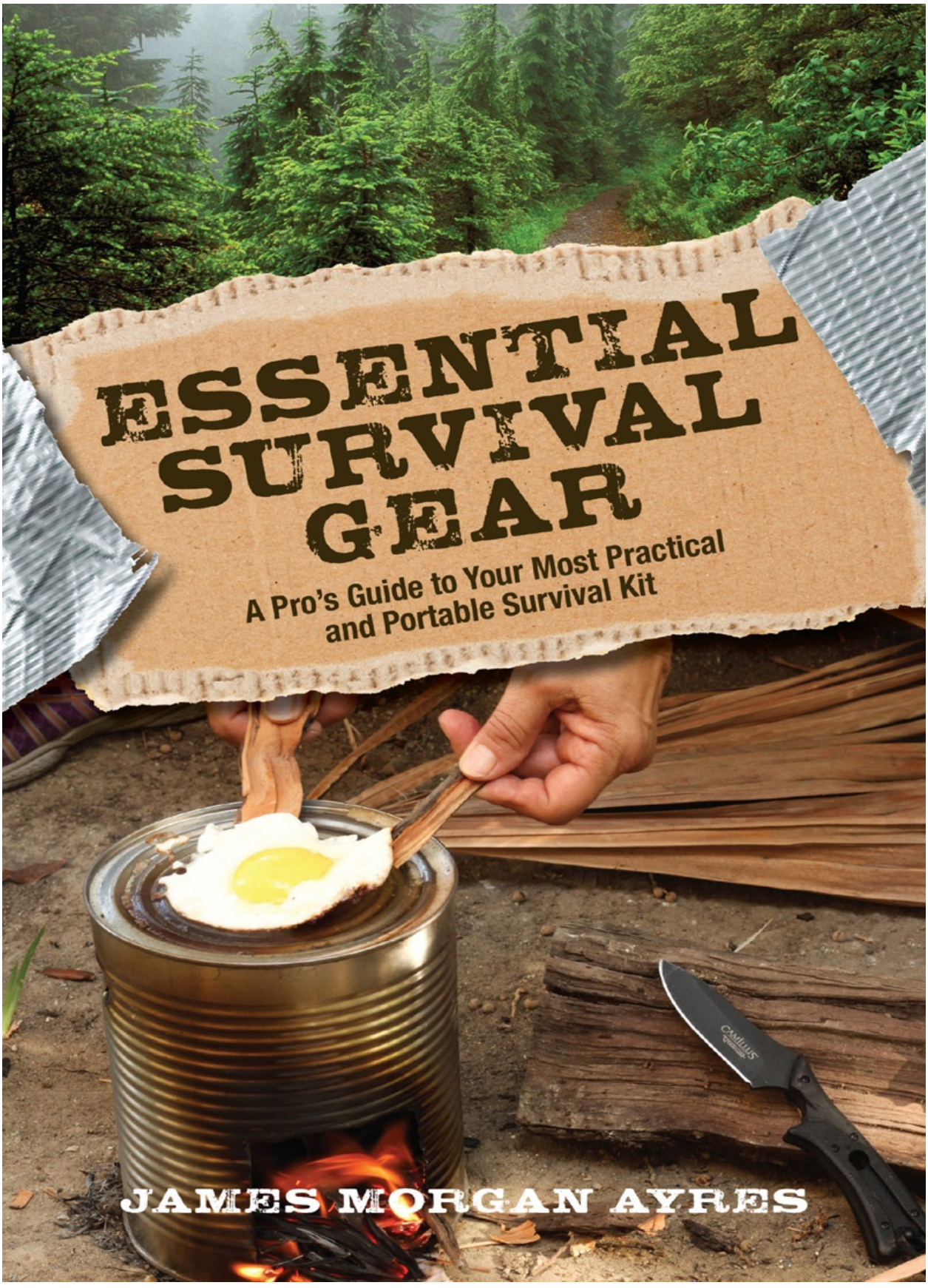

ESSENTIAL SURVIVAL GEAR
A Pro's Guide to Your Most Practical and Portable Survival Kit
JAMES MORGAN AYRES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Advance Praise for
Essential Survival Gear

"*Essential Survival Gear* is the essential book to help you get past disaster. Pray you never need it. Pray you have it if you do. This is a case of answering your own prayers. God won't give you this book. It's like the joke about the guy who prayed to win the lottery. God said, 'First, buy a ticket.'"

—Jim Morris, award-winning author of *War Story*,
Major Special Forces (Green Beret) (Ret.)

"This book is ideal for world explorers, travelers, Peace Corps volunteers, the CIA, and general survivalists. It is also an enjoyable read for anyone, because it's about a person experienced with survival in many countries. Survival during travel abroad can be different from your more familiar wilderness, which many folks (to include backwoodsmen) may not appreciate. This book has good history and excellent coverage of various survival equipment and creative uses of common items, which can help a person stay alive."

—Don Sakal, MMSc, PA-C, veteran Special Forces (Green Beret) medic

"A super read for anyone and everyone into survival, readiness, prepping, and, yes, even the dreaded Zombie Apocalypse. It's easy to read, filled with great info and tips, and useful for all kinds of people from the beginner to the professional, mainly because it sticks to core principles that are universal."

—Mykel Hawke, author and star of the Travel Channel's *Lost Survivors*,
US Army Special Forces (Ret.)

"This is an extremely practical and well thought out guide to survival in situations as simple as being stranded on the road to being trapped in a collapsed building or caught in a riot. It provides in-depth guidelines for an integrated system of layering clothes, equipment, and other necessities tailored to your environment. It also focuses on how to make do with what you have, everyday things in your car or briefcase, or what you can find locally. This is not just another survive-inthe-woods-alone book. It's a logical guide for anyone and everyone that could save their lives."

everyone that could save their lives.

—Gordon L. Rottman, military history writer and survival instructor

ALSO BY JAMES MORGAN AYRES

The Tao of Survival
The Complete Gun Owner
An Introduction to Firearms
The Tactical Knife, 1st and 2nd editions
The Jaguar's Heart
Just Passing Through
Survival Knives, Selection and Use

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To my family, the whole rambunctious crowd

CONTENTS

Introduction

Survival gear is not camouflage clothing and automatic weapons, unless you're a soldier in a combat zone. Survival gear is not a giant backpack stuffed with camping gear and food, unless you're on an expedition into deep wilderness. Survival gear is not a Hummer stuffed full of emergency items, unless you're on a rescue team heading into a disaster area. Survival gear is what you have with you when an emergency occurs, wherever you are, whoever you are. Minimal, simple, situationally appropriate gear that you have at hand when an emergency occurs is more valuable than a mountain of specialized equipment that you don't have with you, and those few things might keep you alive.

- You're on your way back to the office with a bagel and a cup of coffee in a brown paper bag when an earthquake collapses the buildings around you, leaving you unharmed but trapped. You'll have to get by with that bagel and whatever is in your pockets until someone digs you out, and you're wishing you hadn't left your cell phone on your desk.

- Snowboarding off-piste and flying down the side of the mountain alone was exciting. But now you're sitting in a snowdrift, it's getting dark, and you can't remember the way back to the lodge. That half-eaten candy bar in the pocket of your wet jeans will have to do for dinner, and you're wishing you had worn that down jacket and that you had some matches or a lighter because you're shivering, it's getting really cold, and you're trying to remember what the ski patrol guy said about hypothermia.

- You were looking forward to steaming the clams you foraged from the beach when the fog came down, thick and heavy. You can't hear the waves behind you, or see the dirt road where you left your car or more than a few feet in any direction. But you know that the sea is east of the road, so . . . oops. You left your compass in the car. Well, you'll find your way back—sooner or later. Right? Now, where was that cliff?

- You're out for a short walk in the hills when you see a large black bear, and he sees you. Mr. Bear starts coming toward you, and you do what the ranger said and throw down your pack for Mr. Bear while backing away from him. Your foot slips and you fall backward down a steep slope. The last you see of your pack is Mr. Bear ripping it open. You skid to a halt at the bottom of a ravine. Your ankle is swelling and you can't stand on it. Night is falling. You're in pain, getting cold and hungry, and wishing you hadn't put all of your gear in one bag.

- You're tired after a long day at work and not paying much attention to your surroundings. While parking your car, you are startled to see a zombie charging you from the shadows. You quickly reach for your sword but—

Each day, somewhere in the world, people die from events such as these. Well, maybe not so much from zombies. But from the other events, yes, they do. Many who are interested in survival imagine, and prepare for, various catastrophic disasters while not being ready to deal with more common mishaps that could kill them as quickly and easily as stepping off a cliff in the fog. In each of the above incidents, a few simple items and some basic knowledge could make the difference between living and dying.

In addition to the kinds of events described above, you could be traveling in another country and get caught up in a war zone and have to get to safety under your own power. You could find yourself in a massive disaster here in the United States and need to ensure your own survival. Remember Hurricane Katrina and how the emergency services failed? The same basic gear that could help you survive an everyday challenge can also be of critical importance in the event of a major disaster.

Our far-distant ancestors in the Paleolithic era survived with sharp stone flakes, stone hammers, animal skins, friction fire, and a deep knowledge of their environment. Even today there are experts in survival and primitive skills who can craft these ancient tools and survive in many environments with little more than some rocks and their wits. The rest of us would be better off with some modern equipment.

modern equipment.

Our more recent ancestors crossed oceans in wooden ships and uncharted continents on foot. They survived with what today would be considered primitive equipment. Even our grandparents and great-grandparents who grew up during the Great Depression could "get by" in city, country, or wilderness without much in the way of gear. But we live in a consumer culture driven by advertising constantly telling us we need more, more, and more. And so, all too often, when people think of survival gear or emergency equipment, they think of more, more, and more. *More* will not save you in a survival situation. The right stuff might.

Survival gear should be light and compact. If it is not, you probably won't have it with you when an emergency happens, and it will happen—it's just a matter of time. Disasters happen every day, to someone. Survival gear should be durable, reliable, and relevant to your circumstances; it must also be simple, quick to access, and easy to use. If it is not all of these things, it is useless.

A survival situation can be chaotic and fast-breaking. In a major disaster you have no idea what's going on, except in your immediate environment. Your mind will be running at high speed. You will lose fine motor control. You will not be able to use complicated equipment, unless you have been trained on it intensively, and maybe not even then. Ask any combat veteran or disaster survivor. Your life may depend on having simple gear and on having practiced with it. You must focus on the most direct path to immediate survival. Training for developing survivor's mind is the primary topic of one of my other books, *The Tao of Survival*.

STORIES AND STRUCTURE

In this book I will discuss and demonstrate a range of essential equipment, provide some instruction on its use, and make recommendations. This book, however, is not structured as a dry field manual. In general, field manuals are useful as references and as teaching aids in classes. They are less useful as self-contained texts without a teacher, or without having previously taken classes on the topic. From teaching many classes, and from having students tell me years after a class that they remembered a story I had told to illustrate a point, I've found that people remember stories long after dry facts are forgotten, and that gear lists don't do much to inform or teach.

Like my students, I too recall stories told to me decades ago by childhood mentors and by other teachers. Much of what we think of today as survival skills were simply life skills for our grandparents, or perhaps in many cases, great-grandparents. Those skills were passed on to me, and others of my generation, as stories. Those survival skills, survival stories, and traditions, due to our ever

stories. Those survival skills, survival stories, and traditions, due to our ever more urban society, have been broken. It is my intention to, in whatever small way I can, mend that break. It is also my intention to try to bridge the gap between two stereotypes: the effete tree hugger and the environment-destroying camo-clad survivalist. Both think of themselves as survivors. They just approach the topic in different ways.

It's an old tradition, storytelling. All preliterate societies used stories to pass on information, and the advent of writing only reinforced the practice. So, in this book I'll tell some stories, hopefully engaging ones, and relate some personal experiences and practices to illustrate the use of survival gear and to provide some practical examples of survival behavior. I've also found that the process of extracting the lesson from the story aids in absorbing and retaining the lesson, partially because the reader puts him-or herself in the place of the person in the story. Each of these stories teaches lessons. After reading each story, ask yourself what lesson, or lessons, the story taught. Absorb the lessons, and decide for yourself what survival gear you need.

CHAPTER ONE

An Approach to Survival Gear and Survival

HAVING TRAVELED THE WORLD FOR A HALF CENTURY, AND HAVING worked in over forty countries in Asia, Latin America, and Europe, and having experienced survival situations in places as varied as crumbling cities in lesser-developed nations, five-star hotels, sailboats at sea, jungles, mountains, and deserts, my approach to survival gear is global in perspective. During a long life I've lived through earthquakes, hurricanes, tornadoes, and floods, and been embroiled in civil wars, urban riots, and total societal collapse. As a result, I've had to run for the border or get the last plane out more than once. A lifelong outdoors-man, I've also traveled alone and on foot in deep wilderness on four continents for extended periods. From these experiences I've formed my views on survival equipment.

My first focus is on simple, reliable, lightweight gear for the individual that can be integrated into daily life so that a person could have it accessible at time of need, gear that is not a burden to carry on foot and that would be essential in any survival situation. Integrating this gear into daily life is critical. Disaster will not wait for you to run home and get your survival equipment. Survival situations do not occur only when you're equipped and ready. Survival situations usually happen without warning, which is why they become survival situations. Put simply, if you don't have your gear in your possession, you can't rely on it. If your individual gear is compact and lightweight and with you, and if you have your wits about you, you might survive situations that have taken the lives of

others. You might also be able to help others as well as take care of yourself.

Being able to move freely on foot is foundational to survival. Cars, trucks, and buses break down, or are blocked by landslides, or simply get stuck in massive traffic jams when thousands try to flee a disaster zone. Power fails and elevators get stuck and subways come to a halt, often with people trapped in them. Donkeys and horses go lame, boats sink, and trains derail. To be able to move freely and quickly, to walk long distances, to climb stairs and hills, to run and move with agility while carrying your gear is of critical importance.

If, like many people, you have physical limitations that restrict your mobility, you'll have to make allowances and plans that take that into consideration. If you are fit, strong, and agile, you might use those attributes to help others.

Here's a recent quotation from Lee Mastroianni of the Office of Military Research, who is currently working on the problem of lightening the load of combat soldiers: "The ability to move is directly related to the ability to survive." This statement has been proven by history, and by current events, and applies to civilians as well as the military.

During the D-day invasion of Normandy in World War II, many US Army soldiers drowned while attempting to wade ashore with gear that was too heavy. Some of the paratroopers of the 82nd Airborne Division who were dropped behind enemy lines on D-day landed in boggy areas and drowned because they were loaded down with too much gear. In Vietnam, foot soldiers were called "grunts" because they carried so much gear, gear that limited their movement.

Today, musculoskeletal injuries to the knee and back from carrying heavy loads cause twice as many medical evacuations from Iraq and Afghanistan as combat injuries, and those injuries are the leading cause of medical discharges. While in the military I witnessed many such injuries, some of them disabling, due to carrying loads beyond what the human body can support. These injuries were sustained by highly conditioned paratroopers and Special Forces soldiers, elite troops whose training was a full-time job. Given that these exceptional military athletes sustain these kinds of injuries, what do you think the odds are of a civilian, even a gym fit civilian, walking long distances or running, jumping, and moving evasively without injury while heavily burdened?

The experiences of refugees and people in extreme circumstances worldwide over all of history also support Mastroianni's statement. Photographs of the roads leading from disaster zones show them to be littered with discarded possessions that refugees wanted to keep but couldn't carry. Interviews with people forced to leave a distressed region, even if not a total disaster, such as New York City during a region-wide power outage, reveal them walking out,

tossing aside various personal possessions, and wishing they had worn comfortable walking shoes.

The same statement also applies to those who pursue outdoor recreation. I've seen more backpackers than I can count disabled by knee, foot, or back injuries due to trying to carry more gear than they were conditioned to carry. Inexperienced and/or poorly conditioned backpackers who hit the trail with a heavy load usually trudge a mile or so before starting to discard items, usually expensive gadgets the salesman told them they needed. Or they quit the activity. There are more one-time backpackers than any other kind. Experienced, highly conditioned alpinists focus on "fast and light" gear, as do many other experienced outdoors people.

I've worked with civilian survival students who showed up for class with a large backpack filled with gear. Those who didn't heed instructions to leave about two-thirds of their load at base camp learned the hard way. To keep up with the group, which was moving at a moderate pace, they had to discard everything from expensive binoculars to heavy loads of military-grade gear and ammunition. Or, they dropped out of the class.

The term *bug-out bag* is now in common usage. Most "experts" advocate a large backpack filled with sleeping bag, tent, camp stove, a week's worth of freeze-dried food, a couple gallons of water, fire starters, air filter masks, a water filter, a GPS unit, a CB radio, a satellite or cell phone, laptop or tablet, extra batteries, extra clothing, rain gear, knives, machetes, hatchets, and enough guns and ammunition to arm a fire team. If you have all this gear, you're camping, not surviving—and you'll be camping close to your vehicle or home because you won't be walking very far burdened with such a load. If you have to run, say from a wildfire or a riot, you'll ditch that big, heavy bag fast. Odds are you won't have that gear with you in the event of an emergency. Most likely it'll be in the trunk of your car or at home.

People tend to overburden themselves due to insecurities and lack of good information, and because they attempt to take the comforts of home with them. Taking part of your home with you may be fine if you're car camping, in which case you'll have the means to transport ice chests, barbecues, large tents, folding chairs, generators, and portable televisions—all of which I've observed in campgrounds. But what happens in the event of a disaster that forces you to discard all that gear? What if your truck dies, or crashes? What if you get lost away from camp? The same insecurities and lack of good information, and the same desire for the comforts of home, lead to backpackers attempting to carry 60 pounds of lightweight gear for a weekend outing. It is this desire for home comforts coupled with anxiety and a lack of experience that motivates those concerned about survival to load up an enormous backpack with so-called

concerned about survival to load up an enormous backpack with so-called survival equipment and to feel they're now safe because they possess this gear.

I have instructed people who have shown up for my survival classes so burdened to take an hour's walk with their gear before we start class. They soon learn that this walk *is* the first class. Blisters; sore necks, shoulders, feet, and legs; faltering steps; and total physical misery soon cause students to adjust their concept of survival gear. Think bivouac, not camping, when you think about survival gear. A bivouac is a "temporary camp or shelter often with improvised equipment." A little discomfort is a fair trade for mobility that might save your life.

Equally important, after becoming proficient with minimal gear, you will learn to be comfortable with very little, and with that experience insecurities will fade like morning mist. After reading this book, and before you buy any equipment, sit and think about each item you are considering. Is the item something you *need*, really *need*, or only something you *want*?

Also, trying to plan and equip for any disaster or survival situation that has ever occurred in history, for any event that writers of science fiction might dream up, or any event that might spring from the minds of marketers of survival gear, leads to a bottomless pit of anxiety that couldn't be filled with the equipment of an infantry division and the entire contents of a big-box store. The functional approach to survival is to be prepared for survival situations that might reasonably be expected to occur by having simple, minimal, lightweight gear.

The blogosphere and the entire Internet are choked with survival advice from various "experts" who advocate preparing for the end of the world as we know it, for the total collapse of the world economy, for the end of oil, for massive countrywide terrorist attacks or zombie attacks, for worldwide nuclear destruction, for mutated Ebola that wipes out half the population. How can you possibly prepare for all these eventualities?

If it's zombies you're worried about, turn off your television, and step away from the Internet. What if a UFO the size of the Rose Bowl lands in the mall parking lot and 5,000 aliens swarm out? What survival gear would help? I have no idea, and I doubt anyone else does either. What if you're a hundred yards from ground zero when a nuclear device is detonated? Well, I hope you've made peace with your god, or the universe, because you'll be on your way to heaven or hell, or to be recycled into your next life, and no gear will help. What if . . .?

You get the point, right? Much of what I read on the Internet about survival is about preparing for outlandish possibilities that you cannot possibly prepare for. This is fear-mongering and marketing to sell gear, nothing more. True, if you look on the dark side, there is much in our world to be concerned about. But

you look on the dark side, there is much in our world to be concerned about. But there always has been. Large problems will be solved by society, not by individuals. Let's dial it down a little.

I approach survival and survival gear from the point of view that each of us should be prepared for events that could *reasonably* occur as we go about our lives, commuting to work, traveling for business or pleasure, engaging in outdoor recreation, or doing whatever it is you do with your day. Survival situations arise not only when lost in a wilderness or when disaster strikes, but in everyday life, and if we can't take care of ourselves, we can't help our loved ones.

MIND/BODY SKILLS

Before we get to physical equipment, let's briefly consider mind/body skills, without which even the best-selected gear won't do you much good. With mind/body skills and knowledge, tools can be effectively integrated to make a functional survival system. For more on the topic of mind/body skills and fundamental life skills, for survival-level conditioning in seven minutes a day, to learn fire-making and lost-proofing, flash threat analysis, how to improve your night vision and non-visual perception, and other skills, read my book *The Tao of Survival*, and practice the exercises therein. Do so, and you might well avoid survival situations before they get out of hand.

We come naked into this world and immediately begin to learn survival skills. If we were fortunate enough to have been born to loving parents, we learned that crying will produce food, warmth, and comfort. At that point in our lives, crying was a survival skill. Some, unfortunately, continue to practice this skill into adolescence and add whining, tantrums, and sulking to their behavior, thinking that these also are survival skills. In some instances, with some parents, these *are* effective survival skills. This behavior is, however, counterproductive with most of society, and totally useless in the natural world. Some even carry this behavior into adulthood, or what passes for adulthood for them, bitching, moaning, complaining, and railing against circumstance, God, the universe, fate, or whoever is handy.

I've witnessed a good bit of this behavior in survival classes I've taught and attended, as well as in the real world. Such behavior is not a survival skill. Yelling at the captain of the ship as it's sinking will not prevent you from drowning. Stamping your feet in frustration when the match doesn't catch the tinder alight will not make fire—no matter that you're cold and shivering. The forest doesn't care if you die of hypothermia. The right attitude, one devoted to problem-solving, is critical to survival.

Our mind/body is our foundational survival equipment. Keeping your

Our mind/body is our foundational survival equipment. Keeping your mind/body reasonably fit, learning and practicing effective survival skills, acquiring critical knowledge about your environment—all help to build and equip a mind/body effective for survival. As we mature we learn not to put our hand in the fire because it burns and is painful. We learn to not jump off the roof, perhaps by doing it once, because only Superman can fly. We learn to be aware of the world around us, to not trip at the top of the stairs, and to look both ways before stepping off the curb to cross the street, hopefully without first being hit by a car. Learning from other people's experience is survival behavior, and so we listen to our parents and other teachers to learn the ways of the world. Having to learn each hard lesson by personal experience is often not survival behavior.

Unfortunately many halt their learning at this point, or forget even these basic lessons. I often see audio zombies, headphones plugged in, eyes closed, bopping across busy streets in time with their music, oblivious to the person in the Benz on her smartphone shouting at the maid while drinking a latte and bearing down on the hapless audio zombie. Both the driver on her phone and the audio zombie are lost in their private worlds and totally unaware of the world around them. This is not survival behavior and often leads to tragedy.

Responsible people—that is, people who take responsibility for their own well-being, and if they reach maturity, for that of others—continue to learn as they get older, and they pass on their skills to others. Learning to cope with adjustable interest rates, driving defensively, figuring out how to make a living without destroying your soul, these are all contemporary survival skills. So are swimming, basic lifesaving and first aid, basic health maintenance, dressing for the weather, and driving in rain and snow. Responsible people can navigate the world as it is and can, when a survival situation arises, unpack previously learned emergency survival skills and utilize their basic gear to survive. Or, survival skills and gear lacking, they will analyze the situation and devise the most appropriate response of which they are capable. This is good use of the foundational survival equipment we are given at birth—our mind/body.

INTEGRATION OF EQUIPMENT AND MIND/BODY SKILLS

Here is an example of a practical application of the integration of mind/body skills and knowledge, and of being prepared with basic equipment.

ML with small pack containing travel/survival gear and the day's shopping at a bazaar in Turkey. © JAYRES

I'm boarding an inter-island ferry that runs from Turkey to a Greek island. With me is ML, my wife, business partner, and travel companion. As to equipment, on my person I have the things I always have—which are detailed in another chapter. Pertinent to this trip, in my small rucksack, in addition to the usual things, I have an air mattress, which weighs only 6 ounces and deflated goes into a pouch 2 by 5 inches. I'd been using the air mattress while camping and left it in my rucksack because it would also serve as an emergency flotation device. In my pocket I have a tiny flashlight that can be seen for about a mile and a few other useful things. ML is similarly equipped. In the event we are separated, she can take care of herself until we are reunited. If either of us is disabled, each of us is prepared to take care of the other.

Recalling that I had recently read of these ferries sinking with loss of life (local knowledge is survival knowledge), I watch the crew's behavior while boarding the craft. I note that they drag one of the dock lines and the line almost gets fouled in the prop, and that when clearing the dock the helmsman swings too wide and almost sideswipes another boat, and that while these things are happening the crew members run around shouting at one another. They clearly have no procedures in place to deal with minor mishaps such as these. This is not seaman-like behavior, and I wonder how they would perform in an emergency. Most likely all will be well, but I'm going to remain aware, observe their behavior at sea, and be prepared if things get out of hand.

