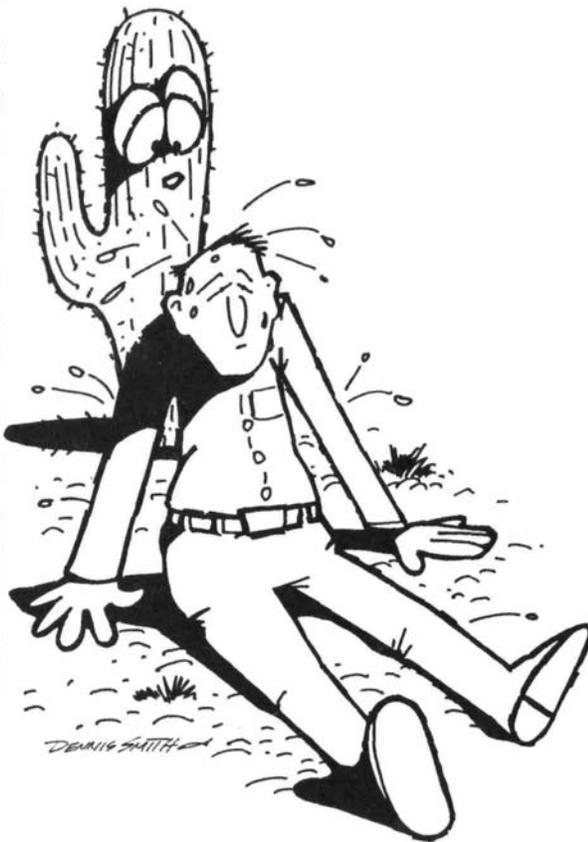
In a survival situation, you avoid cramps the same way you prevent true hyperthermia—by staying out of the sun and resting as much as possible. Sweat and salts are difficult to replace under survival conditions, so consider each a precious resource—too valuable to waste.

Perspiration is the common thread that ties together two of your immediate survival hazards: overheating and **dehydration**. Your body sweats to prevent hyperthermia, but even when it is successful, it dehydrates itself in the process. Unless you control this dehydrating effect, you can cause yourself an awful lot of grief.

Picture yourself stranded in a desert area during winter. You scurry around all day building a snug shelter for yourself and your companion. Both of you have worked hard on the lean-to and gathered firewood for the night; you were smart enough to avoid getting your clothes wet with sweat by stripping off a layer or two as you worked. Around noon you each ate one of the sandwiches you had packed for the trip.

You need a minimum of 3 quarts of water daily  
**DEHYDRATION**

**A LOSS OF 5% OR MORE  
OF YOUR BODY WATER IS  
DANGEROUS.**



In the evening your cheerful fire and cozy shelter have you feeling pretty good. "This survival business isn't bad at all. We're comfortable for tonight, and tomorrow there's sure to be someone out looking for us." Your partner does not answer and seems unusually quiet. "Bill, what's the matter—you look sick." Bill doesn't look up, but mutters, "Yeah, it's my stomach. I feel like I'm going to lose that sandwich—and that's all the food we've got."

If you were stranded during the summer, you might suspect Bill's problem—and yours. It is water, or rather the lack of it.

Dehydration is the culprit. Working vigorously in the dry air, you and Bill were perspiring, but you did not notice because your sweat evaporated quickly. Every breath you exhaled took some water vapor with it. Those beef sandwiches were delicious and good for you, but the few sips of thermos coffee you washed them down with did nothing to help. Digesting the protein in the beef took far more fluid from your body than the coffee added.

Dehydration is sneaky. There are early symptoms of the problem, but you are not apt to notice them if you are busy. A feeling of thirst is a very unreliable indicator. Oh, you'll get thirsty all

right as you start to dehydrate. The problem is that just a few sips will often quench the thirst without improving your internal water deficit. Or you may not notice the thirst in the first place because you are distracted. Being marooned in strange surroundings can be quite distracting.

If your natural thirst fails to spur you to drink enough water to rebalance your electrolytes, you will probably begin to notice a rather vague discomfort—again, not unusual for a survivor. As you use up more of your body's water, you will find it is more comfortable to move slowly or not at all than to hustle about your chores. If you glanced in a mirror you'd notice your skin was a bit red, but you probably would pass that symptom off as sunburn or windburn. You will become impatient, too; but who wouldn't with no rescue in sight. So you still have no reliable indicator that all is not well.

Loss of appetite along with increased pulse and respiration will also occur, but you're not likely to notice because your isolated situation may trigger the same responses.

At a water loss of about five percent of your body weight, you will get sick—just plain miserable. Waves of nausea will destroy all desire to drink. If you vomit, you will lose additional quantities of water. Then things start downhill in a hurry. You are losing fluid, you can't or won't drink, and the symptoms get worse.