I know about twenty Turkish words and the crew's English is similar, so I would have limited ability to influence the crew's behavior if they act in a way that endangers the boat and passengers, but I am prepared to try to do so with

whatever words I can muster and sign language. I have basic boat-handling skills and am confident that I could bring the craft to shore safely if need be. But given my lack of language skills, I see little chance of the crew allowing me to take the helm. I consider alternatives. I also think about how to deal with the possibility of a fire, collision, or sinking.

Justin and Jenelle are ready to travel. Their packs contain everything they need to travel the world and camp for a year.

Even though ML and I have air mattresses that can be used as flotation devices, along with cord with which to attach them to ourselves, and even though I can swim at least 2 miles (but maybe not in this cold water and rolling sea while aiding ML, who is not a strong swimmer), the first thing I look for when boarding is personal flotation devices. Signs state they are under the seats. Based on the crew's less-than-professional performance getting under way, I do not trust the signs. I lift the seats and check for myself. Yes, the flotation devices are there and appear to be in good condition. Next, I examine the sealed life raft containers. They seem to be in order. I slowly walk by the bridge to observe the captain. He doesn't appear to be drunk or incapable.

After a quick walk-through to inspect the cabin, which is in reasonably good order, but with exits I think are too small, I decide to not stay below where we could get trapped in an emergency. I choose seats on deck close to the rail. It's a beautiful summer day, but I would have made the same decision if it had been cloudy. If it had been raining, we would have gone inside but stayed close to the exit.

ML doesn't see well without her glasses. She has an elastic strap to hold her glasses in place, but glasses can get lost in the scuffles that often accompany emergencies. I make sure to stick close to her. Once I'm comfortable that we are prepared for problems that might reasonably happen at sea (I am not concerned about the possibility of a meteor landing on us, a sea monster swallowing up the entire boat, or being boarded by pirates), I evaluate the other passengers. Many of them are overweight and obviously in poor physical condition. They will need help if there's an emergency, fire, sinking, or any of the other disasters that have recently happened on ferries and ships.

There are three young men who look like they spend a lot of time in the gym. They appear to be decent fellows who might accept direction in an emergency, if needed, and would do their best to help others. They might be part of the solution. About a half dozen of the passengers who are traveling as a group are frankly drunk, and rapidly slamming down tall glasses of bourbon and Coke. In an emergency they would be part of the problem. One of them is becoming aggressive, pushing another fellow and trying to start a fight. I keep some attention on him.

All of this observation and analysis takes two to three minutes. Survey complete, I retain awareness, as you would while driving, and enjoy the day, the ride, the sea and its colors, shading from turquoise to cobalt, and the fresh offshore breeze carrying the scent of cedars from the island. Gulls swoop and call. The island draws near, and we see the remains of an ancient stone fort on a

headland. Being a student of ancient history, I make a note to visit the fort. The point to my including these observations and thoughts is to emphasize that survival awareness need not consume all, or even much, of your attention. The crew display their minimal level of competence while docking and slam the craft into the quay, but no emergency occurs. We land safely and continue to enjoy the day.

Ferry between Turkey and the Greek island of Meis

This kind of awareness is automatic for me, and can be for you. With a little practice, it requires no more attention than looking both ways before stepping off the curb or buckling a seatbelt before driving. The possibility of an emergency occurring inhibits my enjoyment of the day no more than watching traffic on a highway. No anxiety, and as the Aussies say, “No worries.” This is survivor’s mindset.

Nothing untoward happened that day, not onshore or on the boat. No wild beasts attacked us on the island, human or otherwise, no earthquake occurred, no forest fire, no terrorist attack. Neither of us got food poisoning at lunch. Under way again, the boat continued to have minor problems due to the lubberly behavior of the crew. They fouled the anchor and spent the better part of an hour freeing it, this in a harbor with a clean bottom. The helmsman steered beam on to the prevailing waves, giving the passengers a rough ride, which provided us with the opportunity to practice balance and sea legs. It was a pleasant day with minor adventures. But we were prepared for emergencies that might reasonably

minor adventures. But we were prepared for emergencies that might reasonably happen.

Think ahead. Think, *what if?* As to gear, think about what might help if something untoward that might *reasonably* happen does happen. I didn't have flares with me during that ferry crossing, but after observing the general level of crew competence on the ferry, and if I were going to be doing much island hopping, I might go to a marine supply store and purchase some pen flares. Or not, depending on my sense of risk. First, develop survivor's mind and awareness, survivor-level physical fitness, and basic survival skills. Then, after reading this book and determining your needs, select your foundational survival tools. Taking responsibility for your own safety is survival behavior. Assuming responsibility for the survival of your loved ones, and that of others if you are able to do so, is also survival behavior—and moral behavior.

Gear has an insidious way of making us think we are protected simply by possessing it. But being loaded down with equipment will not help us to survive if we lack survival skills. For the person who knows how to use them, a few tools can save lives. We are, after all, tool users. Keep in mind that your naked mind/body is your foundational survival equipment. Let's build out from there.

CHAPTER TWO

The Layering System of Survival Gear

SIMPLY STATED, THE LAYERING CONCEPT IS TO START FROM THE SKIN and work out with individual items in layers, the items in each layer determined by importance and portability. The system I was trained in and which I've used for decades has four layers.

The first layer is your clothing and the most essential but compact gear that can be carried in your pockets or on your person in various ways, including money belts, belt and neck pouches, and so on. The second layer is a "ready bag," which is any small bag suitable to be carried at all times according to your activities and which contains critical items too large or inconvenient to carry on your person. The third layer is a small rucksack or backpack that contains less critical but still important gear. The fourth layer is base camp, which could be your home or, if traveling, a hotel, hostel, or tent.

There is a good bit of flexibility built into this system, and items can flow from one layer to another according to individual needs, available equipment, and changing environment. Often second and third layers are combined. Over much of history, and even prehistory, people have proven the value of this system.

Otzi the Iceman, a well-preserved mummy of a man frozen in the Alps over 5,000 years ago and found in 1991, used such a system (more about him later). Daniel Boone and old-school woodsmen such as Nessmuk used such a system. Today's soldiers, aviators, and paramilitary operators all use some variation on the layering system. Rather than setting forth one gear list for all, I'll give examples of layering systems and detail items that I, and others, have found to

be optimal for each layer. With this information you can then develop the contents of a layered system that would work best for you.

Wabash Pete, one of my childhood mentors, introduced me to my first layered system, although he didn't call it that. Pete lived next to the Wabash River in a small cabin he had built, thus his name. I met him one day when I was fishing. I was ten years old and not catching any fish. Pete volunteered to show me how. He was old and whiskered and rumored to be a World War I veteran. He was pretty much a hermit. Pete seemed to like me, for some reason or another. Over the next year or so, he taught me a great deal about how to survive, although he called it "getting by."

Whenever we went "woods wandering," Pete always brought the same small, beat-up, khaki-colored canvas bag he carried around town. I think it was a World War I army haversack. He called it his "possibles bag." In it he usually had a tobacco tin containing fishing gear, his .22 pistol and extra ammo, some wire snares, an old but razor-sharp kitchen knife in a homemade leather sheath and a tiny sharpening stone, some dry paper in a small oilskin pouch to be used for personal hygiene or as tinder if needed, a red bandana, a little pouch with toothbrush and toothpowder, another small pouch with some gauze, iodine, and related items such as oil of cloves for toothache, a surplus army canteen filled with water, a half-pint bottle of "snakebite medicine" (I think it was bourbon, but he never let me taste it), sometimes a sandwich in waxed paper and maybe an apple and some peanuts, and a few other odds and ends.

In the pockets of his baggy pants and slouchy jacket he always had cigarettes, a cigarette lighter made from a rifle shell, a waterproof matchbox filled with matches, a pocket compass, some cord and a leather thong, a folding knife, another bandana, a worn leather wallet with a few dollars, and sometimes bubblegum or candy for me.

If we were staying out overnight, he put in his bag a sack of flour or cornmeal, a flat tin can the size of a hockey puck filled with butter, a box of raisins, salt and pepper in twists of waxed paper, and sometimes a can of pork and beans. He rolled up a thin wool blanket inside a rubberized poncho and tied it under the flap on the outside of his bag along with a tin can he used as a cook pot. With these few things, Pete could "get by" indefinitely. He was an expert hunter, trapper, and fisherman and knew what plants to eat in season. He was a pretty good camp cook, too. Even without his blanket, poncho, and cook pot, he could get by fine by building a shelter and cooking in the open fire or on a flat rock.

Pete's clothing and the items in his pockets were his first layer. His possibles bag, which he carried all the time, was his ready bag and second layer. When he

added the other items to his ready bag, it became, in effect, his third layer. This is the essence of a flexible layered survival system, and a very effective one.

Pete tutored me in putting together my first outfit, which was built around the things in my pockets (more on that later) and my Scout pack, a small canvas backpack. In my pack I kept things similar to Pete's, except for the pistol. I bought my first rifle at eleven, a .22, with money I earned on my paper route and used it mostly in the woods near town to hunt small game. A handgun wasn't within my realm of possibilities. Following Pete's example, I made a pot from a tin can and a bail from a coat hanger to suspend it over a fire, and stuffed a rolled wool blanket and oilcloth under the flap when I planned to be out overnight. I also read everything I could find in the library written by early woodsmen and pioneers, and especially anything about Roger's Rangers and Lewis and Clark.

From an early age I explored all the wilderness I could get to near our town and, just as much fun, abandoned factories and haunted houses. I climbed cliffs and buildings, crossed rivers on the underside of bridges and with makeshift rafts. By the time I was fourteen, I had been captured by the romance of the open road and wandered over much of two states by bicycle, foot, and by hopping freight trains to get to wild areas. During all of this I continued to use and refine the outfit Pete had helped me put together.

In concept, Pete's outfit and the childhood equipment I put together are not much different from the load-bearing harness, butt pack, canteen, and overnight gear strapped to the harness that I was introduced to in army basic training. When assigned to my "permanent" unit (nothing is permanent in the army), I learned that para-troopers and Special Forces carried much more gear, but also in a layered system that included a rucksack and detachable bags.

Some years later, during paramilitary training, I was instructed in detail how to assemble a specific layered system, including a ready bag, or go bag, or "go to hell bag"—referring to when the situation goes to hell. It was also sometimes called a bug-out bag, or BOB.

The bug-out bag, or ready bag, I was taught to assemble was a small, handy bag that I could easily carry with me at all times, and which contained a few essential items of equipment and supplies for daily use and some emergency items in case the situation went to hell and I had to bug out; that is to say, scram, exit, head for the border, slip out the back, Jack.

The first bag I used was what we called an AWOL bag, basically a gym bag. In it I had a strong sheath knife and a tiny whetstone; a match-grade .22 pistol in a slip holster with three fully loaded magazines and an extra fifty rounds of ammo; a small medical kit that included a trauma bandage, a broad-spectrum

antibiotic, charcoal tablets, and potassium permanganate crystals (more on these medical items in another chapter of this book); a flyweight, water-resistant nylon jacket, light wool shirt, hat, thin leather gloves, sunglasses, and tightly rolled poncho; a canteen with a cup that could be used as a cook pot; a little food, and matches in a waterproof case; a compass and penlight; a scarf to serve as a head net for bugs; a small first-aid kit; a compact shaving kit; a match case with monofilament, hooks, and wire (wrapped with duct tape); 20 feet of parachute cord; a notebook and pen; a pint bottle of "snakebite medicine" (usually Johnnie Walker); a paperback book; a good bit of cash and extra identification (kept in the lining of the bag); an extra shirt; and a change of shorts and socks.

Regarding the firearm I carried in those days: It was germane to my specific situation, and it was not uncommon to carry a firearm at that time (forty years ago) and in those places. The world has changed. I do not recommend carrying a firearm in your ready bag or on your person unless you are legally permitted to do so—which you will not be as a casual traveler in most places today. In any event, firearms are not required for survival and often lead to more problems than they solve.

During my first excursion, I replaced that gym bag with a large canvas camera bag and acquired a mosquito net, a handwoven hammock, and some local medical items. This ready bag was in effect both second and third layer, a combination ready bag and travel bag. With this outfit I was equipped for urban and rural travel, work, bivouacking, self-defense, and food foraging and hunting in wilderness areas in Latin America or Southeast Asia.

Basically, I lived out of this bag. And while it might sound like a lot of equipment when described in detail, the weight of the bag and gear was less than 10 pounds—lighter than most laptop bags today. The bag was small and unobtrusive and could be placed next to my chair in a restaurant or held on my lap on public transportation without attracting attention. I could travel quickly and freely over difficult terrain and in rain forest, scrub, or jungle. The bag was no impediment to hopping a ride in a native boat or other small craft, a helicopter, or light aircraft.

My first layer was climate-appropriate civilian clothing, my passport case and passport, cash in three locations, a business card–size address book with emergency contact information, a folding knife, two handkerchiefs, keys, a Zippo lighter and cigarettes (everyone smoked then), and a few items hidden where we lightheartedly hoped they would pass through a search. On occasion, and as need be, the handgun and/or sheath knife were on my person rather than in my bag. Here's an important point: I used all of these items and replaced them as needed. A ready bag, a ready/travel bag, or a BOB must have everyday utility or soon it will be seen as a burden and left behind, as will "just in case" items

or soon it will be seen as a burden and left behind, as will "just in case" items.

Over the years I've used various European hunter's pouches and shoulder bags, a series of small daypacks, and briefcases when in business attire. The contents of my ready/travel bag have changed somewhat through the years; space blankets, cell phones, and lightweight laptops were not available back then. Contents also varied, and still do, according to my immediate needs and the local environment: sun hat in the tropics, wool cap in winter. I no longer carry a firearm and have limited need for fishing gear, but the core items have remained remarkably unchanged over the years, in concept if not in actual gear.

CHAPTER THREE

First Layer, Clothing

THE CLOTHING YOU'RE WEARING ANY TIME YOU STEP OUTSIDE OF YOUR home is your first layer of protection against the elements; it is, in effect, survival gear. This is so obvious that to mention it seems redundant, but this basic function of clothing is commonly ignored in favor of fashion. Take jeans, for example. Jeans are hot in summer, cold in winter, heavy, slow to dry, and a poor choice for the wilderness, or for travel of any kind.

Yet, if all the jeans worn today were to suddenly disappear, about three-quarters of all Americans would be naked, except for underwear, from the waist down. If you doubt that, observe what people are wearing next time you're at the mall. Jeans first became popular when James Dean wore them in the movie *Rebel Without a Cause*. Jeans were originally designed as clothing for miners and were adapted by other workers in various industries who did heavy work. Before that seminal movie, jeans were mostly only worn for heavy work. Contrary to popular belief, cowboys in the Old West did not wear jeans.

The sixties established jeans as required clothing for the cool, the hip, the rebels, hippies, and rock musicians. Soon everyone was wearing them. The fashion spread to Europe, even Eastern European Soviet Bloc countries, where they became a symbol of freedom and the West. By the middle seventies jeans were even worn by the young in Southeast Asia, where the heat and humidity made wearing heavy 12-ounce denim grossly uncomfortable.

Jeans are not a good functional choice for anything but heavy work. Mountaineers and backpackers are familiar with the phrase "cotton kills." Indeed it does—in the mountains where clothing gets wet from the elements and

perspiration. Once wet, cotton is very difficult to dry. In the tropics, jungle, savanna, or desert, lightweight cotton clothing absorbs perspiration and slowly evaporates it, creating a cooling microclimate around your body, which is desirable. But cotton does the same in the cold, where a cooling microclimate can lead to hypothermia and death.

The heavy, thick denim with which jeans are constructed lack even cotton's cooling virtue. In the tropics the thick, heavy, tightly woven cloth adds to the body's heat load. The tight fit of jeans impedes agility and drags on the legs when walking. Jeans are fine for work wear, for clubbing, or any place where fashion rules. But do yourself and your family a favor and don't wear them to the wilderness, especially the mountains where they can kill you.

I once saw a teenaged boy die when the search and rescue crews found him too late to reverse the terminal effects of hypothermia. The team worked fast and skillfully and evacuated him to an emergency room by helicopter as soon as possible. But it was too late to save the boy. His parents were grief-stricken, and the search and rescue team and the emergency medical technicians were in tears. The boy was fifteen and had gone off the main slopes while snowboarding. He become confused in snow flurries and got lost. He was not found for three days. When the event was reconstructed, it was determined that he was never more than a mile from the lodge.

Even without the minimal survival skills of fire-making and lost-proofing, even without a pocketknife and a fire starter, even without knowledge of shelter-building, that boy might have survived if he had been properly dressed for winter in the mountains. Instead, he was dressed in the height of fashion for teenaged snowboarders: baggy jeans and a cotton hoodie, clothing that does not insulate or provide wind protection and absorbs wet snow like a sponge. His choice of clothing contributed to his death.

I've witnessed other tragedies, and near tragedies, that environmentally appropriate clothing could have easily prevented. A German couple on holiday died from exposure and dehydration in the California desert while wearing only swimming apparel that exposed their skin to the burning sun, rather than covering up with long-sleeved cotton shirts, cotton pants, and wide-brimmed hats. When found they had half-full water bottles. In the desert sunstroke and dehydration can take place quickly, faster than the inexperienced realize.

I once encountered a scoutmaster with his Scouts at 9,000 feet in the mountains. They were lost. All of them were hypothermic, and all of them were wearing jeans and cotton Tshirts and sweatshirts that were wet. Fortunately we were able to help them. First we got some soup cooking. While the soup was heating, we quickly make field-expedient vests from space blankets, which we

always carry, and had them put on the vests under their wet clothing. Then we gave them the soup. Refreshed, they were able to follow us to a lower elevation, where we made a fire and helped them dry their clothing as much as possible. Their sleeping bags were inadequate, but they were able to sleep warm around the fire that we kept burning all night. The next day they were able to walk out under their own power.

Wear what you must for your work if you're constrained by employer or industry dress codes. Wear what you will for fashion. But if you're going into wilderness, traveling, or simply want to be prepared, dress for your environment, for comfort—for survival.

In winter or cold climates, dressing for survival means wool and synthetics, such as polyester fleece and puffy outerwear padded with synthetic insulation. Down insulates well—until it gets wet. If and when your nylon-shelled down jacket—warm and snug in the cold—gets wet, it becomes a sack of wet feathers and loses all of its insulating abilities.

The properties of wool have been well established over centuries. Good-quality wool garments will provide dependable warmth and protection from the elements. Tightly woven wool, in addition to insulating, will act as a windbreaker, and if specially treated or the natural lanolin left intact, will repel water. If the possibility of being around campfires is high, wool has a major advantage over synthetics in that it doesn't melt if a spark lands on it. When exposed to flame synthetics can melt, causing serious burns to the wearer.

Tightly woven wool shirts with long tails can serve as jackets or be worn under other garments and are excellent all-around cold weather garments. Wool sweaters also insulate well. Cashmere sweaters are expensive, but no other garment I know of has the versatility and comfort range of a two-ply cashmere sweater. If worn under other garments, and with appropriate care, a cashmere sweater will last for many years. The one I'm wearing as I write is over ten years old, and I have worn it each year in varied conditions, including during extended periods in rough outdoor conditions, and it is still in fair shape.

Long underwear made from fine top-quality wool doesn't itch, insulates very well, has a wide comfort range, and wears well. Silk long underwear is excellent, with a wide comfort range and good insulating properties. Silk dries quickly and will provide warmth when wet. Polyester long underwear, such as that made by many outdoor companies, also insulates well, dries quickly, and insulates well when wet; its primary drawbacks being that it irritates some people's skin, and it retains and amplifies body odor, even after washing. Wool and silk do not retain body odor in the way polyester does.

Socks should be wool without exception. Fleece socks are too bulky for daily

wear. The various synthetic socks currently available do not stand up well to the abrasion that walking creates, and they promote blisters. Wool socks are best for all conditions.

Up to 20 percent of your body heat can be lost from your exposed head, so a wool or fleece hat is a required item for cold weather. The popular watch cap design is okay, but I prefer a wool beret, which sheds water and blocks wind better than the knit watch cap. A beret with an adjustable band that allows it to be pulled down over the ears is best. The Russian-style flapped winter hat, sometimes fur-lined, is excellent for extreme temperatures, but too warm for less-than-extreme cold weather. In arctic areas locals often wear fur. Although out of fashion due to the practices of fur farmers who abuse animals, fur clothing is superior for arctic use, in many ways, to any currently available commercially made clothing, but impractical for use in other climates.

In summer or in tropical climates, dressing for the environment means wearing loose-fitting cotton or linen—and maybe some synthetics. Loose-fitting clothing better supports a cooling microclimate, allows freedom of movement, and is more comfortable than tight clothing that binds. Cotton and linen breathe well, create that cooling microclimate, and if they cover the limbs, protect from the sun. Shirts should have sleeves that can be rolled up or down. Shorts are okay for short periods, if you're conditioned to sun and heat, but long, loose-fitting pants are best. A brimmed hat is essential. Some synthetic fabrics work fairly well in hot climates. Many do not. Some, especially in humid climates, feel like wearing plastic wrap. Careful selection, which might require trial and error, is important.

I have yet to find a synthetic that is as comfortable in the tropics as thin, lightweight cotton or linen. While thick, heavy denim is miserable in the tropics, thin, lightweight cotton is comfortable and functional. Properly woven linen can be cooler than cotton due to superior conductivity. Linen is an inherently tough fiber and so, if woven properly, can be very durable. However, almost all available linen garments are designed for fashion rather than function. If you can find a loose-fitting linen shirt, try it the next time you go hiking in hot weather. You'll find it cooler and more comfortable than any synthetic or a sweat-soaked T-shirt. The best all-around choice for comfort, considering availability, and for survival purposes in hot weather, humid or dry, is lightweight cotton.

When I first wore my newly issued thin cotton jungle fatigues in a hot, humid climate, I discovered the wisdom behind the design and the fabric. General Yarborough, commander of Special Forces at that time, personally designed those jungle fatigues and they were excellent. A few years ago the US Army issued tropical clothing made with a blended fabric, 70 percent polyester, 30 percent cotton. Heat prostration injuries among the troops wearing them

50 percent cotton. Heat prostration injuries among the troops wearing them skyrocketed.

It gets cold in the desert at night, and can get cold even in the humid tropics, especially in rain at higher elevations. Bring at least one insulating garment when you go to either of these areas. A light wool or fleece sweater or shirt along with cotton clothing is ideal for those climates.

Synthetic fabrics are in constant development, with new ones coming to market each year. It would be, and is for some people, a full-time job to keep track of annual developments in outdoor apparel in general, and synthetic fabrics in particular. As a general statement, *some* of today's synthetic outdoor fabrics work well, if not as perfectly as advertised. As with all survival gear, try your clothing close to home before placing confidence in it.

Most experienced people who spend time in the outdoors today, including the military, dress in layers so that they can adjust to activity level and changing climate by removing and adding layers as needed. In cold weather the inner layer —wool, silk, or synthetic—should insulate and also be a "transport layer" that will wick perspiration from your body so that you don't create a wet, heat-robbing layer next to your skin. Over the first layer should be worn one or more insulating layers, which are thicker and trap more heat.

Over the insulating layers goes the most important single garment, the one that provides the most protection for the least weight—a waterproof shell. Worn over all of your other garments, a waterproof shell protects the inner layers from rain, sleet, snow, and wind. Wind can quickly suck away all body heat and chill you. The waterproof shell also retains air warmed by your body, and by itself worn over only underwear can raise the temperature of the microclimate around your body by as much as 20°F.

A perfectly waterproof shell, if not ventilated by allowing air to flow under cuffs and hem and out through the neck, will cause the body's perspiration to collect on inner garments and lead to over-heating and wetting, especially while active. Some waterproof shells "breathe" to some extent, allowing excess body heat and perspiration to escape. I have not experienced any "breathable" garment that accomplishes this perfectly under all conditions. Breathable shells also require ventilation.

Some lightweight shells have a waterproof coating that doesn't breathe at all. These are usually less expensive than "breathable" shells and quite functional—if ventilation is allowed for. The best way to accomplish this is to fit the shell oversized, so that it fits loosely over all your inner layers. It will then fit very loosely when you're not wearing all inner insulating layers, which is fine. The loose-fitting shell will block wind, snow, and rain and prevent loss of heat through convection and radiation, while allowing ventilation as needed.

through convection and radiation, while allowing ventilation as needed.

Unfortunately fashion and marketing permeate the outdoor performance clothing market. This results in tight-fitting waist-length rain jackets, which creates an opportunity to sell rain pants. A shell should be long enough to cover your hips. A waterproof, or at the least water-resistant, shell is so important that a survival school that I know of run by experienced former Special Forces personnel will not allow students to start field work without one. A simple, inexpensive, polyurethane-coated nylon shell can save your life.

There are some cotton fabrics used for shells that provide wind and water resistance, notably Ventile, a fabric developed by the British and originally used for aviator flight suits in World War II, and the waxed cotton used by Barbour, a well-known English manufacturer of waxed cotton outerwear. But both of these fabrics are much heavier and less efficient than modern nylon or polyester-coated, or breathable, shells.

AN EXAMPLE OF A VERSATILE, ENVIRONMENTALLY APPROPRIATE WARDROBE

With careful selection you can assemble a wardrobe that is acceptable almost everyplace as everyday wear, while also being suitable for survival conditions. This allows you to be dressed for emergencies without packing along an extra bag. My lifestyle is somewhat unusual in that my wife and I travel most of the time. We travel lightly and our clothing must be useful in a wide range of conditions. Some of our choices in clothing and other gear might also work for you, so I will detail them.

Home for us these days is various places (we think of them as base camps or temporary homes) in the United States and Europe, from which we travel over much of the United States and Europe, and to Asia and Latin America. We have traveled by air, rail, bus, *dolmus*, jeepney, *tuk-tuk*, sailboat, ship, ferry, auto, motorcycle, donkey, horse, foot, and thumb. In addition to what we're wearing at any time, our extra clothing easily fits in the bottom of our small rucksacks. ML's clothing varies somewhat from mine, but we both have clothes suitable for dinner in Paris, traveling with nomads in Central Asia, and wilderness bivouacs. Our clothing is comfortable in all but extreme conditions and will serve as survival clothing under those conditions.

From long practice I prefer to blend in as much as possible wherever I am, and choose mostly neutral colors. Gray can be dressy or casual in the city and blends well in urban areas or in the field, as the Wehrmacht demonstrated with their uniforms of *feldgrau*—field gray. I recall my uncle, who fought in World War II in the Hurtgen Forest, telling me, "They were shootin' at us but we

couldn’t even see the bastards.” I’ve heard similar comments from other WWII vets. Current research into camouflage bears this out. Gray also has the lowest infrared signature of any color. Although black doesn’t blend well in many outdoor environments, it fits well into any urban area and is inconspicuous at night. Earth tones fade into the background in the field, but tend to draw attention in the city.

Others might choose to stand out rather than blend in with their environment. Mountaineers often choose bright colors that stand out against the monochromatic tones of granite and snow. These colors aid in locating them if rescue is required. ML’s wardrobe is similar to mine in essentials. She also wears mostly neutrals, with the addition of brightly colored accessories such as a red beret and eye-catching scarves, which provide some panache in cities.

For temperate to cold climates, autumn through winter and into spring in the Northern and Southern Hemispheres, including mountains, deserts, and cities, but not deep tropics or Arctic, I wear or pack the following:

- ❒ Black or gray lightweight waterproof shell that stuffs into its own pocket
- ❒ Black or gray synthetic puffy jacket that stuffs into its own pocket
- ❒ Black or gray cashmere sweater
- ❒ Black silk long underwear with turtleneck top
- ❒ Charcoal gray wool zipneck top
- ❒ Black synthetic zipneck top
- ❒ Gray, long-sleeved shirt
- ❒ Black knit tie
- ❒ Boxers and T-shirt
- ❒ Trousers, two pairs: one pair nylon with zip-off legs in khaki, one pair nylon in charcoal gray
- ❒ Socks, three pairs: one lightweight, one medium, one heavy, all wool
- ❒ Black leather gloves with synthetic padding
- ❒ Flat, black athletic shoes
- ❒ Black wool beret

❒ Large black or gray pashmina or wool scarf

My clothing fits loosely so that I could, if needed, wear all layers, which I have done in northern Europe in midwinter. If in the *far* north in midwinter, a location I avoid during that season if possible, I add to this outfit. One winter near the Baltic Sea, with thigh-deep snow and drifts up to my chest, I found in a local store a pair of rubber overshoes and a surplus Russian army greatcoat that I wore over the other layers.

During the heat of summer, or if we travel to the tropics, we leave some of our clothing at one of our base camps and replace them with suitable summer clothing. My summer outfit consists of these items:

❒ Gray, flyweight, water-resistant shell

❒ Gray cashmere sweater

❒ Light cotton long-sleeved shirts, three: one khaki, one white, one blue

❒ Tshirts, thin cotton, two: one white, one gray

❒ Trousers, two pairs: one pair nylon with zip-off legs in khaki (same as in winter), one pair featherweight cotton in charcoal gray or khaki

❒ Swimwear

❒ Socks, two pairs: lightweight wool

❒ Shoes, two pairs: flat athletic shoes, locally acquired sandals

❒ Khaki cotton hat with brim

❒ Thin leather work gloves

❒ Gray silk or cotton scarf

Some further comments regarding my specific clothing and clothing for survival:

All of this clothing is integrated into my everyday life and allows me to be dressed suitably for dinner in Berlin or Barcelona or fieldwork in Bulgaria or Argentina. Previously, when my work required me to dress more formally, I easily adjusted this approach by wearing, say, a tweed jacket and wool slacks with appropriate accessories, or in hot weather, linen or cotton slacks and jackets. Properly designed and constructed raincoats or trench coats can be used

jackets. Properly designed and constructed raincoats or trench coats can be used in place of a casual outdoor shell.

If I knew that a survival situation was going to occur, I might choose other, area-specific clothing, such as furs in Siberia. But, I don't know in advance when a survival situation might occur. If I did, I would make sure to avoid it. Actually, dressing appropriately for the environment has over the years helped me to prevent certain situations from going critical. The practice of packing and setting aside special clothing for survival conditions is of no help if a survival situation develops when you don't have those special things with you. If this type of clothing selection doesn't work for you, give thought to making whatever adjustments you need to make, keeping in the mind the general principles, and pack a few items in your ready bag: A shell, hat, and scarf could make all the difference in any season.

Leather gloves in summer are not to keep my keyboard-soft hands warm, but to protect them when building shelters or related field work. The khaki nylon pants breathe well in all but tropical heat, during which I zip off the bottoms and wear them as shorts. They blend well in most natural environments, and given current fashion, attract no attention in cities. They break the cold winds in winter, and layered with silk long underwear, provide adequate warmth in all but the coldest weather, during which I layer the charcoal pants under them. The charcoal trousers have passed for dress slacks on three continents. Both pairs of nylon trousers dry quickly when wet and are durable under rough field conditions. Both fit loosely for free movement and comfort.

I prefer ExOfficio nylon pants above all others. The nylon they use (or perhaps how they treat it makes it so) is more breathable than the nylon fabric of other brands I've tried. Also, it was ExOfficio that invented the zip-off-leg pants, thereby allowing them to be used as both long pants and shorts, and they do it better than others I've tried in terms of fit and comfort. Some criticize zips (as they're not commonly called) as being unfashionable. They may be so, or not, but I'm concerned with function, not fashion, and these are some of the most functional and versatile garments I've ever used.

My current winter shell, a Marmot PreCip, weighs about 12 ounces, packs into its own pocket, and performs well in all conditions except summer heat and in the tropics. During those seasons or locations, I replace it with a 4-ounce shell, a Mountain Hardware Ghost, that stuffed into its own pocket is the size of a tennis ball, is highly wind-and water-resistant, and which breathes better than my winter shell. The 4-ounce shell is versatile and provides protection during chilly evenings and boat travel, which can be surprisingly cold even in warm weather, and in hills and mountains where the weather can swiftly change. Both shells are fitted very loose so they can be worn over all other layers. In summer I

shells are fitted very loose so they can be worn over all other layers. In summer I also add an umbrella, an often overlooked but highly functional item that serves as a sunshade, which prevents a cooked brain, in addition to its obvious function.

A black or gray shell, black turtleneck or gray shirt and tie, black or gray sweater and/or puffy jacket, and gray trousers will pass, and has passed, for dress clothing in New York, Paris, Berlin, Istanbul, Bucharest, Barcelona, Hong Kong, and many other cities. That same clothing will allow me to be comfortable should I be stranded far from shelter, as I have been on occasion. All blend into the background for field use. Switching to white or blue shirts, along with other summer clothing, allows me to be comfortable and to fit into the crowds in beach and resort areas. I mostly wear the khaki shirt in the field. In all cases this clothing will serve for spending nights out of doors, and for urban or wilderness survival situations.

This wardrobe is suitable for the conditions described. If you're in Siberia, you might need mukluks and a bearskin robe. In Key West, flip-flops and shorts might be just the ticket. Adjust for local conditions.

Camouflage is suitable if you're in the military—or hunting in an area where it's generally understood that hunters wear camo. However, camo draws attention, perhaps unwanted, if you're not in such an area. It some places camouflage clothing will cause locals to assume you're military or in an irregular combat unit, and will draw fire or lead to imprisonment.

At one time I wore jeans and other heavy clothing when doing construction, remodeling, or other heavy work. After watching construction workers in Hong Kong scamper up and down bamboo scaffolding tied together with cord to build high-rise buildings, and after watching Chinese workers (men and women) building a dam and moving enormous rocks and chunks of cement by hand, and after watching field workers in Southeast Asia, and observing that all those workers wore light, easy-fitting, pajama-like clothing that allowed free movement (similar to martial arts uniforms), I stopped wearing heavy clothing even for this kind of work.

Most American men think of scarves and shawls as exclusively women's wear—they are not. From London to Beijing, and everyplace in between, men wear them. In Afghanistan, India, Mongolia, and China, scarves are made of silk, wool, pashmina (a blend of silk and wool), or cashmere and provide considerable extra warmth when worn around the neck or shoulders, or drawn over the face during a snowstorm. A large shawl, also known as a pashmina, the name of the fabric, can serve as a blanket in mild temperatures, as can a silk shawl, sheet, or sack. A silk or cotton scarf or shawl provides sun and wind protection in hot weather. In Latin America the serape or poncho serves the same purpose.

In the Middle East and North Africa, a similar wrap is the *shemagh*, usually made of cotton. These are useful to protect from sand, wind, and sun. Unfortunately many of the uninformed associate it with terrorists. Although many of our military wear them to protect from sand and dust, I would not suggest wearing one in certain areas. A large bandana, or two sewn together, can serve a similar purpose.

Brands can be a guide to quality, but often inexpensive clothing can perform as well as top-of-the-market branded clothing. For example, we've been traveling for the past six months, in winter, with synthetic padded nylon jackets I purchased at a big-box store. These jackets are replacements for very expensive ultralight jackets that were destroyed by misadventure. The shell fabric and stitching of the inexpensive replacements is of lower quality (barely noticeable) than the branded garments, but the performance is equal, they cost one-third as much as the branded jackets, weigh the same amount, and stuff into their own pockets.

Important Survival Tip

If you happen to be wearing inappropriate clothing when a survival situation develops, do the best you can. If you fall into water wearing jeans, shuck them off or swim hard. Adapt. Survive.

CHAPTER FOUR

First Layer, Tools

THE KNIFE IS THE MOST FUNDAMENTAL AND ESSENTIAL SURVIVAL tool, so important that I've written two books on the topic—*The Tactical Knife* on the history, selection, and use of the tactical knife, and *Survival Knives, Selection and Use* on a range of knife skills within the survival context. Those skills are beyond the scope of this book. For purposes of this book, we assume the reader has basic knife skills, and if interested in becoming more proficient, will read my other books.

THE KNIFE

With a good knife, skill, and knowledge, you can make tools for hunting, make friction fire tools and split wet wood to reach dry wood to make fire, build shelters in the wild and in devastated urban areas, dig out from an earthquake-collapsed building, cut through an auto body to escape a wreck, make repairs, cut hoses, cable, rope, cloth, and leather, and if need be, defend yourself.

The most common question regarding survival knives is, "What is the best survival knife?" There's an old saying that the best survival knife is the one you have with you when you need to survive. Although this begs the question of what features the ideal survival knife should have, there is a large measure of wisdom in that saying. In this book we'll only touch lightly on knives. If you want to acquire deep knowledge on survival and/or tactical knives and their use, I refer you to my other books. For now, the important thing to know is this: You need a sharp, strong, reliable knife.

The accompanying photos show three categories of survival knives: large

fixed blade, small fixed blade, and folders. We have used all of these knives, sometimes over a period of years. All the knives illustrated are of excellent quality and are suitable for survival use. The choice between large and small fixed blade and folder depends on your circumstances.

The fixed blade is stronger, usually more comfortable in hand, and better than the folder on all counts except convenience of carry. Convenience of carry, however, might be the most important feature; it might mean you'll have a knife when you need one. In most places having a folding knife is socially and legally acceptable, within certain limits, and depending on location. You'll need to check local laws on this. Fixed blades, not so much. If you can carry a fixed blade, a well-made one with a sharp, strong blade about 4 to 6 inches in length and a comfortable handle is best for belt carry. If you cannot carry a fixed blade on your person, keep one in your ready bag and a folder on your person.

Top to bottom: Fälkniven A1, Kellam Slasher, Mykel Hawke Peregrine, Boker Plus, Daniel Winkler Belt Knife.

Collection of small fixed blades, top to bottom: Fällkniven Professional Hunter, Bark River Aurora, Mora clip point, Condor Bushcraft

Unlike a few years ago, there are now many folders that are suitable for survival use, usually referred to as “tactical folders.” To be functional as a survival knife, the folder needs to have a strong, sharp blade about 3½ to 4 inches in length that can be opened with one hand—a folder requiring two hands to open is not optimal for any survival situation and is a major inconvenience at any time. A folder for survival use also needs a secure, reliable blade lock and a clip to attach it to your pocket, waistband, or other clothing. A handle that’s comfortable for hard work is desirable, but not often found in folders.

Folders, top to bottom: Kershaw SpeedSafe, Fällkniven PXL, Spyderco Terzuola, Swiss Army Hunter Pro Lockblade, Al Mar Shrike

For some years I taught wilderness survival pro bono to teenagers who snowboarded, skied, backpacked, rock-climbed, hunted and fished, kayaked, or engaged in other kinds of outdoor recreation, or were otherwise interested. These kids, for the most part, could not or would not carry even a small fixed blade. They would carry a folder. One of my classes was the “One Hour Shelter.” In this class, which I conducted in a northern state near the Canadian border, I taught how to build a shelter that would allow survival in winter and make a fire within one hour using only a folding knife and flint stick. To give it the needed realism, I only taught this class in late autumn through winter and into early spring. Without exception, the young folks who took this class learned skills that could save lives. This became immediately evident to them as night closed in, the temperature dropped, and often sleet or snow fell. The folder can be a key survival tool—if you have the necessary skills.

Winter shelter built in one hour with only folding knives.

When night fell and it became colder, the opening was closed and a small pit fire kindled.

Folder and flint stick

Fire from flint stick

Aside from obvious uses, the knife can aid in survival in unexpected ways. Here's an example of a survival situation in which survivor's mindset and a knife proved critical.

In the mid-seventies I was working in Southeast Asia and had come to Manila for a meeting. My contact insisted we meet at a revolving restaurant on the top of a high-rise building that housed an international hotel. As usual I carried my ready bag—a large canvas shoulder bag—and was equipped as described in this book. While seated in the dining room, I noticed smoke coming from the kitchen. Then the kitchen doors burst open and billows of smoke flowed into the dining area. Cooks, waiters, and other restaurant employees behaved as unprepared people often do, and as the old saying goes, "When in doubt, run about, wave your arms, scream and shout." In the middle of all the confusion, a man I took to be the manager deployed fire extinguishers and got his people moving in the right direction to control the fire. Even so, I thought it was time to go. So did others.

A crowd mobbed the automatic elevators, which would not open their doors. I had no intention of getting on an elevator during a fire and hit the stairs, pushing my contact in front of me, and with about fifty screaming, panicked people behind us. By the time we reached the ground floor, my guy had almost passed out from exhaustion. He wasn't exactly an athlete. Those behind us were strung out over the twenty or so floors. I thought we were home free, until I saw the steel fire door to the outside had been chained and locked shut in violation of every fire code in the civilized world. Later I learned that this was a common practice, an attempt to foil the thieves that plague Manila.

The mob was thundering down the stairs and closing in fast. I didn't think I could fight my way through them to try to get to the door on the second floor, which opened into the hotel and which would probably be locked, as others had been, especially not while dragging my guy with me. Remembering that I had previously trained and practiced cutting through auto bodies with a knife, I got my fixed blade knife from its slip sheath under my shirt and drove it through the chained-up fire door, which was filled with what appeared to be asbestos. Then the mob started piling up behind me, yelling, shoving, and doing their best to push me through the closed door. I turned to the crowd. Luckily I was about a foot taller than anyone else, so they could all see and hear me when I unleashed my best command voice and told everyone to *STOP!* They stopped.

I told them we would all be out of there in a couple of minutes if everyone

would settle down and stop shoving. I got one of the women to give me her platform shoe and used the thick wooden sole to baton my knife, cutting a triangle through the door about 4 feet in height. Few of the people in the crowd were much over 5 feet tall. Everyone scrambled through the makeshift door. After they were all out, I ducked through the opening to applause. It was kind of cool, hero of the moment and all that. But it was really no big deal since I had a good knife, experience cutting through unusual things, and some presence of mind.

The fire department eventually showed up and extinguished the fire. However, a number of people (accounts varied) died in the restaurant due to smoke inhalation—as might we have if we had stayed put rather than finding a way out. What would I have done if I hadn't had a knife? Well, I would have continued to work the problem until I solved it. But having that knife made solving that problem easier.

Any knife is better than no knife. Start now by selecting a knife you can carry comfortably on your person and using it as an everyday tool, which will increase your proficiency. Use it in the kitchen for food preparation; whittle kindling to make fire in your fireplace or barbecue; open packages and envelopes; cut rope, string, and anything that needs to be cut. Rather than reaching for scissors, a kitchen knife, or letter opener, use your survival knife as an all-purpose tool. Doing so will build familiarity, which is valuable if you ever need to use it in a survival situation.

Making a fish trap from a discarded plastic bottle with a tiny folding knife.

Fish trap completed

Nopal cactus pads, dandelion greens, peppers, and berries make salad to go with the fish.

Temporary shelter

Important Survival Tip

Always carry a knife.

It is useful, and can be entertaining, to integrate survival skills into your

daily life. During a walking trip along the coast of Turkey, where the ruins of ancient cities are as common as shopping malls in Los Angeles, we did a little foraging for wild plants and made a fish trap from a discarded plastic water bottle. I used only a small knife with a blade less than 3 inches, the kind of knife anyone could have and isn't seen as a threat and isn't burdensome to carry. While waiting for the trap to produce, we erected a sunshade with a space blanket. Accompanying photos show the results of our efforts. Total time expended was a little more than an hour—basically a lunch break from hiking.

IGNITERS AND FIRE

The ability to make fire can save your life. Fire can save you from the most common cause of death in wilderness—hypothermia. Fire can make food safe by cooking, which kills bacteria and parasites, and make unfamiliar food palatable. Some foods need to be cooked to be digestible. Fire can signal rescuers. Make a good fire and put wet wood and debris on it, and the resulting smoke can be seen for miles. Fire can raise your spirits and support your determination to survive. When it comes to wilderness survival, fire is *it*.

Fire is also critical in devastated urban and rural areas where gas and other services have been interrupted, or in countries where those services don't exist, or in remote locations where services are unreliable or nonexistent. We once took our three sons to a rented cabin to spend the New Year holiday in remote mountains. The snow was deep, the air clean, crisp, and cold. When we arrived after driving for miles on a plowed road with snow piled high on the shoulders, the cabin was warm and cozy. The owner had assured us the heating system was reliable.

It snowed heavily the second day we were there, almost burying the cabin. We had to climb out a window and dig out the door. Roads were closed. Power was out. The heating system failed. There were a few scraps of wood in the shed. No ax or saw. The situation could have been dire. People freeze to death when power fails, sometimes even in cities. As always, I had a strong knife and an igniter. So did ML and our oldest son. With knives and batons we split what little wood there was to make kindling, cut open downed logs (dead logs on the ground) to get at dry wood, and cut inner limbs from evergreens. We made fire and kept a good fire going in the fireplace for the five days it took for a road crew to clear our road. A potential survival situation became a memorable holiday. Knives and igniters, and the knowledge of how to use them, made that possible.

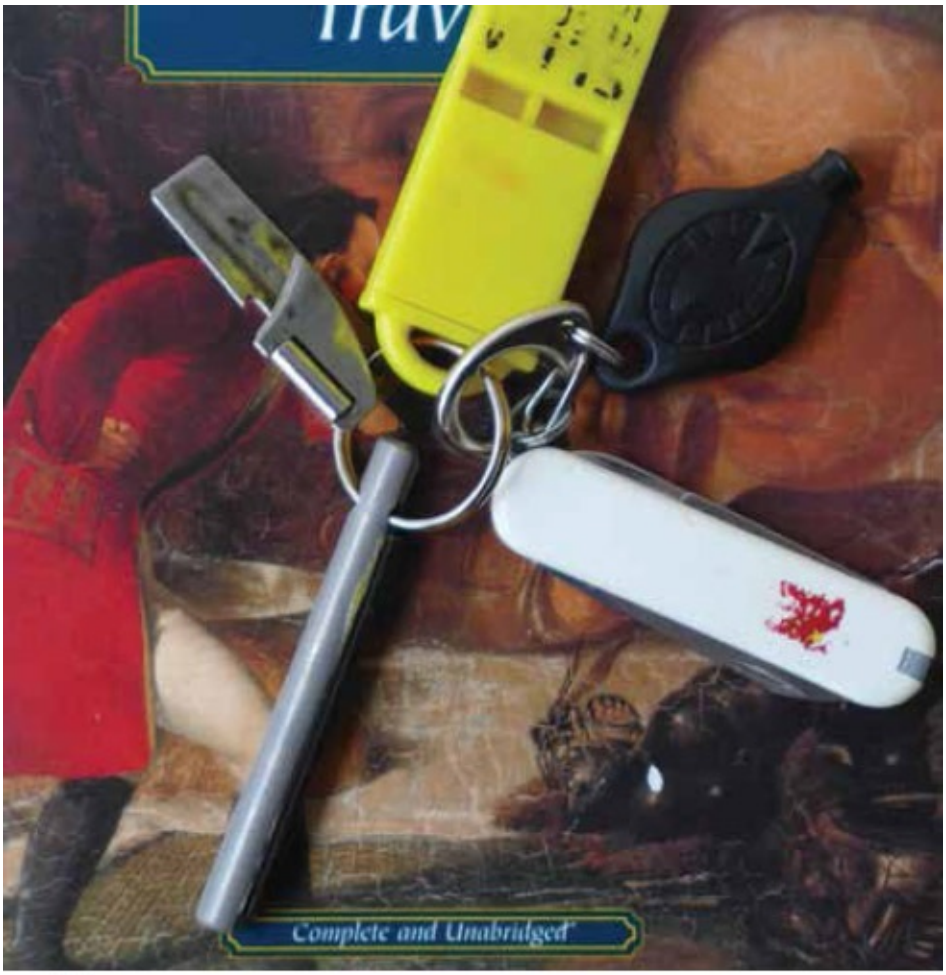
It's easy to make fire—if you know how. It can be almost impossible if you don't. To make fire you need an igniter, tinder, kindling, fuel, and oxygen. Of

these components the igniter is most important. The other components can be found in almost any environment. The igniter is the most difficult to replace or make if you don't have one.

An igniter can be a match, a lighter, a flint stick that throws a hot spark, flint and steel, a flare, an electric spark, or a magnifying glass, if there's sunlight. You can also use friction—if you know how to generate enough heat by friction to get a coal, which is an advanced skill and much harder to do than it seems when reading about it. The best way to learn how to make fire by friction is with personal instruction. Even the most experienced survival instructors who can usually make fire by friction cannot do so under all conditions. They too always carry igniters.

Igniters are tiny, weigh next to nothing, and could save your life. Flint sticks, or sparkers as they're sometimes called, are excellent igniters and come with instructions on how to use them. They will not be rendered useless by water (although they will corrode in water over time) as will matches, and will not be affected by cold, as will butane lighters. Even the smallest-size flint stick, which can fit on your key ring, will last for thousands of uses.

Butane lighters provide a flame, rather than a spark, and are excellent igniters. They also last for thousands of uses, and are easier to use than a flint stick. The best-quality lighters are reliable, although subject to being affected by cold. If they get too cold, they will not ignite. Even in the coldest weather you can keep them operational by carrying them inside your clothing. Butane lighters are also impaired by altitude. Above 6,000 feet butane lighters are not reliable.



Flint stick on key ring

Flint stick by Gerber

Lighter and waterproof match case

I consider matches to be the third choice as igniters. Their flame lasts only for a short time, and even “waterproof ” matches can fail. Matches are, however, effective igniters, available almost anywhere, and can be carried in a pocket in a small waterproof container. Prepared survivors have two or three igniters available. It’s not burdensome to have matches and a butane lighter in your pocket and a flint stick on your key ring.

Although this is a book about gear, making fire seems to be a mystery to some of my friends and many of my students. That being so, and fire being such a critical survival skill, I’ll include basic fire-making instructions here.

First assemble all the components, and have your igniter to hand.

Tinder is anything that will easily catch fire and burn long enough and hot enough to ignite kindling. Paper, cloth, weeds, dry leaves, wood shavings, pine resin, Spanish moss, tree fungus, bark, rotten wood, wood dust, fibers from a carpet, lint from a dryer, a scrap of cloth from your clothing—all can be used as tinder. Good tinder must be dry and must catch fire easily.