As water loss continues, more noticeable symptoms will begin to appear. You may get dizzy, develop a severe headache, become short of breath, experience tingling extremities, a dry mouth, "thick" speech and become unable to walk. Dehydration at this level is extremely dangerous. You have to *prevent* it.

In a desert survival episode, water may be scarce or nonexistent. If so, your safest bet is to be extremely stingy with the supply stored inside you. There is little you can do to reduce some water losses. You will lose almost two quarts of water each day through urination, breathing, and bowel movements. If you eat, more water will be used to digest the food. Eating is controllable. So is the other big water thief—sweating. When you're a survivor, perspiration is your enemy. It robs you of the water supply stored in your body and fouls up your electrolytic balance.

If you have water—drink it, don't ration or save it. People have died in the desert with water in their canteens. They rationed that water while their bodies dehydrated and quit working for them.

Unless you have lots of water available, eat sparingly and don't work up a sweat. Read more about water in Chapters 6 and 8.

The third hazard, **hypothermia**, is a lowering of the body's core temperature. You are designed to operate at about 99 degrees Fahrenheit. Drop that temperature even a few degrees and the machine starts to break down.

The desert cools off rapidly as soon as the sun sets. Suppose you have a flat tire at night on a lonely road. While you are struggling with the spare, a soft rain starts. There is a wind coming up, too. By the time you discover the spare is flat, you're soaked.

Eventually, another car stops to pick you up; by then, you are shaking like a leaf. You have never felt so cold. That's hypothermia—the newspapers call it "exposure."

You have probably experienced hypothermia at this level many times, so what's the big deal? Well, in a survival situation hypothermia can be a killer—and a sneaky one at that.

Let's suppose no one comes by to pick you up. When you start to shiver, your body is sending a desperate signal. "Cover me up and feed me, I'm getting cold!"

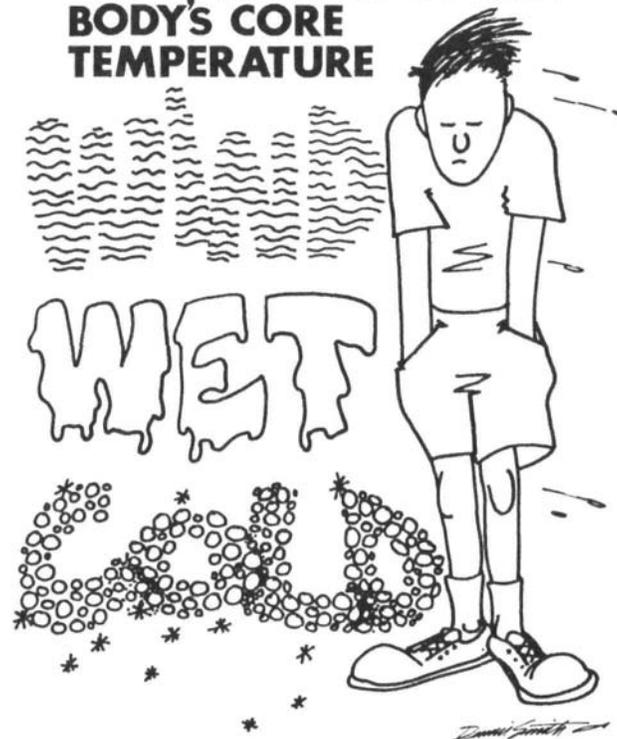
Your body, like an engine, generates both energy and heat as it burns fuel. When you start to shiver, the body is telling you it is losing calories (heat) faster than they are being replaced. The shivering reflex exercises a whole bunch of muscles, and increases heat production by burning more fuel. The fuel in this case is food.

Shivering alone is not likely to rewarm you. Active prevention is the key. If you have dry clothes, put them on. To produce heat you can run in place or do calisthenics or isometrics. This forces your muscles to burn more fuel and that generates heat.

In some survival situations, if you opt to exercise, you are burning fuel you can't easily replace. You may not have dry clothes to put on. Under survival conditions you have to prevent hypothermia. Failing

# **HYPOTHERMIA**

**THE LOWERING OF THE  
BODY'S CORE  
TEMPERATURE**



that, you must act fast. That means reducing heat loss as much as possible with a shelter, fire, and more clothing.

This seems fairly straightforward. But see what happens if you are slow to react or don't know what to do.

While you are shivering, the circulation to your hands and feet is being choked off. That is another automatic reflex to keep your vital organs warm. By reducing the flow of blood to your extremities, your body is reducing its loss of heat. But your hands and feet will get cold and stiff.