Tinder

Pine cones, military issue fire starter kit including a fire sparker and tinder, and Esbit fuel tabs

Kindling is small pieces of wood or other flammable material—anything that burns hot and long enough to start fuel burning. When collecting or making wood kindling for a fire, you should gather it or make it in graduated sizes, from toothpick-size to pencil-size to finger-size and wrist-size. Other kindling, such as auto seat covers and seat belts, small rubber tubes and hoses, strapping and belts, and carpet and upholstery strips, should be cut into graduated sizes before use. Kindling also needs to be dry.

Kindling also needs to be dry.

Fuel is anything that will burn, most commonly wood. If wood is being used as fuel it should, like kindling, be gathered and cut or split into graduated sizes, starting with wrist-size and going to larger-size if you want or need a large fire. Many of the things you can use as kindling can also be used for fuel in larger sizes. It's best if fuel is dry, but if you have enough kindling, you can sometimes use damp fuel and dry it in the fire of the kindling.

Wood shavings to be used as kindling © JAYRES

Kindling gathered for fire

Oxygen is present all around us, but its lack is a common cause of failure in fire making. Piling too much kindling and fuel on tinder will smother the spark

or initial flame.

To make fire you must direct your attention to the details. As in many things, the devil is in those details. Select a spot for your fire that is clear of debris so that your fire will not get out of control and spread, and make sure the ground there is dry. Before igniting a fire, gather all the materials so that you can add them as you progress. Ignite the tinder and place it under the smallest kindling, which you have arranged as a tepee, log cabin, or other structure that allows air to flow freely around the kindling. When the smallest kindling catches, gradually add larger kindling until you have a good flame. Then, careful not to smother your fire, add fuel starting with the smallest size and gradually increase until you have the size fire you need.

It's best to practice fire making before a survival situation arises. Light your barbecue as described above, rather than using lighter fluid. Start a fire in your fireplace without using paper. Practice makes . . . well, you know.

OTHER FIRST-LAYER TOOLS

In addition to a knife and igniters, it's a good idea to always have on your person a few other tools. I routinely carry my passport, other documentation, and some cash in a case that can be worn on a cord around the neck or attached to the belt to be worn inside the trousers. We prefer Eagle Creek money belts and pouches; they are of excellent quality. I also carry a separate wallet with more cash, driver's license, credit cards, a credit card–size address book, business cards, and a pen.

On my key ring are two tiny Photon pinch lights—one of which is red. Red light does not degrade night vision as white light does. Red light can also, at night, be seen farther than white light. This tiny, little red light can be seen for about a mile and has a strobe feature. Also on my key ring is a button compass, which shows the cardinal directions and is sufficiently accurate for general direction-finding if not for precision map work; a flash card containing my current work and digital images of our passports and other documentation; and a P38 can opener—a relic of my military service.

In my pockets are one or two handkerchiefs, which have many uses, including sunshade, towel, compression bandage, water filter, and hot pad; a tiny container of dental floss (aside from its hygienic function, dental floss is excellent all-around cord); a packet of Kleenex; and a packet of Handi Wipes, which could serve as tinder in addition to their usual functions.

Sunglasses

Sunglasses not only protect your eyes from bright light and UV, they will also guard against windblown sand and debris, and against stray foliage when moving through woodland or jungle. Wearing sunglasses during the day also enhances night vision. I consider sunglasses to be an essential survival tool, with the wraparound styles providing the most protection. Top-brand sunglasses can be very expensive. The cost is often justified by their utility in that some are impact resistant and provide superior UV protection. Inexpensive versions are available everywhere and are, sometimes, as good as the expensive models.

Due to fashion and marketing, sunglasses are a fast-changing item. It's virtually impossible to keep up with all the changes. Either select a well-known brand or examine them closely before purchase. Ask a salesperson if you can wear them outside for a few minutes. Simply wearing sunglasses outside the store for a few minutes in bright sunlight will demonstrate their effectiveness, or lack thereof. Good sunglasses also protect against the early development of cataracts, definitely a survival plus.

Money and Money Belts and Pouches

Cash is an important survival tool, in some cases *the* survival tool. You knew that, right? In addition to its obvious uses, cash can also be used to motivate others to provide needed help. In some countries, cash amounts to a get-out-of-jail-free card. Cash might buy you the last seat on the last plane out of a country where war just broke out, passage through a militia roadblock, or special consideration from a local authority. You can also use it as tinder to start a fire.

We use various kinds of money belts and pouches that are available from makers of travel gear. We also use small buckskin pouches made by friends and/or various pouches we purchase while traveling. Much survival gear can be comfortably stored in these belts and pouches. Some people favor carrying a few items in a neck pouch or on a cord or chain around the neck. One of my students wears a medical alert tag on a neck chain. To this, he attaches a tiny knife and flint stick. Blade and igniter combine to create the most compact and basic survival kit I've seen. Carrying a few survival tools such as these on your person is not burdensome and may save your life.

Collection of pouches, both nylon and buckskin

Mobile Phones

Communication can be essential to survival. There's no doubt that cell phones have enabled communications that have saved lives, and that they are a valuable addition to first-layer gear. If you scan the media, you'll find instances of lost or injured or trapped people using their cell phones to call for help and to guide rescuers to their location. Keeping batteries fully charged and having a spare, fully charged battery is a good practice.

There is not, however, cell coverage in all places where an emergency might occur, or even most of them. Nor is it a good practice to rely on your mobile phone or other communication devices as your primary means of getting out of trouble. Batteries run out of power, electronic devices fail, and cell towers and networks fail or can be shut down—as they have been by authorities during many civil disturbances, and by malware inserted into the system by the ill-intentioned.

Also, there are many situations in which an immediate, appropriate response is the only thing that will allow you to survive. No phone call will help when a grizzly bear is charging you, a bridge is collapsing under you, or gunfire is raking your auto. If you've fallen from a steep trail and broken your leg and there's no cell coverage, you'll have to solve that problem in some other way. Cell phones are important supplementary devices but do not replace simple

Cell phones are important supplementary devices but do not replace simple tools, skills, and self-reliance.

Firearms

Firearms are first-or second-level equipment and can be, of course, effective survival tools—that is, in the right hands and in the right circumstances. The right hands are those of people who have been well trained in the safe use of firearms and who have the discernment and judgment to know when their use is appropriate and effective. There is currently, in the United States, an overemphasis on firearms for survival that needs to be adjusted to a more reasonable level. Far too many untrained and frightened people carry firearms in the belief that doing so makes them safe. Guns can be good tools and needed weapons, but are not for the untrained. The topic of guns for survival is too complex to be addressed in this book.

Here's a story about a survival situation that I experienced the same year I met Wabash Pete (see chapter 2), an experience that no doubt influenced my thinking on the topic of first-layer survival gear, clothing, and tools, and which illustrates the importance of the first layer.

It was late November, the week before Thanksgiving and a few months after my tenth birthday. A thin crust of snow that melted a little in the afternoon then froze again as the sun went down covered about a foot of snow on the ground. Streets and roads were slushy. Except for evergreens, trees were stripped bare. There were ice floes in the wide river that ran through town. Black Bear Creek would be frozen over. I wanted to try ice fishing, which I had not done before, so I slipped out of school early and headed for the creek on my bicycle. At that time of year it would be dark in a few hours. I pedaled hard, first on slushy pavement, then on a narrow dirt track, part mud, part snow, and covered the 5 miles or so to the creek as fast as I could. I hid my bike in bushes and scrambled down the steep, brushy hill to the flats and walked the mile or so to the bank next to the creek where I often fished in summer.

Along the way I cut a thin sapling. A proper fishing rod and reel were beyond my means. I carried line, hooks, corks for bobbers, and bait—bacon scraps—in a tobacco tin in my pocket, a trick I had learned from Wabash Pete. Black Bear Creek had a layer of ice from bank to bank. The pictures I had seen in a magazine about ice fishing showed round holes in the ice that had obviously been made with a saw.

I didn't have a saw, but the bank above the creek was steep and I figured I

I didn't have a saw, but the bank above the creek was steep and I figured I could drop a rock from the bank and bash a hole in the ice. Then I could sink a line from the bank through the hole. After prying a stone the size of a watermelon from the frozen ground, I made my way slowly to the edge of the bank, a little unsteady from the weight. My foot slipped on an ice-covered rock, my ankle turned, and I dropped the stone. I slipped over the edge, fell about 4 feet, slammed onto the ice, and broke through into the water, sinking until I was completely submerged.

Ice water soaked through my clothes like they were tissue paper and hit my skin with a shock. I pushed off the bottom and broke through to the air, gasping and thrashing. Fortunately the water was only about neck deep. But the cold caused my chest to constrict. I could barely breathe. Shoving and smashing at the ice with my hands, arms, and chest, I broke a way toward the shore. My foot slipped on a slimy rock on the creek bed and I went under again, badly twisting my left ankle, the same one I had injured on the bank. By the time I crawled onto the creek bank at a low spot, my hands were numb and bleeding and I was colder than I'd ever been in my life.

I sat for a minute or two shivering and shaking uncontrollably. My ankle was throbbing, and I was trying to not moan or cry with the pain. Unlacing my high-top sneaker, I saw my ankle was swollen to about the size of a cantaloupe. Maybe something was broken. I tried to stand. The pain exploded in my ankle, and I collapsed on my rear. I was in serious trouble. It would soon be dark and even colder. I couldn't get back to my bike with my ankle like this. Even if I made it the mile or so across the flats, I didn't think I could get up the hill in the dark. I hadn't told my mother what I was up to because I figured she wouldn't let me go. One of my buddies knew about the ice-fishing expedition, but he wouldn't tell anyone. No one was coming to help.

There was a moment when I almost cried. But that wasn't going to do any good. What would Daniel Boone do, or a forest Indian? Well, they probably wouldn't have been so stupid and clumsy in the first place. But there I was. I had to get warm and try to dry my clothing. At home in my bedroom were my Scout pack with bedroll and oilcloth tablecloth for shelter, and other things Wabash Pete had taught me to carry. I had nothing but what I was wearing and the stuff in my pockets. Fire. I had to have fire.

I scooched and crawled up the bank to level ground and across it until I reached a big old evergreen tree with thick overhanging branches that touched the ground. I had to find some tinder and kindling to get a fire going. Everything was wet from the snow that had melted a little during the afternoon: weeds, fallen leaves, twigs, and ground cover, all were soaked and now freezing again. Useless. I remembered some of the library books I had read, and what Wabash

useless. I remembered some of the library books I had read, and what Wabash Pete had showed me about starting a fire when the woods were wet.

I broke off dead branches and twigs from the trunk of the sheltering evergreen, ones that were more or less dry up under the tree's canopy. I intended to make my fire there, just a few feet from the trunk of the big old tree and under its canopy. Opening the main blade of my Boy Scout knife, I used it to split some of the branches and twigs to get at the dry wood inside. Setting aside dead pine needles from the branches, I shaved the dry wood into thin curls and split long splinters. I made a small pile of the curls and built a tepee over it with the splinters. Then I scraped wood dust over the tepee and poked some pine needles into the structure.

Another thing I had in my pockets was a purportedly waterproof match case filled with wooden kitchen matches that I had bought with my knife at the Scout shop in the J.C. Penney store. What if the case wasn't really waterproof? I had never tested it. What if the matches had gotten wet? I unscrewed the lid, hands numb and losing feeling. I was shivering even worse now and getting really scared. The matches were dry.

Thinking about what had happened to the man in Jack London's story "To Build a Fire," I checked to make sure there was no snow on the branches above me. In that story, snow had fallen from a branch and put out the man's fire before it could get going. I took out one match and screwed the lid back on. My hands were shaking badly, and I was afraid I would drop the case and the matches would fall out and get wet. I struck the match on the side of the case and held it to the little pile of tinder. There wasn't much wind under the tree branches, just enough to make the flame flicker. The match burned out. The tinder didn't catch.

Ulster Boy Scout Knife ©J SALDANA

Now my fingers had lost almost all feeling and were clumsy. I rubbed my hands together until they burned and started over. First I sliced the curls and splinters into smaller pieces. Thinking that the wet ground had prevented the fire from catching, I crawled to a nearby dead log. The log was wet outside, so I dug at it with my knife until I got deep inside where there was dry dead wood. I cut, pried, and pulled off a flat piece of inner wood and rebuilt my teepee on top of the dry flat. Again I scraped at dead wood until my splinter tepee was lightly covered with dry wood dust, and made sure the curls inside had room to breathe. This time I opened my coat and hunched over the pile of tinder to shield it from any wind. The match burned almost to my fingers before the fire caught. But catch it did. Seeing that tiny tongue of flame lifted my spirits. Now I had a chance to make it.

I fed the fire with long splinters I had cut from the dead wood in the log, first splinters about as thick as toothpicks, then about the size of pencils. Then I carefully added twigs I had taken from the pine tree. When the fire was going good, I added bigger twigs and splits until chunks about the size of my wrist were burning. The fire was now getting high, so I cut branches off the evergreen that were above the fire and piled them on the ground next to the trunk to give me a place to sit off the cold wet ground. Hobbling, half crawling, and shivering, I dragged longer branches of downed wood over to my fire and fed them in little by little, along with more dead wood from the log. The heat from the fire dried

the wet downed wood. It then burned as I fed it into the flames little by little. I wanted a big fire so I could get warm and take off my clothes to dry them. Finally my woodpile was big enough to feed the fire and last a while. I sat on the evergreen branches close to the fire with my back to the tree, but I was still cold and shaking, even with steam rising from my wet clothing.

Remembering another Jack London story about a boat capsizing on a river in Alaska, I realized I had to remove all my wet clothes to let the fire warm me and dry my clothing. I took off my coat, shirt, T-shirt, jeans, shoes, socks, and underwear; wrung and shook them all out as best I could; and hung them on sticks by the fire. Sitting close to the fire buck-naked, I finally began to warm up and stop shivering.

Darkness had fallen while I was busy with the fire. The stars came out and a half moon rose. The sky was deep blue, clear and cold. Alternating between toasting on the side next to the fire and being chilled on the other side, I shifted position as one side warmed and the other chilled. After an hour or so my wool coat felt drier—still damp, but drier than it had been, dry enough to warm me. I couldn't squeeze any more water from it, so I put it on and huddled in it while my other clothes steamed by the fire. My jeans and shirt weren't drying well. Neither were my socks, canvas high-tops, or underwear. All were cotton. My mother had tried to make me wear wool long underwear and wool pants, but that wasn't "cool," so I wouldn't. Now I wished I had.

After a couple more hours, I was guessing about the time, I put my on my still-wet clothes. Quickly I realized that was no good. I was colder wearing the wet clothing than without it. I stripped again and hung everything but my coat around the fire. I spent that long winter night hunched on pine boughs close to the fire and naked except for my wool coat. The tree trunk and the branches all around held in some of the heat from the fire, and the boughs kept the cold ground from draining away all my body heat. When I dozed off, the fire would die down and I'd wake up cold and feed in more wood and stare into the fire, watching the flames move and change shape, trying to not think about how much trouble I was in, and imagining what it would have been like 200 years ago with no miles-long cornfields and towns, and with forest running all the way to the Atlantic Ocean.

Snow began to drift down near dawn, large wet flakes falling heavy and thick. Snow continued falling as first light came gray and thin, seeping through thick layers of cloud. I watched the snow as it came and settled, and smelled wood smoke and the green scent of pine, and thought about how lucky I had been. Without fully understanding why, I realized I was happy, as happy and content as I ever had been. Snow stopped falling about an hour after dawn, leaving a new layer on top of the old snow. Six late-season geese rose from a

leaving a new layer on top of the old snow. Six late-season geese rose from a pond on the other side of the creek, where they had been roosting. I watched them as they cleared treetops and wheeled to the south, calling to each other as they headed for warmer weather. I had made it through the night.

Almost all of the wood within crawling distance had been burned, and my fire was dying. The sun began to warm the day. The swelling in my ankle had gone down, and it wasn't as painful as it had been. I put on my jeans and other clothes. They were still wet, cold, and clammy, and I got chilled again. I had to try to get home. My wool coat was now dry, more or less. I took off my shirt and T-shirt and wore the jacket next to my skin. It was the only thing that kept me warm away from the fire. I was tired, hurting, and hungry, very hungry.

Cutting a sapling for a staff, I leaned on it and favored my injured ankle as I made my way across the flats. I had to crawl to get up the hill to my bike. The ground was covered with snow starting to go slushy, with mud underneath. Muddy and tired, I pedaled with my good foot and rested the injured one, letting it ride up and down on its pedal. It was past time for school when I got home. Mom started crying when she saw me. She had been up all night calling my friends and trying to get the police to go and look for me. I felt stupid for doing such a dumb thing and guilty for making my mother worry and cry. Yet deep inside I felt a warm glow at having been able to get through it all and make my own way home. No one had to rescue me. Thanksgiving came the following week, and I had much to be thankful for.

It was my familiarity with my Scout knife that allowed me to quickly shave wood for tinder, even when my hands were numb with cold and I was wet and shaking and in pain. It was the desire to emulate Wabash Pete, my woods mentor, that motivated me to buy that match case, fill it, and keep it in my pocket. It was my mom who always made me wear a warm wool coat in winter. Knife, matches, and a wool jacket, coupled with my childhood romanticism about frontiersmen and Indians, and some woods experience and reading (and plenty of determination)—all those things together got me through that night. I don't know if I would have made it without them.

There were many things I did wrong. I suppose I shouldn't have gone at all into the woods alone in winter. That might have been right for some other kid, but not for me. The woods and the library were the twin poles of my childhood. My inner compass always pointed to one or the other. I was going to the woods, come hell or high water as we used to say. But I should have told my friend I would call him when I returned, and if I didn't call by dark to alert my mother. If I had listened to my mom, I would have worn the wool long underwear and wool

I had listened to my mom, I would have worn the woolen long underwear and wool pants she wanted me to wear, which would have made more than a little bit of difference in my condition. If I hadn't been able to make fire, those woolies might have made the difference between life and death.

Mom didn't like jeans, which were just then becoming popular. It might be hard for those who didn't grow up in the fifties to understand that jeans were not always popular. I still remember how heavy they were when I was in the water, how they dragged on my legs when trying to get out of the creek. Those jeans were still wet, heavy, and cold and still dragged on my legs as I pedaled home. Since we didn't have a clothes dryer, they stayed wet for days. If I had been in true wilderness, it would have required a three-day bonfire or the arrival of spring to dry them.

If I had followed Wabash Pete's example, I would have taken my Scout pack, which was my ready bag. Pete always took his. I could have made good use of that oilcloth and blanket, and the crackers and sardines I kept in it. I didn't take it because it would have roused Mom's suspicions and attracted interest at school. Besides, I thought, I was just going to the creek to fish. What could possibly go wrong?

TINY TIN SURVIVAL KITS

A final note on first-layer survival gear: It is now popular to pack fire starters, tinder, fish hooks, first-aid equipment, a small knife, compass, and a variety of other tiny survival tools into a tiny tin can, such as an Altoids can, and to carry this tin in a pocket, pouch, or bag. The notion is that the person doing so will now be equipped to survive. This is not a practice I recommend. Such a tin is workable for, say, a fishing kit. Packing an entire survival kit into such a small container is not as practical.

The tin itself is tiny, which puts severe limits on what may be packed in it. A good deal of ingenuity is required to pack anything useful inside of such a small container, and once packed with all the suggested items, it can become an exercise in patience and dexterity to extract the items for use. Some experts even advise sealing the tin with tape, or by other means, so that it cannot be opened until time of need. This might be a useful approach, if the user is already expert in the use of the tools contained in the tiny tin.

Assembling such a tiny survival kit was first practiced by, and recommended for, soldiers of the British Special Air Service, one of the most elite and highly trained groups of soldiers in the world. These soldiers receive extensive training and practice in the use of these items. Few of the folks carrying such tins, secure in the belief that they are now equipped to survive, have such experience or practice. Even with the desire and intention to practice survival skills, the

practice. Even with the desire and intention to practice survival skills, the contents of these little tins are fiddly when you try to extract them for use and more so when you try to pack them. This discourages the user from removing the tools once the tin has been packed, which results in getting no practice with the tools. These tiny tools are, in any event, inadequate.

Small aluminum case with some essential items

Altoids tin and other portable cases

Far better is to carry survival tools of adequate size on your person, as previously described, in pockets and pouches that are easy to access, and to use those tools in your daily activities. Only in this way can the tools be integrated into your daily life, and only by such integration can proficiency be gained with these tools, and only with proficiency will you be able to rely on them in a survival situation. Tools that are too large to be conveniently carried on the person should be carried in a ready bag. Packing, say, hooks and fishing line in a tiny tin is another matter. A few items easily accessed and often used is another good use of a small container.

I can easily imagine the result of trying to unpack such tiny tools from a itty-bitty tin can with my hands frozen and bleeding, as they were in the story just related, and attempting to use tools I had not used on a daily basis. Imagine yourself in such a situation, and think about which approach you think would be workable for you.

CHAPTER FIVE

Second Layer, the Ready Bag

A PERSON WITH GOOD SKILLS, AND WHO IS DRESSED FOR THE environment, is carrying the right tools, and has a well-equipped ready bag can survive indefinitely in any environment that will reasonably support human life. This person might not be comfortable, but survival is not about comfort, and this is where many folks go wrong. By misunderstanding what "survival" means, and in a misguided effort to replicate the comforts of home or a well-equipped campsite, they load themselves down with unneeded gear, gear that limits mobility and supports the delusion that the gear, by mere possession, can save them. Lack of skill cannot be replaced with equipment.

The skilled person with good first-layer gear and thoughtfully equipped ready bag might, in a survival situation, go thirsty and hungry, might be cold at night, might be bug-bitten or sunburned—and if it's necessary to walk unaccustomed distances, might be sore-footed. But with skill, patience and prudence, determination and endurance, this person will survive conditions in which the well-equipped but poorly prepared will not. Attempting to re-create the comforts of home often results in a needless expenditure of calories and time, neither of which should be wasted. Survival means just that: surviving—not setting up housekeeping.

The ready bag and the second-layer gear carried in the ready bag are more important than third-layer gear, or even base camp gear, because you *will* have it with you when you need it, and because it contains *essential* gear. It is possible to blend some third-layer gear into your ready bag (and in effect make it your third layer as previously described), but in general, comfort gear is for third and

fourth layer. Attempting to add comfort gear to your ready bag might well result in a bag too bulky or heavy to be an everyday bag. Beware of this tendency. It's of primary importance to have *essential* gear in your ready bag, and have that bag *with you* at time of need.

With survival tools added, any bag that is well-made (quality is important—you do not want your ready bag to fall apart under stress) and comfortable to carry can be used as a ready bag: computer case, book bag, or briefcase. A dedicated ready bag can be a shoulder bag or a small rucksack. Some men have told me that they cannot carry a shoulder bag as a ready bag because those are "man purses," and their friends would make fun of them and think they were sissies. Really? Their masculinity would be suspect if they were to carry a shoulder bag? My response was that if their masculinity was so fragile, they needed to, as the current term goes, "man up." Or, in any event, get over it.

Shoulder bags are convenient to carry and easier to access than a small daypack. A shoulder bag to be used as a ready bag can be a camera bag, messenger bag or haversack, hunting or fishing bag, a soft briefcase with a shoulder strap—anything that holds your gear. You can even get a canvas paratrooper's shoulder bag from a military surplus dealer. You know, like the one Jack Bauer carries in the television series *24*. I know a number of paratroopers who would dispute the notion that a shoulder bag is a "man purse" and only for sissies.

For various reasons, many people prefer a daypack or small rucksack (backpacks and rucksacks are in current usage the same thing) to a shoulder bag, even though access is not as fast or convenient. Some have injuries or physical hindrances that make carrying a bag on one side difficult or painful. A shoulder bag puts the extra weight on one side, which can affect balance. Even with a waist-strap, as on messenger bags, the shoulder bag can't be strapped as tightly to the body as a properly constructed daypack, such as race or runner's packs. Also, a daypack might hold more than a shoulder bag, depending on size. But be wary of overloading any bag. Put in too much gear, and you'll tend to leave it in the car or at home because "you're only going out for a minute."

Every survival instructor and advanced student of survival I know carries a ready bag with essential survival tools. If you ask them, they'll tell you they have a large fixed blade knife to back up the small fixed blade or folder on their person, a second (or third) igniter, tinder, a water bottle, maybe knapping tools (for making stone tools) if they're into primitive skills, and a few other items according to individual needs and environment. All former Special Forces soldiers and covert operators I know carry a ready bag; don't ask them what they carry in their bags. Almost everyone carries a laptop bag or a book bag or a

briefcase or a purse. With the addition of a few tools appropriate to your circumstances, all of those bags can serve as ready bags. Whatever kind of bag you choose for your ready bag, do have one, and keep it close to hand.

In chapter 2 I detailed items that went into a ready bag I was trained by the military to carry, and items that my childhood mentor, Wabash Pete, carried and taught me to carry in what amounted to a ready bag. Here are some other examples of ready bags and tools that are used by friends and students.

EXAMPLES OF READY BAGS AND READY BAG TOOLS

All of the bags illustrated belong to folks I've trained, so you'll notice that the bags contain similar tools.

The hunter's shoulder bag contains a custom-made 7-inch bladed camp knife, which is central to the owner's survival plans. He uses it daily in his kitchen and around the house and has built shelters, split firewood, dressed game, and made primitive tools with it. The whet-stone keeps the knife sharp. Thin leather gloves protect his hands from thorns and cactus needles. The Adventure Medical Survival Blanket (reviewed in chapter 9) is superior to and far more durable than any "space blanket" we have used. This person has used these blankets as tarps in the Sierra, sunshades in the desert, and as blankets everywhere. The cord is for use with the blanket, and for other uses. Next to his bag is an Adventure Medical First Aid Kit. The steel water bottle serves to both carry and boil water, and if need be can be used as a cooking pot. The flat steel box is a Chinese lunch box I selected for survival tools. Most of my students use them. This one contains water purification tablets and other small tools. The repair kit on top of the notebook occupies little space. The notebook is a daily-use item. Next to the military compass are three igniters: a butane lighter, a waterproof match case with matches, and the olive-drab box, which contains a military emergency fire starter with tinder. The flashlight has long-life batteries. The food items are for lunch and are renewed each day.

Hunter's bag with essential gear. See text for details.

The messenger bag contains a more extensive first-aid kit by Per-Sys Medical that was designed by Mykel Hawke, a Special Forces qualified medic and experienced and well-qualified survival expert. Next to it is a different style of compass, and instead of a survival blanket, a Blizzard Bag, which is reviewed in chapter 6. The Blizzard Bag is a product I recommend without reservation, as it can retain life-saving warmth in subzero weather. The flat steel Chinese lunch box contains the owner's choice of small survival tools. The knife is a Fällkniven A1, one of the best purpose-designed survival knives on the market. Next to it is a diamond-plate sharpener made by DMT. One or two strokes will keep this knife razor sharp. There are two igniters: a butane lighter and a flint stick with a recess for tinder. The owner eats a high-protein diet, thus the sardines. The cord is for making a garrote to strangle zombies. Not really, just checking to see if you're awake.

The red nylon bag folds into its own pocket when not in use, weighs about 5 ounces, and is made by Patagonia. ML used it for about five years and recently gave it to a friend. The friend likes coffee, as we can see from the Coffee Bean & Tea Leaf thermos. When the coffee runs out, she'll drink water. The new owner of this bag travels through mountains once a week and carries both a Blizzard Bag and a survival blanket. Mykel Hawke designed the survival knife. We gave the Hawke survival knife a field trial lasting months and found it to be an excellent purpose-designed survival knife. The Chinese lunch box with survival items (water purification tablets, water bag, hacksaw, cordage), igniters, and tiny compass fits into a small pocket inside the bag. The Photon pinch light and flashlight, the food, water, and coffee are used daily.

Messenger bag with essential gear. See text for details.

Lightweight shoulder bag—yes, everything fits. See text for details.

Waist pouch—for when you need your hands free. See text for details.

A man who spends most if his working day on fire roads in mountains, and who enjoys trail running, wears the waist pouch. The Chinese lunch box contains his small survival tools. The Blizzard Blanket, Adventure Medical Survival Blanket, and a generic space blanket provide him with many shelter options. In addition to the butane lighter, he carries a flint stick on his key ring. With the Daniel Winkler Belt Knife and the Victorinox Swiss Army knife he can, if afoot in the mountains, make primitive tools, shelter, and so on. With the Winkler he can rip through an auto body. He's actually done that. Didn't damage the knife.

Although each of these ready bags have commonalties, each is also different, and each serves the owner's individual needs. When developing your ready bag, consider your local weather and environment. Will you be in a large city, countryside, wilderness, desert, mountains, aboard a sailboat, or . . .?

CHAPTER SIX

Ready Bag Tools

THESE TOOLS CAN FLOW BETWEEN READY BAG AND RUCKSACK, depending on your needs.

FIXED BLADES

Because the people who own the ready bags from the previous chapter carry on their person a folder rather than a fixed blade, as do most people, each of these ready bags contains a good-size, strong, sharp, purpose-designed fixed blade.

Top left, Winkler Belt Knife; top right, Wayne Goddard Camp Knife; bottom left, Mykel Hawke Peregrine; bottom middle, Fällkniven A1; bottom right, Kellam Leuku

SURVIVAL/REFLECTIVE BLANKETS AND BLIZZARD BAGS

Note that all of these ready bags have either a reflective/survival blanket or a Blizzard Bag. The utility of reflective blankets, in particular the Adventure Medical Survival Blanket, has been proven over a period of years. The utility to weight and bulk ratio of these products makes them virtually mandatory for inclusion in a ready bag. The Blizzard Bag is significantly larger and heavier than the survival blankets, about a pound compared to 3 ounces. It is, however, far more effective at retaining body heat, and was chosen by those who expected to be in mountains or cold climates and those who think they have a high possibility of having to spend the night outside with no shelter, but do not want the bulk of a sleeping bag.

Adventure Medical SOL Blanket

PerSys Medical Blizzard Survival Bag

POCKET-SIZE PONCHOS

None of the owners of the illustrated ready bags have included a small plastic poncho. They chose other options. These thin sheets of plastic are fragile, but provide rain protection and help to prevent chilling that often comes with getting soaked. Pocket-size plastic ponchos, no larger than a deck of playing cards when folded and usually costing only a few dollars, are available in convenience stores, big-box stores, online—just about anyplace. I've seen them offered at roadside stands in Indonesia, in small shops in Romania, and by street vendors in Bangkok and many other cities. I usually buy a couple of them whenever I happen to see them. I give them to companions who are caught out with no rain protection.

Reusable plastic rain poncho

PLASTIC TRASH BAGS

Heavy-duty plastic trash bags can be easily and quickly converted to ponchos or rain jackets, tarps or ground cloths. They also protect the contents of your rucksack from being soaked in rain (rucksacks are no usually waterproof, only specialized “dry bags” are) or from a dunking if your boat capsizes or you or your gear falls into water.

Such bags are the only protection I know of that will prevent your gear from being infested with bedbugs if you encounter them; there is currently a worldwide epidemic of these little beasties. They can be found in the best hotels and, well, almost anyplace. Googling bedbugs might alarm you. They are a misery, but they’re no reason to stay at home.

Back to trash bags, plastic trash of one kind or another is a plague on our planet, but these bags have an extraordinary level of utility and are quite durable. They can be used as forage bags, as exterior protection for an improvised shelter, and for solar stills by tying them over living vegetation—so that the tree limb, bush, or other vegetation is inside the bag. The natural process of transpiration will result in drinkable water accumulating in the bottom of the bag. If you do this, make sure the plant you select is not poisonous. You do not want to drink

this, make sure the plant you select is not poisonous. You do not want to drink water from poison oak, poison ivy, or the like.

Trash bags cost little, weigh little, and are not bulky. We always have a couple.

FOOD

While it's true, as many survival books will inform you, that you can survive for weeks without food, carrying a small amount of food in your ready bag is more important than such information might lead you to believe. A can of sardines, a bag of cashews, or a couple of candy bars might not save you from starvation, but they will level out blood sugar and prevent mind fog during what might be a critical period when you need to have your wits about you.

Candy, carrots, caviar—whatever you eat daily—have some in your ready bag. Fresh food such as boiled eggs, bread, cucumbers and tomatoes, peanut butter sandwiches, and so on will usually keep for a couple of days. Remember, the idea is to integrate survival with your daily life. Think of your ready bag also as a lunch bag or picnic carrier. The kind of food you're accustomed to also serves as comfort food and can help to keep you centered when stressed. Keep in mind that others might also welcome a few bites.

WATER AND WATER TREATMENT

You cannot carry enough water in a ready bag to support crossing the Sahara. Nor do you need to. There are few places in the world where you cannot find a water source and refill your water bottle. Having even a small amount of water available can stave off the early effects of dehydration. Like low blood sugar, dehydration causes mind fog. Water is also essential to clean wounds or wash debris from eyes. A liter of water can be a lifesaver for you or a loved one.

Water bottle filter

EveryDrop Water Filter © JAYRES

Water filters are, in general, too bulky to be included in ready bags. Thus, chemical water purification is the tool of choice. Water filters, if carried, are usually carried in rucksacks or used at base camps.

CAFFEINE AND SUGAR

If you, like most Americans, are habituated to caffeine and/or sugar (they often go together), include some of each in your ready bag. Withdrawal from these substances results in headaches and, again, mind fog—in this instance severe mind fog. If you don't know if you are habituated, and if caffeine and/or sugar are part of your daily diet, try forgoing them for two or three days. See how that goes. Better to learn your tolerances and responses under low-stress circumstances than to find out during an emergency. Having to deal with mind fog and crushing headaches during a survival situation makes matters more difficult by an order of magnitude. Caffeine tablets take up little room and will ease withdrawal. They'll also buzz you up like a bumblebee on speed if you take

too many.

Mind Fog

Because it is a condition that affects all of us from time to time and because mind fog with its consequenti confusion, inability to concentrate, and poor decision-making is probably responsible for more deaths tha the Black Plague, I have a few more comments on the topic. Mind fog can result from not having the thing mentioned: food, water, and substances to which you're habituated. Mind fog can also result from losing your center, from encountering situations for which you're not mentally prepared, from fear, from panic. Mind fog can lead to bad, possibly fatal, decisions in a survival situation. Make it your first priority to avo mind fog. Carrying a few things you are accustomed to consuming is a simple thing to do.

Being mentally prepared for situations you've never before encountered, and avoiding mind-destroyin fear and panic, is not so simple. To learn how to avoid mind fog and to be calm and centered in an emergency, as calm as a fighter pilot coming in for a night landing on a carrier, as centered as a Special Forces soldier in a firefight, practice the exercises in *The Tao of Survival*.

MEDICATIONS

If you're using any medication, you'll have supplies of it in your ready bag, right?

DUST MASK, BANDANA, AND SCARF

If caught in an earthquake or near a volcanic eruption, or if traveling in any dusty environment such as the desert, you'll value some means of protecting your nose, mouth, breathing passages, and lungs. Most disaster workers use specialized dust-filtering masks. If you anticipate being in such conditions, you might also. If not, and for general use, a bandana, scarf, or *shemagh* will serve the purpose, and offer the benefit on being multifunctional.

COMPASS, MAP, AND GPS

In addition to your pocket compass, you should have, and know how to use, a professional compass with all 360 degrees marked. A professional compass will aid you in finding your way through trackless mountains, tundra, and plains, and will help you find a specific location or your way through rain forest and jungle too thick to see more than a few yards. Professional-level compass-reading skills are beyond the limits of this book; see suggested reading.

Maps, if available, combined with a compass and the requisite skills, will enable you to find your way in any place that is mapped. Today that's most of the planet. Maps for almost any region of the world can be found online or in specialty stores.

A GPS device is a terrific tool, sometimes, for some things. Like all electronic devices, the GPS is subject to failure and to batteries dying. The

Global Positioning System can also fail, or be shut down if the government so decides. Nice to have, but learn map and compass first.

NYLON CORD

Nylon cord, commonly known as parachute cord (yes, it's actually used in parachutes), is available almost everywhere and useful for almost everything. It has become the all-purpose lashing material of today's survivor, outdoors person, and anyone who needs to tie things. Parachute cord, sometimes called 550 cord for its breaking strength, is made up of a woven sheath, inside of which are nylon threads. The sheath can be cut open and the threads removed for individual use—fishing line, sewing, and so on.

Nylon parachute cord

NYLON TUBING AND WEBBING

Good-quality 1-inch-wide tubular nylon webbing is available in any rock-or alpine-climbing shop and can used in place of rope to protect when climbing, or to rappel down a precipice or from a burning building. Such tubing when rolled is compact and flat. A 25-foot length weighs little, occupies little space, and could prove critical in, say, that burning building. It can also be used to throw a line to someone who has fallen into a hole, down a cliff, or into water.

Depending on the exact composition of the tubing—some have exceptionally high-strength materials like Kevlar or Dyneema (up to 10,000 pounds breaking strength) woven into them—they can also be used for towing boats, swimmers, or vehicles; tying objects into a bundle or to a vehicle; securing unruly animals

or people; and a dozen or so other things.

Nylon webbing has similar uses as tubing, but you will need wider webbing, at least a half inch wider, to equal 1-inch tubing. Also, the sides have more of a tendency to abrade.

DUCT TAPE

Everyone knows duct tape can fix anything, right? I've seen autos and boats, even once a small aircraft, held together with duct tape. With duct tape, plastic sheeting or trash bags, and some cardboard you can build a field-expedient shelter as comfortable as and warmer than a nylon backpacking tent. Small rolls of duct tape, small enough for a ready bag, are available from Adventure Medical, at outdoor stores, and online. Get some.

SIGNAL MIRROR

A small, or large, mirror can throw a reflection for many miles on a sunny day—a reflection that might be seen by an aircraft if you're lost and signaling for help. Purpose-designed signal mirrors are available from surplus outlets and from Adventure Medical, the same company that offers survival blankets, other survival tools, and medical kits. Signal mirrors are small, light, and might come in handy one day. You can also shave with them and/or put on your makeup.

CHAPTER SEVEN

Ready Bags in Use

HERE ARE A FEW STORIES THAT ILLUSTRATE THE USEFULNESS OF ready bags, and show that you can survive with only a well-thought-out and well-equipped ready bag.

A teenager who had taken many of my classes, and other survival and primitive skills classes, decided at fourteen that he was ready to do a four-day wilderness solo with only his first layer and ready bag. After receiving parental permission, I agreed to his request, with the stipulation that I would be his backup and would camp within a mile of his location. In case he got into trouble he couldn't handle, I would check on him each day. He wanted to negotiate that last point. With my fingers crossed, I agreed that I would not check on him until the last day. In fact, I fully intended to check on him each day. I had no doubt I could so without his becoming aware of my presence. He would think and feel that he was entirely alone, and so earn the benefit of the solo experience without causing terminal anxiety to his parents, or me.

Survival student with ready bag building a shelter

The weather was relatively mild with the possibility of showers and cold snaps. Relative is a relative term. Temperatures could climb to the nineties in daytime and drop to low forties at night in the terrain where he would be—the middle of a half-million-acre wilderness area, an area of rolling hills and steep cliffs ranging from just above sea level to 5,000 feet, with mixed oak, eucalyptus, and pine. To the untutored eye, the land appeared barren.

It was not barren. The area was mostly arid, but there were a few streams with small fish, frogs, turtles, and other aquatic life. There were black bears, deer, coyotes, raccoons, rabbits and squirrels, snakes and lizards, snails, ants, and other insects. Cattails grew along the streams, salsify in the meadows, and prickly pear cactus at low elevations. There would be some fallen acorns not yet eaten by deer and other wildlife, maybe even some berries. He knew all of these animals and plants could be eaten, and had eaten most of them, including snake. He knew how to get them and process them so they were safe to eat.

He dressed in ripstop cotton cargo pants, two synthetic long-sleeved T-shirts, a wool long-sleeved shirt, wool socks, low trail shoes, and a cotton brimmed hat. He wore a sheath knife with a 6-inch blade and a tiny sharpening stone on his belt. In his pockets he had two bandanas, flint stick, butane lighter, match case with matches, small multi-blade folding knife, and a pinch light.

In his ready bag, which was a beat-up old leather and canvas hunter's bag, he packed the things he usually kept in it: water bottle and purification tablets,

enamel-coated steel cup, nylon cord, dental floss and toothbrush, compass, space blanket, and a survival kit I had designed—in one of the flat steel Chinese lunch boxes previously mentioned. The box held a pint and could be used as a cook pot. His medical kit included potassium permanganate and activated charcoal tablets, which are reviewed in chapter 9.

Also in his bag were: sugar packets and a screw-top jar filled with lard, both to be used as bait in deadfall traps; salt, pepper, and chili powder to make wild food more palatable; bo-nay tea bags (a special Chinese tea available in Chinese communities or online) to make wild food more digestible and to soothe an upset stomach; flint arrowheads he had knapped; a small bundle of pigeon feathers; the tip of a deer's antler to sharpen flint; and a buckskin pouch with scraps of buckskin and some leather thongs. To this he added a small bag of cornmeal, a smaller sack of raisins, and a half-pound of homemade beef jerky. He rolled up an old army poncho with a poncho liner, secured that under the flap of his bag, and announced he was ready to go.

We walked together to where I would camp, so he could find me if needed, then a mile or so to his place next to a stream. That night when I went to check on him, I saw that he had constructed a low shelter open on one side with a trench fire close to it. His shelter was in a grove and not easily seen. In the firelight I could see a spear leaning on the shelter, and that he was boiling something in the flat box. The poncho and liner were on a bed of duff and leaves in the shelter. All appeared to be well.

I checked on him each evening after nightfall, and a few times during the day. He was obviously doing fine. On the second evening, while he was occupied with making an arrow from a willow shoot, I saw a skinned rabbit on a rock next to the fire, its skin stretched over a switch tied in a circle. One day the sky darkened, and that night the temperature dropped and sleet came in sharp and cold. I watched him build up the roof of his shelter with sticks and debris until it was over 2 feet thick, and the floor with duff and pine needles about a foot thick. Then, wearing all his clothing, he rolled up in the poncho and liner with a pile of wood at hand to feed the fire.

Whenever I went to check on him, he was busy: working on a eucalyptus stave for a bow, spearing fish, setting snares and deadfalls, improving his bivouac site, brushing away his footprints that led to it. One day a group of four backpackers came tramping by on a trail that ran about 100 yards from his bivouac site. He was sitting on a rock no more than 5 yards from the trail. The backpackers did not see him or his bivouac, or me. During those four days, I never had cause for concern or reason to intrude upon him.

Later, when we were on the way back to town and discussing his experience,

he told me that on that first night he had caught three small fish and cooked them in coals. After eating the fish, he boiled the bones with cattail roots to make soup. The stream had become his supermarket. Every day he took something from it: fish, frogs, cattails, and, of course, water. He had taken the rabbit in an open field with a *boleadora* he had made with three rocks and the materials in his ready bag, leather thongs and buckskin scraps. He also made soup with grubs from a rotten log, cattail roots, and rabbit bones. He used quite a bit of chili in his various soups and stews. He had saved the larger rabbit bones and was processing them to be used as needles, scrapers, and other small tools. One day he put sugar water in his steel box and placed it near an ant trail. The box was soon filled with ants. Those went into the soup, too.

He had not set triggers on the traps and snares he had made. He made them for practice, but didn't want to take a chance of catching, say, a raccoon or other wild creature he didn't need. No one starves in four days, but he had managed his resources well and still had about half of his jerky, cornmeal, and raisins. No doubt he could have continued to live, to survive, in this area for an extended period.

I have heard stories that illustrate the utility of ready bags from many friends. One fellow, Jesse, whom I used to see a lot of but haven't seen in many years, once hid on the roof of a high-rise building in Latin America for two nights and a day while being pursued by a group of bad guys. He had been in a gunfight with some members of the group, an encounter that did not turn out well for his assailants, and which engendered considerable anger and a desire for revenge in their survivors. In his ready bag he had a large bottle of water, a couple bananas and a bag of peanuts, and a shawl he had purchased for a lady friend. The shawl shielded him from the sun and helped warm him at night. The water and food made his unplanned stay more tolerable. Perhaps none of those items were critical to his survival—certainly they were not as important as the extra ammo in his bag—but they did make it easier for him to stay in place until the pursuit went elsewhere, thereby avoiding the need to expend any of that ammo.

On a lighter note, I worked for many years in international business. Meetings in hotels and offices were far removed from the natural world, from which I draw sustenance and find renewal. Sometimes I got tired of it all and wanted to wander off into the trees. Sometimes I did just that. Inside my briefcase lived an old-style rucksack, the kind made of thin canvas that you used to be able to buy in any outdoor shop in Europe. The fabric was thin but strong. Empty, you could fold it small and flat to fit in a large pocket; opened, it held about 15 to 20 liters. In it I kept a few things.

One day in early autumn, after a week of smoky rooms and talk, talk, talk, I

dumped my briefcase, laptop, and luggage in a locker at the Gare Lyon and with only that little rucksack, grabbed the first fast train south. Paris had been gray and rainy. The TGV train flashed south at 200 miles an hour, and I looked out of the window and thought of the hills and sunshine in the south.

There are national parks in France as large and wild as many in America. I planned to go for a walk in just such a park, a place where villages of stone houses have been abandoned and have become ghost towns. Deer herds are everywhere, stepping delicately through green woods and wandering along broken and unused roads. Crumbled castles and ruins from Roman and medieval times add to the mystery and beauty. Wild boar—large, red-eyed, mean-tempered, aggressive, wild boar—shuffle and snort through the underbrush. I knew about the boar from a previous visit, and from a friend who hunted them—with a spear. He advised me to always have gun or blade on hand in those hills.

Arriving in the Auvergne, I went shopping in a village, where I found wine, venison, bread, and cheese. Along with other tools, I had a knife, but only a folder. Remembering the boar, I also shopped for a large blade. In a small shop on a side street, I found an old, used, 10-inch Sabatier chef's knife. There was rust on the blade. It was dull. But the old knife balanced well in my hand. I also bought a plastic sheet, the kind used for covering cutting surfaces; a roll of tape; and a sharpening stone. When warmed by a fireplace, shaped around the blade, and secured with a couple layers of tape, the plastic sheet became an effective sheath for the big blade. A good scrubbing with an abrasive kitchen cleaner removed the rust. A few minutes with the stone put a ferocious edge on its carbon-steel blade. With my Sabatier tucked into the back of my belt and supplies in my rucksack, I was ready.

I departed the village at dawn and spent the first day wandering the hills, often on ancient trails that in some places were worn down to stone. In a mountain pass an eagle soared by at my fingertips, close enough to touch, it seemed, in the ice-clean air. That night I bivouacked on a flat ledge halfway down a hillside above a clear-running stream that smelled of granite. At twilight I heard deer come to water. Clouds scudded across a full moon, the kind of moon the French call the moon of Loup Garou, the werewolf.

I kindled a tiny fire, no larger than my hat, in an old stone circle and grilled a venison chop in the coals. I ate the meat from the point of my knife while drinking a bottle of the rich red wine from Cahors, wine called "black wine." Moonlight moved softly across the ruins of a medieval castle on the crest of a ridge, and I imagined life as it must have been in the twelfth century. The castle would have been kept in good repair. War was constant then, a clash of steel, screaming horses, and desperate men. The stones of the castle, and her

defenders, would have provided sanctuary and safety.

Sabatier carbon-steel chef's knife, with traditional rucksack

Water splashed over the stones in the stream below, and wind rustled the leaves in the trees. The night passed slowly by the fire as I listened to the forest shifting and moving. I dozed and dreamed, wrapped in a blanket I had borrowed from the pension. At first light I watched a fox come from the brush to water at the stream. After a breakfast of bread and cheese, I wandered deeper into the hills, light of foot and heart.

From experience, and with the gear in my little rucksack, I knew I could, if need be, survive in those hills indefinitely. I could have made a primitive hunting weapon and taken one of the deer that came to water, dried his meat, made broth from his bones boiled in his hide with hot rocks before tanning, then tanned his hide and made tools from his bones. Waste no part of an animal.

Being prepared and ready enables survival. But that's not really the point of this story. I encountered no enraged wild boar, no werewolves, experienced no desperate survival situation of any kind. But I would be poorer for the lack of that experience, one granted to me by being prepared, by adapting, by being open to what the world might bring. Here's the point: Integrate your ready bag and survival tools into your life, learn to use them, and enjoy the process. Then, if a survival situation develops, you won't be one of those who panic, run about, scream and shout. You'll be a survivor, and able to help others.

For decades, when not working in a business that required me to carry a

For decades, when not working in a business that required me to carry a briefcase, I used some kind of shoulder bag as my ready bag. In addition to the advantages of a shoulder bag previously detailed, it also makes it convenient to add a rucksack for third-layer gear. Simply leave the shoulder bag in place slung across your chest and wear the rucksack over it. This method also keeps the ready bag items easily accessible. If you use a daypack for your ready bag, you should think in advance of how to add third-layer gear to it, and try it out.

This 26-liter pack weighs 12 ounces and folds into a small pouch when not in use.

Alternately, if that doesn't work for you, and if you use a daypack as a ready bag, you'll need to figure out how to carry a daypack with a rucksack, or unpack the ready bag and put those items in your rucksack—not convenient and there might not be enough time to do that in an emergency. Plus, it's always best, once you have your gear organized, to keep everything in its place so you can quickly reach it if need be. Doing so also guards against loss. Continually moving things around leads to losing things. A possible solution to this would be to keep all of your essential tools in one pouch so that can easily be moved from bag to bag.

Hiker in the high desert with a reflective survival blanket rigged as a tarp to escape the heat © JAYRES

If a daypack is used with a rucksack, it will need to be attached to the rucksack or stuffed inside—which makes the ready bag items inaccessible—or you can join the travel internationally, you've seen them: backpackers with huge packs on their backs and daypacks worn on their chests, ungainly, uncomfortable, unsightly.