The last thing you need in a tight situation is clumsy hands. Those hands are going to have to build a fire, put up shelter, or button a coat. Ever try to strike a match with fingers stiff from cold?

As your core temperature continues to drop, you'll stop shivering. That is a sure danger sign—and one you are not likely to recognize, because the biggest danger of hypothermia is that it takes away your will to help yourself. Amazing as it may seem, about the time you quit shivering you also quit worrying. You are dying and you couldn't care less.

At this point, your body has lost the ability to rewarm itself. So, even if you have unlimited clothing or a thick sleeping bag to crawl into, you will continue to cool off. That means your only hope is adding heat. It could come from a warming fire, hot drinks—or another human body.

It is vital in a survival situation to prevent hypothermia, or at least to recognize it very early. You may not have a sleeping bag or a warm partner.

Prevent hypothermia by constantly thinking of your body as a heat producer with a limited supply of fuel. Use every means available to insulate yourself and stay dry!

If you have extra clothing with you, put it on before you start to shiver. Don't sit on or lean against rocks or metal vehicle parts. You'll lose heat very rapidly through conduction. Get a fire going at the first hint of a chill. If possible, use more than one fire, so you can add heat from both sides. Drink all the hot fluids you can swallow. If you have extra food, use it to refuel and keep your body furnace going.

One final note on hypothermia—alcohol is not a useful fuel. Your body will burn alcohol, but at the same time it will short circuit that automatic reflex which reduces blood flow to your extremities. As a result, just when your body is trying desperately to keep all that warm blood in close, near your vital organs, alcohol is opening the flood gates to your face, hands and feet. To make matters worse, alcohol slows your body processes—like generating heat. You will feel warm, but you'll lose heat very fast, and your heart, lungs, and other internal organs will chill and quit. You may feel warm while you are dying. No alcohol!

Protecting your body from hyperthermia, dehydration and hypothermia is your most critical challenge. You do it by managing your body as though it were a precious spacecraft engine with

very limited fuel, coolant and lubricant—the only engine that can get you home.

## CHAPTER 3

# *Take Cover*

Learning the skills of finding or building a shelter is easy. Let's go back to the desert drive described in Chapter 1. You've got to get out of that blazing sun, or you're a prime candidate for hyperthermia or dehydration. Walking five miles to the Interstate would be an endurance contest you'd likely lose. Stripping off your clothes will only make matters worse. They're part of your shelter. Stay close to the car and get into the shade. You can walk out in the cool of the night.

It's just after noon, so the car casts a narrow shadow that's not really big enough to shade you. However, you note a scraggly tree and a rock ledge nearby that offer larger patches of shade. Checking under the tree, you discover the ground is very hot, even in the shade. The moving shade allows the sun to bake the ground. Sitting there would be uncomfortable. You could use the tree shade if you could remove the back seat or spare tire of your car to sit on. Or you might dig down a few inches to cooler soil. Your tire jack and hub caps are good digging tools. Be lucky and find a north-facing rock ledge that casts an all-day shadow. You wisely decide to rest in the best available shade until after sunset.

Okay, that was an easy one—but it illustrates some basic principles of shelters. Learn them, and all the rest will fall in line:

1. Recognize the need for shelter.
2. Take advantage of natural protection.
3. Make provisions for heating or cooling.
4. Conserve your energy.  
(Don't build a log cabin when a lean-to will do.)

All shelters have one basic purpose—to protect your body from overheating, overcooling or drying out. In other words, they prevent hyperthermia, hypothermia and dehydration.

We'll look at two types of shelters: natural shelters of opportunity and improvised shelters you build.

Most obvious in the natural class are vehicles. Probably more people get into "survival" situations while using vehicles than by all other means combined. Cars, boats, and airplanes all make very good shelters—under certain, limited circumstances. If they have fuel, are in running order, and have unobstructed exhaust systems, they can be excellent for general use. However, once the engine is dead they all have serious drawbacks. They are hard to heat and impossible to cool because they offer little insulation. On the other hand, they are relatively rainproof and windproof.

If wind or rain is your primary environmental threat, by all means use your car, boat, or plane. Unfortunately, the shade you get inside your car is of little help; it's like a shady oven. Use the shade outside your car. Depending on the sun's angle, that may mean crawling under the vehicle—no easy task on some low-slung models. There is usually some place to squeeze underneath. Use a hub cap to dig away a few inches of dirt. Watch out for hot exhaust pipes.

Airplanes, too, are better ovens than shade trees, but it is usually easy to use wings or tail surfaces for protection from the sun.



On the shores of our Southwestern desert lakes the combination of shade from a disabled boat and cooling from the lake water (splashed onto your clothes) almost eliminates the hazard of desert heat. Again, the only safe survival decision is to stay with the boat and use its shelter and