Important Survival Tips

Adjust the contents of your ready bag according to your environment and circumstances. Carry your ready bag with you while walking, jogging, running, climbing, and other exercise so that you can become accustomed to doing so. You may have to one day.

Since I teach survival and write about it, and gear, I'm usually reviewing some item or another. At present I'm experimenting with a cinch bag—one of those nylon bags with a drawstring that you can get in any sports store—as a light ready bag. I replaced the cords with longer ones so that I can carry it as a daypack or on one shoulder, sling it across my chest with the rucksack over it, or tie it around my waist. We'll see how it works out.

CHAPTER EIGHT

Third Layer, the Rucksack

THE THIRD LAYER IS WHERE WE ADD COMFORT ITEMS, OR WHAT some military units call “snivel gear.” This layer should still be minimal. Again, this is survival gear, not camping gear. Although, if chosen wisely, this gear can allow you to be as comfortable as the over-equipped backpacker.

The rucksack, or backpack—these days the terms are used interchangeably—is used to carry third-layer gear. Some use a shoulder bag as a ready bag and add a rucksack. Some use a small rucksack as a ready bag and add third-layer gear to it as needed. Either approach will work. If you have already organized a separate ready bag, especially if it’s a small shoulder bag, there can be a temptation to go large on the rucksack so that more equipment can be carried. Guard against this temptation.

You look at your little ready bag and wonder how you can get by with only this gear. The rucksack appears so accommodating. It will carry lots of good stuff, all the stuff that won’t fit into your ready bag. You think. But no, the rucksack will carry nothing. Bags, packs, rucksacks—they only contain things. *You* must carry them.

It is standard practice by salespeople in outdoor stores, and by some experienced backpackers, to advise first assembling all the gear you need and want, and then select a pack that will hold everything. This helps to increase sales for gear suppliers, and novices feel more confident because they’re participating in the process, making some of their own decisions. This is not good advice for the survivor, or for anyone who’s the least interested in traveling light and/or being able to move freely and with agility while carrying gear.

Better is to first determine how large a pack you can comfortably carry while walking long distances, moving over broken ground, running and jumping, and to then limit your gear to what will fit in that rucksack without overstuffing it. Following the mantra of "It's better to have it and not need it than to need it and not have it" leads to acquiring a mountain of gear that a squad of paratroopers couldn't transport without a three-quarter-ton truck. A better guideline is this: If it doesn't fit, you don't need it.

It's also usual to advise inexperienced people that they can comfortably carry a backpack weighing about 20 percent of their body weight. This is bad advice. Sure, most folks who are in reasonable physical condition (which is an ill-defined condition) *can* carry 20 percent of their body weight. But should they? How far can they carry it? How fast? How tired will they be after carrying it even a mile or two?

Let's say you weigh 150 pounds. According to the 20 percent of body weight concept, you should be easily and cheerfully able to tote a 30-pound pack on dirt and stone trails over hill and dale and up and down mountains for at least 10 to 15 miles a day—day after day—for a long weekend or a weeklong outing. But that concept makes no mention of blisters, sore shoulders and neck, leg cramps, and the mind fog that enshrouds you when you're over-fatigued. But, hey, that's some other guy or gal. You're in pretty good shape. You go to the gym every now and then, maybe jog a little when you think of it and when you have time. Okay, you're not in the same condition as when you were on the basketball/baseball/football/wrestling/soccer/tennis team. But you're not over the hill, not yet.

Be truthful with yourself. Look in the mirror. Is there maybe just a little extra of those internal metabolic food storage units around your middle? Do you maybe spend more time on the couch than you know you should? No? Okay, you're composed of lean, gym-conditioned muscle and you don't need to hear about conditioning 'cause you're on top of it. Bad news. Even if that's true, it won't help much. I saw many high school and college athletes drop out in paratrooper training because they couldn't keep up. The bodybuilders with their layers of muscle were the worst prepared. Paratrooper training includes covering long distances on foot while carrying heavy loads, which is precisely what you should be prepared to do in a survival situation. Truth is, the only way to get in condition for carrying heavy loads over long distances is to carry heavy loads over long distances. That's why they do that in the military.

Put 20 percent of body weight on the back of average suburban-ites and send them out for a walk, and within a mile or so they will be sweaty, tired, mind fogged, and staring at the ground about 3 feet in front of them. If they make it 5

miles, they'll be so lost in misery that they wouldn't see a herd of buffalo bearing down on them. I know whereof I write, and have seen it dozens of times. Do not kid yourself about this. Even carrying a light load over distance on foot requires conditioning. Doing so while remaining alert certainly does. Being alert and aware of your surroundings is critical to survival.

In the infantry, airborne or not, this is called being tactically aware. I well remember being a young paratrooper and, as do all who took the training remember, running mile after mile after mile with rucksack and rifle, and the sergeants running up and down the column shouting, "Heads up! Heads up! Keep your heads up. Look around. If you don't see them first, they'll nail your ass." And similar, less polite, comments.

Hopefully, you won't be in a war zone. But being aware is a sound practice and a necessary survival skill. If you're not tactically aware, if you're trudging along with your head down, staring at the ground in front of you, mind fogged and over-fatigued, you're subject to . . . well, just about anything: slipping on wet pavement, falling from a crumbling trail, getting hit by a runaway truck or debris from a collapsing building, coming under fire during a civil disturbance, or, hell, being swarmed by a hive of killer bees, or a pack of zombies. Might even stumble over your own feet and fall down stairs. Travel light. Carry no more than your physical condition allows. Maybe even do a little training. It couldn't hurt.

RUCKSACK TRAINING

Start with a light pack of small capacity, say, 20 to 30 liters, and load it with, say, 10 pounds, or 5 kilos, of gear. Unless you have specialized ultralight gear, you'll find that a couple bottles of water, lunch, a sweater and rain gear, cell phone, and your usual daily stuff will easily add up to that weight. Go out and cover some ground. Vary your route, up and down hills, on trails and sidewalks. Walk. Don't run, even if you're a runner, wait. Walk now, run later. Increase the weight little by little. Do this at least three times a week.

After a couple of weeks, pick up your pace, staying within your training zone, which is determined by directing your attention to your body. If you're already a well-conditioned runner, you'll find that with some extra load-bearing conditioning, you can run with your rucksack—if it fits properly. (More on rucksack fit to come.) Remember to keep your head up and look around, see whatever there is to be seen. Don't push too hard—you might injure yourself by doing so and set your training back by weeks.

When you can cover, say, 5 miles in an hour for two or three hours, on relatively level ground, while toting 20 pounds and remaining alert, you're better

conditioned than 95 percent of civilians. Do the same with 30 pounds over broken ground, and you're in the 1 percent of civilians and as well conditioned as many military personnel. Paratroopers and those in other elite units can move farther, faster, carrying more weight. But such training is part of their job and not something average civilians have the time, or desire, or need, to strive for, unless they're endurance athletes or aspire to be such. If you have any notion of carrying a "bug-out bag" on foot to a secure location, or escaping a disaster on foot, do some training. After a while you'll know how much weight and how large a pack you can carry while still being able to move well and stay alert, and will be able to equip yourself accordingly.

If you have physical limitations or hindrances, major or minor, as does about 50 percent of the population, just do the best you can and work within your personal abilities. Physical hindrances are even more reason to be rigorous in choosing gear so that you have the lightest load possible. One of my oldest friends received severe spinal and pelvic injuries during a parachute jump gone wrong. Pain, therapy, and physical limitations are part of his life. Yet, he manages to stay fit. He maintains a ready bag /rucksack and walks with it at least three times a week. Due to his injuries he cannot tolerate carrying much weight. He has chosen a 20-liter race pack (Terra Nova Elite) that weighs 7 ounces and a careful selection of only ultralight gear. Total weight for his rucksack and gear is 8 pounds, including food and water. Another friend cannot walk at all. He keeps a compact ready bag strapped to his wheelchair.

I hear the reader thinking, "But I have a car. I don't need to worry about all this running and walking." It's difficult for an American to think of life without a car. From birth we've been transported in autos. As soon as we're old enough, we get a driver's license and an auto. Like everyone else, I've had cars since I bought my first one at fifteen. I get it. But think about the possibility of not having a functioning auto. There might be no gas at the pump. Your car might break down. It could be stolen. Reread my previous comments on this topic.

RUCKSACK CAPACITY

Even if you're a well-conditioned endurance athlete, or if you do the training I advised in the preceding text, it's still best to carry the lightest and most compact load possible while still having critical gear. The pack capacity you choose will depend on your environment, your physical size, your physical condition, and your projected scenario: If you intend to remain in an urban area, your equipment needs will vary somewhat from those who expect to be in a rural or wilderness area.

In general, however, I've found that a rucksack with a capacity of

somewhere between 25 and 40 liters will contain enough gear to allow for extended survival, and even some comforts, in almost any environment—especially if using modern lightweight equipment. A possible exception is the Arctic, where bulky clothing and shelter gear is required. Those who have well-developed skills and have refined their needs favor the smaller end of this range. Smaller rucksacks are not only easier to carry, they're also easier to maneuver through woodland, tropics, and mountains and allow better balance. People of smaller physical stature and whose clothing is, therefore, less bulky also favor the smaller sizes. Smaller folks also, usually, require less food and water, and need to carry less of each. For personal survival and for travel, even for extended periods, you do not need a 90-liter rucksack stuffed full of gear. Exceptions would be if you are walking deep into a wilderness area to set up base camp, or if you're carrying gear for others. In either of these instances, you'll need to be in top physical condition.

In the sixties and early seventies, I used a canvas alpine rucksack made in Switzerland of about 30-liter capacity. That old pack worked fine for me, but eventually I gave it to a cousin who needed a pack and was short of funds. Over the years I have used a variety of rucksacks, some smaller, some larger, some much larger. During the periods when I was leading survival students on extended trips afoot in wilderness, I used a 90-liter expedition pack so that I could carry extra gear for the students, mainly medical and emergency equipment and supplies.

For my personal use, given my minimalistic approach to equipment, I have found that a rucksack of around 30 liters hits the sweet spot. With a well-designed and well-made rucksack of about this size, I can carry everything I need, and some things I just want, and move freely through thick woods and jungle, climb, jump, and run—as much as I can do those things these days. This size works for me as an all-around rucksack for travel and fieldwork, and has served me well in actual survival situations.

North Face 32L Verto pack fully loaded. Empty, the rucksack weighs 1 pound 10 ounces; full, about 15 pounds.

Also, a 30-liter rucksack is about the size of a book bag or computer backpack and therefore low profile, which allows me to walk city streets and move about in public without drawing unwanted attention, possibly from thieves or others of ill intent. Brightly colored packs also draw attention. A small pack also allows you to maneuver through crowds, while a large one will have you bumping into others and getting jammed up in tight quarters.

Your best chance of retaining your rucksack while being evacuated, or while jammed into a vehicle filled with refugees from, say, a flood, or simply while traveling on public transportation, is to have one in the smaller size range that you can hang onto. In this instance, if you cannot easily hold your rucksack on your lap or between your feet in a crowded vehicle, it’s too large.

RUCKSACK EXAMPLES

ML has traveled with me to many countries and camped out in varied terrain—mountains, desert, seashore, tropical, and woodland—and in all kinds of weather, from summer in the Mohave to winter in various mountain ranges. She has done so with only her ready bag, a small purse, and a 26-liter rucksack. For many years her rucksack was a Patagonia Lightweight Travel Pack, which would fold up in its own pocket and weighed 12 ounces. She has carried it all over the world and used it far beyond its design envelope. This little backpack, sometimes heavily loaded, has been carried on and off *dolmuses*, *tuk-tuks*, jeeps, airplanes, and trains, on foot up and down mountains, in the desert and tropics, through rain and snow and summer's heat, without failing or even showing hints of failure. The stitching is as good as new. The ripstop nylon fabric shows little sign of wear and is water-resistant.

In this little rucksack, while traveling, ML would pack a week's worth of clothing and toiletries, her camera, laptop and related electronics, a couple paperback books, snacks and a water bottle, bivouac and survival gear. With this setup she could live out of it indefinitely. When we arrived at a base, she would dump her clothing, laptop, and accessories in our room and use the rucksack as a combination purse, day bag, and grocery getter. The bag expands and contracts as needed.

With it we have hauled two or three days' worth of food from markets and bazaars to holiday apartments, rented rooms, and campsites in a dozen or so countries. A while back at the local bazaar, she packed into it: a double bunch of 2-foot-long leeks; a pound each of walnuts, cashews, dried apricots, and goat cheese; a half dozen each of tangerines and tomatoes; a pound of onions; 4 pounds of potatoes; and two loaves of flat bread. There was room for chocolate bars, a bottle of wine, and a few other things that ML picked up on the way home. For a picnic with friends at the 2,000-year-old ruins of a Roman city, I carried this rucksack with four bottles of wine, two of water, a pound each of Brie and pâté, two baguettes, two pears, a bunch of arugula, a couple tomatoes and a lemon, olive oil, paper plates, and forks—and my sweater, rain jacket, and personal gear.

ML wearing the Patagonia Lightweight Travel Pack while shopping at the bazaar

Patagonia Lightweight Travel Pack with produce from weekly bazaar visit

Patagonia Lightweight Travel Pack ready for travel

When we headed for the field, ML would leave laptop, electronics, and extra clothing at home (base camp) and add food and cooking gear and some comfort items: a 1-pound sleeping bag, a 10-ounce air mattress, and a mosquito net.

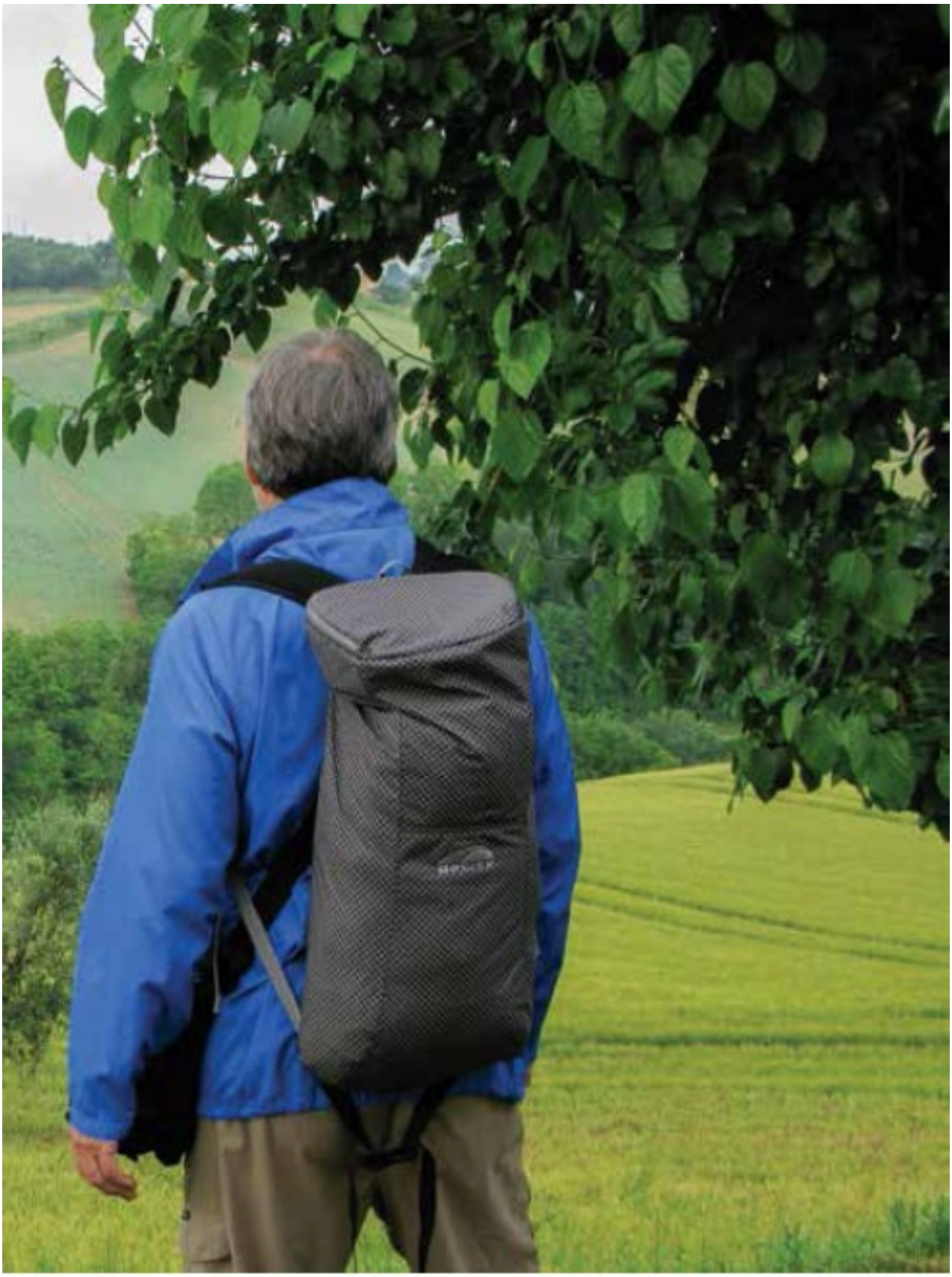
The only improvements I can think of for this little pack (I used to design backpacks and luggage) would be to make the shoulder straps longer. They fit ML fine. They also fit medium-size fellows. I wear a size XXL jacket and would like longer shoulder straps. This is a problem I have with many packs. Also, over the years the elastic on the side pockets has stretched out of shape. ML sewed some stronger elastic over the worn-out material. In addition to the main compartment, there are two side pockets, one zippered pocket on the front, a back pocket into which slips a foam pad, and a top pocket for small items. The bag does in fact fold into the top pocket when it's not in use, which is pretty much never. This exact model is out of production, but has been replaced others equally good, if not better. There are similar rucksacks made by many companies.

During this same period, I carried a 36-liter rucksack that weighed about a pound and a half, and that was made by GoLite, a small outdoors products company. My personal possessions and survival and bivouac/camping gear, including sleeping bag, air mattress and tarp, extra clothing, and work-related equipment (laptop, etc.), rarely filled this rucksack to more than two-thirds of its capacity. The only time I filled this pack to its capacity was one day at a bazaar

capacity. The only time I filled this pack to its capacity was one day at a bazaar when I stuffed it to the top with water and wine bottles, blocks of goat cheese, pails of olives, and bags of garden produce.

This rucksack has two small side pockets and one large back pocket. The fabric is sturdy, and after a year on the road and in the field shows little sign of use, except for one strap that a would-be thief cut. Lacking an awl, I had it repaired by a local cobbler. The result was an insult to craftsmen everywhere and a triumph for entropy, but the repair held. This hard-used pack gave good service and was still in good condition when misadventure caused me to discard it. Unfortunately GoLite is no longer in business. There are, however, many other companies that make similar rucksacks. When replacing this 36-liter pack, I elected to return to using a smaller 32-liter rucksack. ML still uses a 26-liter rucksack, albeit a different one, having given away her Patagonia pack.

When traveling between base camps, we have a 6-ounce, fold-up, 30-liter duffle bag made of ripstop nylon in which we put extra gear we don't need for immediate use, noncritical work tools, and souvenirs and gifts to send to family and friends. The duffle is a convenience rather than a necessity. When traveling I carry it slung over a shoulder. It's no larger than some women's purses, and in an emergency I could ditch it without hesitation. This little duffle gives us flexibility and allows us to check or store a bag as needed while retaining our rucksacks. I've checked it on many airlines for some years and it's still in good condition. If we were to encounter a real-world survival situation that required us to, say, flee on foot, take to the hills due to civil disturbances, or be evacuated by helicopter, we could stash everything not needed for immediate survival in the duffle bag and make our way quickly and lightly loaded with small rucksacks.



GoLite 26L pack

We could also do the same if we were traveling with a roller bag, which on occasion we do in order to carry large amounts of work materials.

I describe this equipment in some detail to show examples of well-designed and well-made lightweight rucksacks that are suit able for survival use and for daily and travel use, another example of integrating survival gear into daily life. You do not need a heavily constructed military rucksack unless you are carrying military equipment.

North Face 32L Verto pack

This past year, since I've been testing and reviewing gear, I've tried out a half-dozen or so packs. The accompanying photos show the 26-liter North Face Verto that ML now uses and the 32-liter North Face Verto I was using. Both are alpine summit packs. They are made of cargo parachute nylon, which is very durable and tough, with few frills and excellent construction. They are comfortable to carry (for the average-size person) but could use two better side pockets. ***Note:*** I've now given away the North Face 32-liter rucksack, which did not fit well, and replaced it with a Millet 30-liter, which is much better.

North Face 26L Verto pack; ready for travels, just need to add first-aid supplies

ML wearing the North Face 26L Verto pack © JAYRES

The Mountainsmith rucksack in the photo opposite holds 25 liters and has been used by two of my students. For a short time ML carried one identical to it, and she liked it very much. Unfortunately she had to abandon it due to the same misadventure that caused me to discard my old 36-liter GoLite. The Mountainsmith rucksack is a modern interpretation of a classic rucksack, using nylon and other contemporary materials. It has two side pockets, a front pocket, and a lid pocket. It is very well made, comfortable to carry (for the average-size person), and sturdy, having stood up well to field use and survival classes over the past year or so, an altogether excellent rucksack.

Mountainsmith 25L pack

All the rucksacks mentioned in this book have served us well. I recommend them without reservation. You'll be able to determine what works best for you with a little experimentation and the training I recommended.

RUCKSACK FIT, FRAMES, WAIST-BELTS, AND STERNUM STRAPS

Rucksacks, unlike shoulder bags, are commonly used to carry heavier weights. So, design and fit are more important. Rucksacks, like clothing, should come in sizes. Few do. If you are an average-size person, you should have no trouble finding a good rucksack that is comfortable to carry, if not overloaded. If you are larger than average, you'll find it more difficult to find a comfortable rucksack. Comfort matters. Walk 10 miles with a loaded rucksack that doesn't fit and you'll understand.

There are two measurements critical to pack comfort: torso length and torso thickness. Those companies that offer sizes base their sizing on torso length. Torso length is easy to measure, and this part of the fit isn't hard to work out

Torso length is easy to measure, and this part of the fit isn't hard to work out. Only allowing for torso length doesn't work very well for those who are thick through the chest, shoulders, and back. If your rucksack is generally comfortable, except for the buckles hitting you under your armpits, as mine often do, you may have to find a seamstress to lengthen your straps.

Virtually all backpacks come with waist-belts, some wide and padded, some simple nylon straps. Some also come with various kinds of frames. The idea behind frames and wide, padded waist-belts is that you can shift some of the weight from your shoulders to your hips. This works for some people some of the time. Many, including myself, do not like this approach. Shifting the load to waist and hips requires the waist-belt to be tight, which restricts proper flex and movement of the pelvis and hips, which inhibits agility and over time can lead to lower back problems. If you aren't carrying a load in excess of 20 pounds, and if you've done even a little minor conditioning, you should not need to shift pack weight to your hips, unless you are a very small person or have a physical hindrance.

A simple nylon waist-belt on a rucksack is essential to secure the rucksack to your body during vigorous activity. For the same reason, sternum straps are also desirable.

Many of the frames in use on today's backpacks are designed in a C shape to move the load away from your back to allow air to circulate between back and pack to avoid sweating. This is just a terrible idea. If you're carrying a pack and moving, you're going to sweat. It's normal. That's how our bodies cool. Moving the load away from your back ruins your balance and can lead to falls. These frames feel fine in the store, and are all very well for an undisturbed walk on level ground, but they are a disaster waiting to happen when trying to move fast and/or with agility over rough terrain or the broken streets and tumbled down buildings of a devastated city. Also, such a frame takes up too much space in crowded spaces and inhibits movement through tight places. A well-designed rucksack will fit comfortably without any kind of frame.

When shopping for a rucksack, try on the ones you are considering loaded with the type of gear you expect to carry. Any outdoor shop salesperson will assist with this. Then, instead of simply walking around the store, jump up and down and sideways, stretch your hands over your head as if reaching for handholds, do some jumping jacks, drop and do a couple of pushups, twist and turn as if moving over broken stone. Ask if you can go outside and run with it on. All this may surprise the salesperson. They're accustomed to selling packs with the assumption that their customers will only be walking on manicured trails. They will tell you the small packs you're considering are only useful for day hikes, that you need at least a 60-liter pack for overnight trips. Persevere.

Tell the salesperson you plan to do some climbing or running, as in endurance races. After doing these things, you'll know if the rucksack you're considering is fit for survival.

ALPINE RUCKSACKS AND RACE PACKS

Take a close look at alpine rucksacks. Some have simple frame-sheets that do not inhibit movement or are easily removable. Others have no frame. Alpine packs are designed to allow free movement, not only on flat ground, but also while climbing over broken rock, on snow, in tight places, and while skiing. They work equally well when moving through, say, an earthquake-damaged city or one experiencing a civil disturbance. A well-designed alpine pack comes with a waist-belt and sternum strap designed to stabilize the load and hold it close to the back, which aids agility. The waist-belt might take some of the weight from the shoulders, but that is not its primary purpose. Alpine packs, even lightweight ones, are designed with tough fabric and good shoulder pads to carry climbing hardware, which means they'll also accommodate other kinds of hardware.

Race packs are designed for long-distance endurance events, some lasting for weeks and covering hundreds of miles over all kinds of terrain. Good examples fit well, cling to the body while running, are lightweight, and will contain everything needed to subsist during such extended events. Some use minimal sleep pads as frames; these do not inhibit free movement. Obviously such rucksacks can also serve the survivor.

TYPES OF RUCKSACKS

In general, there are two popular types of rucksacks: those that open and close at the top with a drawstring, usually called "top loaders," and those that open and close with a zipper. Also, some packs have many pockets and compartments, usually those that open with zippers; others do not. The zippered opening offers convenience. The drawstring opening is simpler, more reliable, and more secure. Virtually all alpine rucksacks, and most race packs, are top loaders. The many-pockets-and-compartments approach might work well for those who always have the same equipment and put the same things in their rucksack, and are of the "everything in its place" turn of mind. The top loaders, some with one large compartment and a couple of small pockets, are more flexible.

In the course of a few months, the contents of my rucksack vary a great deal. When traveling between base camps, my rucksack will contain my camera, laptop and related electronics, and work materials, along with other items I have described. For traveling for a week or so, or when taking to the field, the laptop, electronics, and work materials stay at base camp. If going into a wilderness area

electronics, and work materials stay at base camp. If going into a wilderness area for any length of time, I add more food. I prefer the top loader, but either can work well.

There is no reason for any pack in this range to weigh over 2 pounds.

LOADING YOUR RUCKSACK

To move with agility you must maintain your natural center of gravity, which is just behind and slightly below your navel. Loading heavy things on top of your pack will result in being top-weighted and unbalanced, which could lead to a fall, perhaps a bad fall in difficult terrain or in broken urban areas, or even on stairs. Keeping most of the weight at the bottom of your rucksack will help to keep your center of gravity where it should be, aiding agility and ease of movement.

CHAPTER NINE

Rucksack Tools

ALTHOUGH ATTEMPTING TO STUFF ALL THE COMFORTS OF HOME into your rucksack is dysfunctional, adding a few comfort items can be, well, comforting, as well as functional. Here I'll describe a few important tools to be carried in a rucksack. We've included reviews of a variety of survival tools in chapters 4 and 6. After reading this book and the other suggested material, and after doing some personal training, you'll be able to choose what tools are best for you.

SHELTER—TARPS, TENTS, PONCHOS, HAMMOCKS, AND BUG NETS

I do not think a tent belongs in a survival rucksack—but a tarp does. We only use a nylon backpacking tent when in a public campground, and then mainly for privacy. A tarp is more flexible, can be pitched in places a tent cannot, can be heated by fire (a nylon tent must be kept away from fire), weighs much less than any tent while providing a larger roof, and doesn't shut you away from the environment. In a small closed tent, your senses are severely limited in regard to the world around you. Add a bug net to a tarp and you're protected from the wee beasties, but can still hear the rustling of small, or large, night creatures, perhaps smell their approach, see the night sky, and feel all the living world.

Also, nylon backpacking tents—the only kind that is light enough to carry on foot—tend to accumulate moisture from rain and condensation from your breathing and perspiration, and can be quite difficult to dry. This moisture adds weight, and more important, impairs the efficiency of the tent. If you're in an area of high humidity, such as a tropical or temperate rain forest, a few days of

area of high humidity, such as a tropical or temperate rain forest, a few days of rain will turn the interior of such a tent into a wet cave. A tarp collects much less moisture, is much easier to dry, and does not confine you in a dripping, sagging enclosure. Tarps are also far more versatile than any tent and can be pitched in many ways: as a high or low lean-to, with a cord in the middle as a roof, against the side of a boulder—I could probably devote an entire section to pitching a tarp, but it's mostly common sense.

A 5-by-7-foot, or 8-by-10-foot, silicon-coated nylon tarp weighs only a few ounces, will fit into a corner of a rucksack, and, depending on how you pitch it, provides shelter from debilitating desert sun, rain, sleet, snow, and even high winds. Such tarps will, with reasonable care, last for years. The Sea to Summit tarp we've recently been using is 8 by 10 feet, weighs 13 ounces, and is in as good a condition after almost a year's use as when new. This tarp, combined with the Sea to Summit Bug Tent, which weighs only 14 ounces, makes a comfortable lightweight refuge. Both of these products are of excellent quality.

I can't count the nights I've spent under a poncho rigged as a tarp. I'm sure that's true of most former foot soldiers. Military ponchos are one of the few items of military gear (along with poncho liners) that are as useful for a civilian as a soldier. In addition to military surplus ponchos, which are durable but heavy, there are many ponchos made for civilian use, including some made of very light silicon-coated nylon. Ponchos do double duty, although not at the same time, as rain gear and shelter. I would feel quite comfortable taking to the hills for an extended period with only a poncho as rain gear and shelter, and have done so many times.

We've also used Adventure Medical Survival Blankets, in the double-wide size, as tarps. With reasonable care they provide good service in this mode. Two of my students used two of these 3-ounce tarps for a monthlong trip in mountains. When they returned, the survival blankets were worn but still serviceable. Rigging two of them facing each other a few feet apart and keeping a small fire in the center, either an open fire or one in a hobo stove, will provide warmth and comfort even in winter. The reflective qualities of these blankets will trap the heat from a small fire and amplify it.

Those same reflective qualities will also reflect unwanted heat and provide shade. We have used them in the desert, and once on a desert island, to provide cool shade from harsh sunlight. According to my pocket thermometer, temperatures under the blanket, with the reflective side facing the sun, were 20° cooler than in sunlight. Those same reflective qualities can be used as a signaling device to attract aircraft.

If done carefully, you can place strips of duct or filament tape on each side in the center of one of these blankets, cut a slit through tape and blanket, and have

both a poncho and a tarp. When it's worn as a poncho, use a length of parachute cord as a belt to prevent it from flapping in high winds. Many companies make heavier-duty versions of these tarps, usually marketed as "sportsman's blankets." They have all the virtues of the lightweight survival blanket, except weight and bulk, and are sturdier.

If you live in a rain forest area, tropic or temperate, or know you'll be in such an area or in actual jungle, a pocket-size hammock and a bug net, both of which can be strung under a tarp, will be worth their weight in hundred-dollar bills. You do not want to sleep on the ground in a rain forest or jungle. If you do, insects will drain your blood ounce by ounce and eat you alive, bite by bite. Pitch a tarp over your hammock and bug net, and you can be comfortable in any of those environments.

If you have neither hammock nor bug net, use your knife to build a platform to sleep off the ground—examples of this and instructions are in *Survival Knives, Selection and Use* and other books I recommend. Also, keep a smoky fire going and retreat inside your clothing, another reason to wear loose-fitting clothes.

BIVVY BAGS

There are many different concepts of what constitutes a bivvy bag. Some are simple nylon sacks, like a sleeping bag without insulation. Others are waterproof nylon sacks. For the most part, these nylon sacks are meant to be used over a sleeping bag to protect it from the elements and/or add warmth. Other bivvy bags, such as the SOL Bivvy made by Adventure Medical of reflective materials, are designed to be used in place of a sleeping bag—the idea being that since these bags are lighter and less bulky than sleeping bags, they will more likely be on hand. Day hikers, for example, rarely carry sleeping bags and sometimes get stuck out overnight. Such bags are also less expensive than sleeping bags and more durable, and can be stored long-term in an auto or other vehicle to be available in an emergency.

We have, over the past two years, done extensive field reviews on some bivvys and have not found the plain nylon bivvys to be of much utility. The Adventure Medical SOL Bivvy performs as advertised and can be a viable substitute for a sleeping bag—if you're an average-size person—in mild weather and a survival bivvy in temperatures below freezing. Six of our students have fitted into these bags comfortably—not all together, but rather one at a time. I did not. I'm 6 feet and about 190 pounds. We found the SOL Bivvys to be comfortable to about 45°F and to provide survival level warmth to 32°F—with adequate clothing and a survival shelter.

Adventure Medical Bivvy

Blizzard Bags, which are made of reflective material and have built-in expanding air cells, take the bivvy concept to another level. We've used Blizzard Bags in actual blizzards at 8,000 feet when it was so cold our cameras shut down. With a thin foam pad for ground insulation, and wearing appropriate clothing, we were as warm inside the Blizzard Bag as in a winter sleeping bag. We've used them at 5,000 feet directly on snow with no insulation underneath, and were very warm on top. Of course, cold from the snow underneath seeped in because the air cells are compressed when you lie on them. Used with ground insulation, Blizzard Bags perform very well. Blizzard also makes blankets with the same technology, which work equally well. We've not had to use Blizzard gear in actual emergency conditions, but I have no doubt they would serve well. Emergency rescue teams also use Blizzard Bags to good effect.

Unopened PerSys Medical Blizzard Survival Bag

Opening the PerSys Medical Blizzard Survival Bag

ML in Blizzard Bag at 6,500 feet elevation in Taurus Mountains of Turkey © JAYRES

Both the Adventure Medical SOL Bivvy and the Blizzard Bag are good tools and can serve as an alternative to sleeping bags.

SLEEPING BAG, QUILT, AND BLANKET

A lightweight sleeping bag, quilt, or blanket, or one of the bivvys mentioned above, belongs in your rucksack. During the past couple of years, when traveling or in the field, ML and I have each carried a 1-pound sleeping bag made by Mammut, a Swiss company. The fill is a new synthetic, and while it doesn't compress quite as well as down, it comes close, and requires much less care than down, which is important for long-term use under field conditions.

Down bags or quilts require special handling and hours of attention and care when washing and drying, along with special cleaning agents. Synthetic bags such as the Mammut can be tossed in any washing machine or washed in a tub, shower, or washbasin with whatever soap is available. They dry quickly in a commercial dryer, on a clothesline, or spread in the sun.

Last year we had the misfortune to stay in a hotel with bedbugs. Getting these critters out of your gear requires that everything be washed in hot water and dried for at least an hour at very high heat, at least 130°F. Such treatment would have destroyed a down bag. These were not harmed.

During extended use in humid field conditions, down will gradually absorb moisture and become less efficient. Down requires considerable time to dry, and may never dry in a tropical rain forest or jungle. The Mammut bags, and other

synthetic bags, retain much of their insulation value when damp and dry quickly. Last winter the foot of my bag was soaked while I was sleeping in a survival shelter during a snowstorm. I quickly and easily wrung the water from my bag, after which it would still insulate my feet. No down bag would perform like this. I used down bags for many years, and might again under certain conditions. But I do not consider them optimal for all-around survival use.

Rated to 45°F, these synthetic bags are essentially summer bags. We have been comfortable in them in winter with temperatures below freezing and during snowfall, in a survival shelter, by using an Adventure Medical Survival Blanket as an additional covering and by wearing warm clothing. Survival blankets do not breathe. When used in this way, moisture can condense between the sleeping bag and survival blanket. This can be avoided by allowing for some ventilation.

Mammut sleeping bag in stuff sack

We often use these bags unzipped as quilts. Used in these various ways, they provide us with more flexibility than bulky winter bags. Other manufacturers make similar bags. Such bags, when combined with additional insulation as described, are an excellent choice for survival use in all but extreme temperatures. At zero and below, you'll want a bag with more insulation and/or

a fire.

There are specialty manufacturers who make ultralight quilts with down or synthetic fill. The idea behind the quilt is this: When sleeping the fill under you in a sleeping bag is compressed, rendering it ineffective. The effectiveness of insulation is determined, partially, by loft—thickness. When the filling of a quilt, blanket, or sleeping bag is compressed, as it is under you when sleeping, insulation value is lost. And so, to save weight and bulk, they eliminate the part that goes under the sleeper. This approach works well. Although I've not yet tried one of these specially made quilts, I rarely zip my sleeping bag and have often used a synthetic blanket instead of a bag, or in warm weather even an oversized pashmina shawl. A military surplus poncho liner amounts to a synthetic quilt and is an excellent piece of gear, if a bit heavy by ultralight standards. With today's fabrics and synthetic insulation, a similar quilt could be made at half the weight. Such a quilt would likely not be durable enough for military use, but might be ideal for survival use.

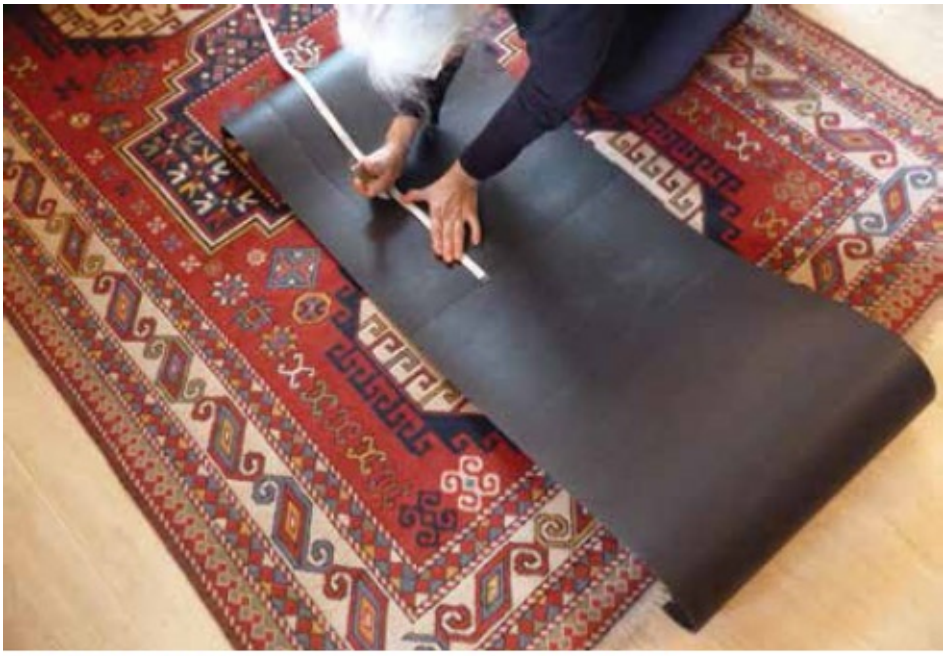
SLEEPING PADS, AIR MATTRESSES, AND GROUND COVERS

Ground insulation is as important, if not more so, as a sleeping bag or blanket. Bare earth will quickly drain body heat. For some years we used only thin foam pads (available in most outdoor shops) cut and folded to fit inside our rucksacks, and added leaves, pine needles, duff, and so on under them if needed. They also served well on a tile floor when we were stranded for the night in a Bulgarian train station, and could do so in any train station or airport when connections are missed. Thin foam pads, as thin as a quarter of an inch, are a perfectly workable, and even minimally comfortable, lightweight, low-bulk, reliable solution to the need for ground insulation.

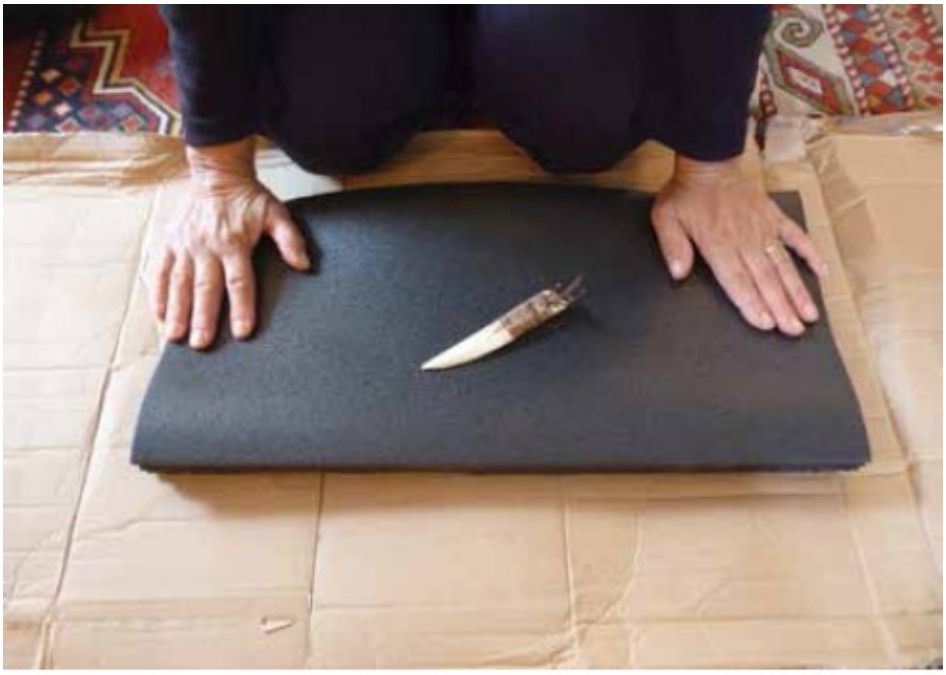
NeoAir inflatable sleeping pad, by Cascade Designs

We're now experimenting with NeoAir mattresses, which differ from normal air mattresses in that they have a reflective lining that prevents heat loss through conduction. The short models, which we use, weigh about 6 ounces and are very comfortable. We have come to appreciate the comfort and like them very much. Over the past year that we have been using them, they have not punctured. We still, however, carry our thin foam pads. Used together they make a very comfortable bed. As noted near the beginning of this book, air mattresses can also be used as flotation devices.

An auto windshield sunscreen will provide good ground insulation, but little cushioning. Cardboard also makes a good expedient ground pad—more on that in the chapter on improvised materials.



Cutting foam pad down to size to fit into rucksack © JAYRES



Finished foam pad sized to fit into rucksack © JAYRES

A ground cloth provides a minimal amount of insulation and keeps your other gear from getting damp or dirty. There are purpose-designed ground cloths, but almost anything will serve: plastic trash bags, a piece of Tyvek (house wrap), plastic sheeting of any kind, a space blanket.

WATER AND WATER TREATMENT

No one has yet developed a way to reduce the weight and volume of water. As the old mnemonic has it, “A pint’s a pound the world around,” and that refers to the weight of water as well as the price of a beer. So, until someone develops dehydrated water, we’ll just have to bear its weight. In general, under most conditions, which means you can resupply every day or so, 2 to 3 liters of water is a reasonable amount to keep in your rucksack. If you have to transit an area where there is no water, and that takes more than a couple of days to cross, you’ll need to carry more.

If you need to carry, say, 3 gallons of water to cross such an area on foot, you’ll most likely have to cut back on gear and other supplies because that much water weighs more than 24 pounds. In such conditions there is a delicate balance between carrying enough water to prevent serious dehydration, but not so much that the weight extends the time needed to make the crossing. Only by doing at least a minimal amount of training with a full rucksack will you be able to determine how much water you need to survive each day under various conditions. Again, *survive* is the key word. Being perfectly and comfortably fully hydrated every minute of the day is not the same thing.

Locating clean, safe water might be difficult. Groundwater, and tap water, is in many places contaminated with harmful bacteria and/or industrial and agricultural pollutants. Bacteria can be killed by various chemical treatments or eliminated by filtering. Only filters that use activated charcoal can remove industrial pollutants. Some agricultural pollutants can only be removed by distillation or by processes requiring sophisticated technology.

Potassium permanganate crystals and charcoal tablets

Chemically based water treatments, such as Aquamira, iodine, and so on, are available in small containers in most outdoor shops, as are various filters. All filters are bulky. If you think you'll have to depend on water that is possibly contaminated with industrial and/or agricultural pollutants, a charcoal-based filter may be worth carrying. If you *know* available water will be contaminated with industrial and/or agricultural pollutants, a charcoal-based filter *should* be carried and used.

I always carry at least one chemical water treatment (potassium permanganate) and sometimes two in my medical kit. Potassium permanganate, in various concentrations, is an effective antifungal and disinfectant, and in a weak solution can be used to treat drinking water. In my medical kit I also have charcoal tablets, which are an effective treatment for food poisoning. Charcoal tablets can also be ground into powder and used with a plastic bottle and handkerchiefs to make a field-expedient water filter. Charcoal from a campfire can also be used for these purposes.

FOOD

It's prudent to pack enough food that will not spoil to last you about forty-eight hours. Taken with food already in your ready bag, this amount will carry you through most short-term situations and, if rationed, through a longer emergency. Canned food, such as tuna and other canned fish and meat, canned beans, and so on, is heavy but has the virtue of requiring no cooking. If you're accustomed to

oil, is heavy but has the virtue of requiring no cooking. If you're accustomed to eating this kind of food, it might be worth the extra weight. The first few days of a survival situation is not the best time for radical changes in diet.

A small quantity of long-lasting food that requires no cooking, such as nuts, dried meat, fruit, and vegetables (and cornmeal, see below), and similar food, provides the most food value for the least weight and bulk. If you're accustomed to this kind of food, it is superior to canned goods. If you're unaccustomed to such food, you might want to try some from time to time and see how well you tolerate it. Drying meat, fruit, and vegetables is easy, reduces weight and volume, and preserves it for long periods. The resulting foodstuffs will be less expensive, free of additives, and taste better than any commercially available prepared product. Dried foods can also be rehydrated and cooked.

Fresh food can be dehydrated in your oven or a commercial dehydrator, in sunlight, or over a fire. To dry food in the oven, slice it thin and place it on racks, turn the oven to its lowest temperature, and prop open the oven door. Meat will require about eight to ten hours, vegetables and fruit perhaps a little longer, or depending on water content, a little less. Our neighbors, here in rural communities around the Mediterranean, routinely dry every kind of local vegetable and fruit on white sheets under the sun. Meat needs a low fire and a little smoke to discourage insects. Such dried foods also have the virtue of requiring no cooking. Television survival shows aside, no insect, or their eggs, should be eaten without being cooked. Insects carry parasites that can be quite harmful to humans.

Wheat, cornmeal, rice (quick cooking), bulgur, and other grains can be cooked in a small lightweight pot and can form the basis of soups and stews made with other food in your pack and with foraged food. Also, a tablespoon or two of cornmeal can be mixed in a cup of water and consumed as a drink, no cooking required. In Mexico this drink is called *atole* and is available ready-made in any *mercado*, usually sweetened. During the early days of America, atole, by various names, was relied upon by Native American hunters and warriors when on the move, and was a favored food of Daniel Boone and other long hunters, and of mountain men when traveling long distances. The combination of atole and dried meat can sustain a survivor for extended periods, while weighing little and requiring no fuel or preparation time.

Outdoor stores sell many varieties of dehydrated food. Most, however, require cooking, which can be inconvenient or impossible under survival conditions. MREs (Meals Ready to Eat) are military field rations that do not require cooking. They are available to civilians from many suppliers. MREs are convenient, although bulky and heavy for the food value they provide. They are also loaded with preservatives and often cause indigestion and other internal

distress. Soldiers say that the name MRE contains three lies in one name.

THE POT

Over history, when first cultures were contacted by technologically advanced cultures, the first tools the folks from those first cultures wanted, and traded for, were steel blades. The second tools they desired were iron or steel pots—for good reasons.

Pots allow soups and stews to be prepared. Soups and stews can provide complete nutrition in one dish, and by boiling kill bacteria and make ingredients safe to eat and digestible that would not be so if eaten raw. Most first cultures developed clay pots. Other than being fragile and heavy, there is nothing wrong with clay pots. Indeed, clay pots will often make food taste better than steel pots. But for a hunting and gathering group on the move, iron and steel pots offered a clear advantage in durability, and sometimes a weight savings.

A rucksack outfitted for survival should have a pot in it. If filled with food or other gear before being packed, the pot takes up negligible room in the rucksack. Today we have available lightweight pots made of many materials: aluminum, steel, enamel-coated steel, even titanium. There are dozens of sizes and designs. Almost any pot available in an outdoor store will do, as will many from the housewares department of any supermarket, big-box store, or local bazaar the world over. For the single person an oversized cup might well be large enough. A small pot, say, about a liter, is large enough for one person. A liter and a half will do for two. If planning for a group, it's a good idea for someone to bring a large pot.

With the addition of a pot, you can make restorative soups and stews which can include the food in your pack (dried meat and vegetables, cornmeal for thickening, etc.) and virtually anything you've foraged from the wild or found in a shop.

A spoon and plastic bowl with lid will do for eating utensils. If traveling alone, you can simply eat from the pot and eliminate the bowl. You already have a knife on your person. The plastic bowl will also serve to soften dry beans, lentils, and grains, enabling them to be cooked quickly and with little fuel. Put some of the beans or grain in the bowl, cover with water, and let sit overnight. Or, do this in the morning and let the covered bowl with food in it ride in your pack.

STOVES

If you only expect to be in wilderness, you can get by with a wood fire and no stove. But what if you were stuck on a runway for two days waiting for a plane

stove. But what if you were stuck on a runway for two days waiting for a plane and forbidden to make a fire? What if you were holed up for days in a tumbledown building waiting for the shooting in the streets to stop? More prosaically, what if you're just tired, don't want to kindle a fire from wet wood, and just want some hot soup to restore you?

Solid fuel stoves, such as the Esbit, weigh only a couple of ounces and are used by soldiers, mountaineers, and backpackers going ultralight. A typical solid fuel tablet lasts about fifteen minutes, depending on how well it's shielded from wind. This is enough to heat soup or a hot drink. Two or more will cook a simple meal or make a quick soup from scratch. The fuel tablets can also be used as tinder to start a fire. Solid fuel stoves and their fuel are light, durable, long lasting, and reliable. Their disadvantage is that the fuel is not widely available, which isn't important if you're outfitting for short-term survival possibilities, but would be for long-term in that resupply might be a problem. I always have a "wing stove" that weighs less than an ounce and a package of Esbit tablets in my rucksack.

Wing stove with a Titanium pot using Esbit fuel

The Esbit stove with titanium pot and Esbit fuel tab

Small alcohol stoves, such as the Trangia, which have been in use for decades, weigh little and will burn long enough to prepare a full meal. Ultralight alcohol stove systems, such as the Caldera Cone system, weigh even less and perform equally well, sometimes much better depending on conditions. The Trail Designs Caldera Cone system is very lightweight and, while a little fiddly in use, generates much more heat than the Trangia. Sailors have used alcohol stoves for at pots, are standard issue for many European mountain troops. Unlike least a century, and many still do for safety reasons. Alcohol stoves, and propane, butane, white gas, or kerosene stoves, alcohol stoves do not operate under pressure and will not explode. Specially prepared fuel is available in outdoor shops and chandleries. Alcohol stoves, however, do not need special fuel. They will burn virtually any kind of alcohol from antifreeze to vodka.

Trail Designs Ti-Tri Inferno stove kit

I sometimes also have an alcohol stove. We are currently using an alcohol stove system from Trail Designs and have found it to work very well.

Mountaineering and backpacking shops usually have relatively small and light multi-fuel stoves available. These stoves will burn white gas or kerosene, or gasoline (petrol) from the pump. I like them for extended camping, but think they're too big and heavy and too complicated to carry in the rucksack for survival use.

Backpacking-size canister stoves that run on butane or a mix of butane and propane are convenient for camping, but not suited to survival use. The fuel canisters are bulky and under high pressure. The canisters are virtually impossible to find anyplace except specialty stores, and are not available in developing countries. They are also inefficient at high altitude.

A wood-burning "hobo" stove is easily crafted from a large tin can. To make one, like the one in the photos on the following page, cut a large opening in the bottom (open) end of the can, and one or more smaller openings on the *opposite* side of the can at the top (closed) end. Start a small fire and then set the hobo stove over the fire. The lower opening will allow you to feed twigs and small pieces of fuel into the stove. The upper opening will allow smoke to escape. The upper and lower openings together create a draft that will provide oxygen to the fire. Keep in mind that the upper opening, or openings, *must* be on the *opposite* side of the can from the lower opening in order to create a good draft.

This simple device is quite efficient. It will trap heat that would in an open fire be wasted, and use less fuel than would be needed for an open fire. You can fry food directly on the top, or place a cup or pot on the top. In addition to cooking, you can also use a hobo stove to heat a small shelter. It will generate more heat than you might imagine, and since it requires little fuel, do so with less expenditure of energy than keeping an open fire would require. Although somewhat bulky, if you use the hobo stove to carry food or other things when on the move, it takes up virtually no space. Hobo stoves are an excellent example of minimalism: They cost nothing, weigh little, and are multifunctional.

Making a hobo stove from a #10 can with an OKC Cayuga Hunter© JAYRES

Cutting air holes into can for hobo stove © JAYRES

Frying an egg on a hobo stove made with the Camillus Tyrant. Any of the knives in the photo (Böker Plus TUF, OKC Cayuga Hunter, and Condor Matagi) or any similar knife, or in a pinch any knife, could be used to make such a stove.

BIG BLADES

Knives with blades between 7 and 12 inches in length are important, versatile tools and far more efficient for many wilderness tasks than small knives. With a minimum of instruction and experience, and with a well-designed big blade, a survivor can do everything from skinning a rabbit to quickly ripping open a dead log to get at the dry wood inside.

With a big blade you can make a shelter and primitive tools, open coconuts, break down a deer carcass, and in general do many things much faster than with smaller blades. With this size blade you can simply slash through a 2-inch-thick sapling with one stroke, whereas you might spend three to five minutes to take down the same-size sapling with a small knife and a baton. Multiply this by the ten to twenty saplings you might need for a shelter framework, and we're looking at a considerable difference in time and calories expended to do the job. A strong big blade can also serve as a pry bar in an urban area to, say, free an earthquake victim.

Large fixed blade selection (top to bottom): Tops Steel Eagle, CRKT Redemption, Condor Pack Golok, Condor Hudson Bay camp knife

Mountainsmith 25L pack with a Kellam Leuku in side pocket

With a minimum of instruction, big blades are safer to use than a hatchet. The cutting edge is much longer than the hatchet's, and the modestly skilled person is less likely to miss the target and overswing, perhaps resulting in an injury. Over the years I have seen many more students at military and civilian survival schools injured by hatchet use than by big blade use.

The Lapland Leuku, with a blade in the 7-to 9-inch range, is still today the all-purpose cutting tool of virtually every trapper, hunter, herder, and outdoors person around the Arctic Circle from Finland to Siberia and from Mongolia to China. The Central and South American machete; Southeast Asian parang, *golok*, and bolo; the Nepalese kukri; and the African panga are generally longer in blade length than 12 inches, but all are daily tools of choice for the people of those areas for bush work, agriculture, and all-around use. Big blades are also fearsome weapons.

Generally speaking, the big blade is too big to carry on your person unless you are actually in the wilderness. These knives mostly live in ready bags or rucksacks until their owners step off the pavement. I often have a big blade in my rucksack, as do many survival instructors, experienced outdoors people, military personnel, and bush travelers in lesser-developed nations.

Conclusion

Three Layers

With these three layers of clothing and equipment, and requisite mind/body skills, you're ready to escape a wildfire, flood, volcano eruption, tsunami, civil disturbance, or zombie horde. (Well, you might need a sword for the zombies.) You're also equipped so that your personal needs are taken care of, which allows you concentrate on the needs of others, if you're in a position to help others.

There are many specialized tools for specific survival situations, but our focus is on essential survival tools for the individual. The gap between *essential* survival tools and *what if* survival tools is as deep and wide as the Grand Canyon. It's good to do mental "what ifs" to project your mind into possible survival scenarios to develop solutions to problems before they arise. But it's not good to allow insecurities to take control and influence you to attempt to gear up for every scenario you can think of. Sure, you might need those automatic weapons if surrounded by a pack of zombies. But, let's stay in the real world. Try to keep your "what ifs" in the zone of reasonableness, and prepare for possible events that might reasonably happen and that you can influence.

With only the three layers of gear previously described, and with the requisite skills, I have moved seamlessly from cities to wilderness without needing to reequip, traveled in many countries and a few war zones, lived for extended periods in what many would think of as survival conditions, and survived actual survival situations, sometimes with much less. So can you.

CHAPTER TEN

Fourth Layer, Base Camp and Base Camp Gear

A BASE CAMP IS ANY PERMANENT (AS MUCH AS ANYTHING IS PERMAnent in this ever-changing world) or semipermanent location that provides supplies, shelter, and communications for persons engaged in wide-ranging activities. A base camp can be an encampment with trucks and wall tents; a large tarp or cave that shelters a mountain of supplies you've carried into the wilderness over footpaths; a log cabin; a sailboat; a holiday apartment or villa; or just about anyplace you might call home.

Base camp for most people reading this book is most likely a house in the suburbs or a rural area or an apartment in the city. Unless, that is, the person who's reading this book is doing so after the apocalyptic collapse of civilization as we know it. In which case the person who is holding this book might not actually be able to read English, or any other language. If that's who has this book in hand, and if you can read the language in which it's printed, I hope you do a better job of keeping things together than we did. If, as I hope, a member of our current civilization is reading this book, then let's continue. There is some important information in these pages. If you're a survivor of total collapse, the part about credit cards may not apply.

What is essential gear for a base camp? Well, limited only by budget, you can give yourself up to total consumer frenzy and anxiety, max out your credit cards, wear out your ATM card, blow through your bank accounts, and pile up a year's supply of MREs in the garage, equip everyone in the family with

automatic weapons and stock up on enough ammo for a fire team in a war zone, buy body armor and zombie killer swords, trade in your minivan for a Hummer, buy a chemical toilet in case the water stops running and a gasoline-powered electrical generator for when the power goes out, and sandbag the walls to stop incoming fire. You can do all that. America is, after all, *the* consumer society. And, "prepper fever" is in the air. But there's no reason to do so, unless buying all that stuff is your idea of fun, and three good reasons to *not* do so.

First, you don't *need* that level of defense or weaponry. Trying to turn your home into an armed bunker is a really bad idea. Doing so fosters paranoia, and it's useless in any event. From what are you preparing to defend, an armed military force? Have you ever *seen* a military unit on assault? If that's what you're thinking, forget about it. Soldiers return fire. If you fire on a military unit, they will reduce your house to debris, and you and your family . . . just don't do that. If you want to be able to defend your home from civil disturbance or criminals, then locked doors, a low profile, and a firearm in reserve, if you are well trained and have the judgment to use it—or *not* to use it—is enough.

Second, there are simpler solutions for other problems. Instead of buying an expensive (probably never to be used) chemical toilet, in the event your water is shut off and toilets won't flush, or if the pipes freeze and burst (as they once did in a cabin we had rented), just put a plastic trash bag in the commode and dispose of it after use. A gas-powered electrical generator is expensive, loud, polluting, and requires a large fuel reserve. Storing 50-gallon drums of gas (petrol) in your garage is a fire hazard, probably illegal, and another really bad idea. If the power goes out, use candles and oil lamps for light. You can survive without the television. Trust me on this. For entertainment you can read by candlelight, converse with your family and neighbors, play games, and so on. If your frozen food might spoil, cook it or dry it. If the heat goes off, bring out the quilts and warm clothing.

In today's consumer society, there's always someone trying to sell you something to solve some kind of problem, often a manufactured problem designed to sell goods. Resist. Self-reliance and creative thinking will save the day when *stuff*will not.

The third reason not to gear up absurdly is that you might have to evacuate and leave all that stuff behind.

Having some survival-oriented equipment (and plans) is useful and prudent. If you live in an earthquake zone, a wrench to turn off the gas if the main is ruptured during an earthquake is inexpensive and a good thing to have. If you live in a hurricane area, you'll watch the weather and be ready to go, or to button up. If you might have to evacuate by vehicle due to hurricane or wildfire, having

some food and water, valuables, and a few family keepsakes ready to go is prudent. Of course, each family member will already have his or her ready bag and rucksack.

If you live in a tornado zone, you'll have a storm cellar or know where the nearest one is. I grew up in "tornado alley" and lived through many twisters. After the twister passed, folks came out of their cellars and started repairing the damage, each helping the other as needed. If you live on a flood plain, you might want to have a boat in the garage, or on top of it, or at least have a plan to get to higher ground.

Once in Bali our rented holiday house was flooded by days of torrential rain. No one panicked, us or the neighbors. As the water rose we moved to the second floor. From windows we saw neighbors in small boats rowing along flooded streets and taking others who didn't have upper floors to places that did. Eventually the rain stopped and the flood receded. People came out in the street, laughing, smiling, glad to see one another, and another day. That night, after spending the day cleaning up, we had a block party.

A portable camp stove of some kind (one you can take with you if you have to leave) with a small supply of fuel will enable cooking when the power and gas are out. Having a sufficient supply of quilts, blankets, or sleeping bags for everyone in the house is sensible, especially if you live in an area that has actual seasons. Large reflective tarps, essentially space blankets, if strung above a roof and/or in front of windows will lower inside temperatures as much as 20°F, which can be critical if you live in a desert area and the power—thus the air-conditioning—goes out. A couple of heavy-duty tarps for the roof in case of rain damage, and rope to secure them, plastic sheeting for broken windows, duct tape, basic tools for repairs, warm quilts and blankets in case the heat goes out, oil lamps and candles in case of power failure—that kind of stuff is useful.

People the world over solve problems caused by disaster without expensive, specialized equipment. More importantly, most people most of the time come together in emergencies and help one another. It's what humans have been doing since we got started. Community is an essential survival tool; more on this topic in *The Tao of Survival*.

FOOD

You don't have to be a "prepper" or a "survivalist" to keep on hand food and supplies for more than a few days. It's simple prudence to have a supply of food and water stored at your home, and it certainly is not necessary to rely on MREs or specialized "survival rations." Folks I know in every culture I've spent time in that has retained any of its traditional roots keep a supply of food on hand. They

use it daily and resupply as needed.

Our American friends who live in a small house in the far north of Japan have on hand at any time at least 50 pounds of dried seafood: fish, shrimp, squid, octopus, abalone, and various sea vegetables. They also have a freezer full of seafood, chicken, pork, and vegetables. If the power goes out and the frozen food starts to thaw, they can dry or cook those supplies before they spoil. From Costco, which in Japan delivers, they buy rice in 100-pound bags, wheat and rice noodles in large cartons, gallon jugs of sake, wine, soy and fish sauce, and so on. They use all of this in daily cooking, eat very well, and resupply as needed.

When I lived in a village in Mexico, the local people always had on hand large bags of pinto or black beans, rice, and masa (cornmeal for tortillas) and bins of different kinds of dried corn to be ground for masa or used in soups, along with thin foot-wide slabs of dried beef and various dried vegetables. They kept a few chickens and turkeys and a vegetable garden. Prickly pear cactus, which is very tasty, grew all around their house. They had their own well.

Our friends in the Le Marche region of Italy buy in bulk and will typically have on hand 40-pound bags of rice and wheat flour, 20-pound bags of white and lima beans, and large cartons of pasta. There's always at least one whole prosciutto (dried ham) and various dry salamis and sausages; a large wheel of dry Romano or Parmesan cheese; a 20-pound tub of olives; strings of garlic; bins of potatoes, carrots, turnips, onions, and apples; large cans of tomatoes; and gallon jugs of olive oil. In season they sun-dry tomatoes and eggplants and store them in jars of olive oil. Ten-liter, straw-sheathed, green glass jugs of red and white wine come from the local co-op. They eat the produce of their garden in season and pick wild greens from the hillside. They keep a dozen chickens for eggs. Their neighbors keep rabbits for meat, and they trade eggs for rabbit. In autumn Paolo might take one of the wild boars that ravage their garden from time to time.

With variations in local food, this kind of practice is common over most of the world. In France, in addition to flour and other staples, it's pâtés and terrines of goose, duck, and pork, which keep for months. One of our friends who lives in a Bulgarian village keeps a 100-liter wooden barrel filled with cabbages in brine, shelves of home-canned vegetables, another barrel of goat cheeses, jars of brined pork, smoke-cured hams, and wine he made from his own grapes. He has a goat for milk. Our neighbors in Turkey dry all kinds of fruits and vegetables on white sheets spread under the sun. This produce is stored along with goat cheese, large bags of bulgur, rice, and two or three kinds of beans and lentils. They too have chickens and goats.

None of these people are wealthy. But as a matter of tradition, they keep a

season's food on hand. From these traditional supplies, supplemented with fresh food, they prepare delicious and healthy meals. Allowing for differences in culture and foodstuffs, this is pretty much how my grandparents lived. Yours might have also. Although the America of today is very different than that of our grandparents, it's not a bad idea to bring back some of their practices.

Even city apartments have space to store dry and canned foodstuffs. Suburban houses usually have plenty of space for a vegetable garden. Some apartments do, too. In our travels we see many window boxes on balconies of city apartments producing various vegetables. Unfortunately many places in America have zoning laws that prohibit vegetable gardens, and chickens and goats. Some citizen action could change that. Well, maybe not the chickens and goats. But I doubt anyone could make a strong case that daffodils are inherently more virtuous than tomatoes. Meanwhile, I know of no law that prevents anyone from storing a prudent supply of food at home.

During the years we were raising a family and maintaining a home in a large city, we always had on hand a supply of staples that would last for a month or so and two to three weeks of bottled water. When we all (ML and I, three sons, and a cat) lived aboard and cruised on our sailboat, we stored at least two months of supplies, including three or four cases of wine—no need to suffer—and fished off the back of the boat, too. These days we travel much of the time, lightly loaded as described. When we arrive at one of our base camps, the first thing we do is stock up on nonperishable food and bottled water. Buying in bulk and storing food is economical and makes good survival sense.

WATER AND WATER TREATMENT

Unfortunately in much of the world, including parts of the United States, tap water is not safe to drink. Industrial and agricultural pollutants are carcinogenic, long-term hazards. Lead from old pipes is also a long-term hazard, one that's been eliminated in many, but not all, cities. Bacteria, prevalent in lesser-developed nations but not as common in the USA, poses short-term threats, possibly fatal.

Bacteria can be killed by various chemical treatments or eliminated by filtering. Detailed information on chemical treatment of large supplies of water has been worked out by specialists, and is available free of charge from the appropriate government agency.

As with rucksack-size filters, only filters for your tap water that use activated charcoal can remove industrial and some agricultural pollutants. Some agricultural pollutants can only be removed by distillation or by processes requiring sophisticated technology. Some cities use these processes. Others do

not.

Having your tap water tested is inexpensive and a worthwhile protective measure for your family. If unsure of your water quality, adding a filtration system to your tap, or otherwise filtering it, provides a good level of protection and might be less expensive than bottled water.

Storing and rotating bottled water from a trusted source is a relatively inexpensive safety measure, and could prove critical in a variety of emergency situations.

MEDICAL SUPPLIES

If you know how to use medical supplies, then you know what you need. If you don't know how to use medical supplies, it's a good idea to get some basic medical training, which is available from your local Red Cross and other agencies.

Dispensing medical information or advice is outside the parameters of this book. I will suggest, however, that the companies whose products I use provide excellent-quality medical supplies. Adventure Medical primarily focuses on the consumer market, while PerSys, in addition to its consumer-level products, supplies military and government medical agencies and EMS agencies. Mykel Hawke—retired Special Forces Captain, fully qualified SF medic, survival expert, and television star—has worked with PerSys to develop kits for emergency and survival use, which include trauma-treatment supplies. We have used supplies from both companies and recommend both, each for their own niche.

Since your fourth level of survival gear is your base camp, you might as well make it feel like home, rather than a bunker.

CHAPTER ELEVEN

Backpacking Gear and Practices versus Survival Gear and Practices

BACKPACKING (AND THE GEAR ASSOCIATED WITH IT) IS OFTEN CONfused with wilderness survival and survival equipment. Although there is some minimal overlap in gear, the activities are not at all the same thing. To avoid having the reader go down a path that doesn't lead to where he or she thinks it does, let's take a look at the differences.

Backpacking amounts to walking on marked trails, camping in designated campsites, and carrying a large pack of about 80 liters capacity, often with "bear bells" attached—the notion being that the sound of the bells tinkling will frighten off marauding bears. As an aside, since backpackers are counseled to drop their packs when confronted by a bear so the bear can get at the food inside while the backpacker retreats to safety, I suspect those bells sound like dinner bells to bears that hang around heavily traveled trails.

Large packs are needed in order to be "self-contained" and to bring many of the comforts of home. Backpackers carry all of their food (they don't forage or hunt), mostly elaborate pre-prepared dehydrated meals, and sometimes an array of picnic food in "bear-proof " containers. They also sometimes bring bottles of wine, for which I applaud them. They use a canister or liquid fuel stove to cook their food, sleep in tents, and bring many appliances such as espresso makers, lanterns, large flashlights, headlamps, water filters, titanium pots and pans, sporks (combination spoon and fork), speakers for their iPads and iPhones, solar chargers for batteries, multi-tools, and other gadgets I cannot fathom the purpose

of.

Illustrating a pack too large for survival purposes and stuffed to capacity

All of this lightweight gear adds up to a hefty load. The large packs typically have elaborate suspension systems to help distribute the weight over the body, and allegedly to make the load more comfortable to carry. But, a load of 50 to 60 pounds is not comfortable to carry, no matter how the weight is distributed. Also, such a load requires stiff heavy boots to support feet not accustomed to such loads.

When the whole rig is put together, there's no chance of soft footing through the trackless wilderness, of watching a mother marmot at play with her babies or a doe and fawns stepping delicately to the edge of a steam and lowering their heads to water, of finding hidden glens that no human has set foot in and clear-running brooks with the rising scent of water over granite blended with the green scent from ferns at water's edge. A backpacker so loaded and clumping along a trail will never see a cougar's track by a secret rill, or gather its hair from the branches of a bush, or put that hair into a buckskin pouch worn around the neck, a memory captured and kept close, a reminder of a connection with the wild world.

Since backpackers stay on marked trails, this may not be a problem for them; they might not be especially interested in the wild world. They are, in any event, cut off from that world and enclosed in the bubble created by their gear. It is a problem for the person who's truly interested in wilderness survival, or in the natural world. Being aware of these things, having all your senses fully open, moving freely and easily as part of the natural world, is survival behavior. The casual user of the out-of-doors who gets in trouble can, maybe, call for help on a cell phone, send up flares, make a smoky fire (if he or she can make fire), or simply wait for help to arrive, and pray. The person who has a deep interest in wilderness survival will want to be tuned into his or her environment and to be comfortable in wilderness and will likely not get into trouble; so, too, the person who simply enjoys the natural world. Backpacking, as I see it practiced, is an activity that has little in common with my wilderness activities, which many consider to be survival activities, but which I think of as woods wandering, even a half century after Wabash Pete has been gone.

Bone knife and stone blade work

The backpackers I occasionally encounter seem to be backcountry tourists, different from those in autos or motor homes only in that they're pedestrians. Sightseeing appears to be their primary activity, the wilderness nothing more than a diorama seen from a footpath. To the backpacker's credit, they try to "leave no trace," a term that has become a poorly considered mantra, but which is far better than trashing what's left of the wilderness. I will not say that being closed off in a gear bubble while in the midst of the living world and great natural beauty is a bad thing. I will, however, say that those who do so are missing a great deal. I'll also suggest that there is another way.

Walnuts gathered in Bulgarian mountains

Whether in mountains, rain forest, jungle, desert, or woodland, I go lightly, and step lightly in moccasins or athletic shoes. I interact with my environment. I identify and sometimes collect and/or forage wild plants, closely observe wildlife, maybe do a little hunting or fishing, cook over a fire, sometimes just sit for time unmeasured *seeing* and feeling the life all around me and the transcendent wild world. I make primitive tools from found objects, bone, wood, and stone. Rarely do I follow a trail for any distance, preferring to follow animal paths, contours of the terrain, and watercourses, to wander as the spirit moves me. Backpackers never see me unless I choose to step out on their trails and be seen. I leave no trace that any backpacker could find.

Once when traveling in the California Sierra with a friend and student of wilderness ways, I heard a group tromping along a trail and approaching us where we sat concealed in underbrush and watching a newt stalking water bugs in a tiny brook. I was feeling sociable, and so was my friend. Not wanting to alarm anyone by appearing unexpectedly from the underbrush, we stepped out onto the trail in plain view before the group arrived.

They were a party of four, two couples, all with 80-to 90-liter packs and great clumping boots. They were dripping sweat and blown out from hard exercise. We chatted for a while; they were glad for the rest. They were friendly

folks, incredulous that we had been out in the mountains for almost two weeks with only what they took to be daypacks. They were at first taken aback by the large camp knives at our waists, our moccasins, and our general appearance. After some conversation that assured them we had not just stepped out of the movie *Deliverance*, and that we had no ill designs, we agreed to share a campsite for the evening.

They needed a large level site for their tents, and an established fire ring so as to leave no trace. We walked together to such a campsite near a pond. I prefer to find a flat spot not much larger than I am when I lie down, if possible about halfway up the side of a ridge sheltered by trees. In such places fresh air flows down at night and rises with morning light. Mosquitoes do not frequent those places, and I can see and hear what takes place in the area. When I depart such a site, I leave no more trace than if a bear had slept there, maybe less.

I never bivouac next to water where mosquitoes breed. But in the interest of sociability, we went along with their plans. As to mosquitoes, we had previously, before watching that newt by the stream, rubbed mint leaves on our clothing. Mint repels mosquitoes and helps to mask human scent from wild creatures, which helps when trying to get close to them. Other wild plants, such as catnip, marigold, citronella, lemon-grass, rosemary, and lavender, also repel insects. I also had a citronella coil to burn if the flying bloodsuckers became too annoying.

Out of our trail-met friends' packs came a cascade of tents, lanterns, and other gear. We carried on a conversation, and I watched as they erected their two tents and hung lanterns, and got ready for dinner. Their tents were excellent quality, designed for base camps above tree line (say, Everest base camp), cost about $700 each, weighed about as much as my entire outfit, and were about as appropriate for a mild summer weekend in foothills as an igloo. Whoever sold those tents to these folks, well, it would have made his day if he was on commission. They had wine bottles with elaborate cork pullers, a cutting board, fresh lemons with a special lemon squeezer for the plastic bag of supermarket salad, baguettes and Brie, chocolates, coffee, and many other goodies. Dehydrated packaged lasagna was to be the main course.

We felt a little like country cousins who had been invited to the ball at the palace. We had nothing to erect but a tarp, and since it was a clear evening, we decided to sleep under the stars and not bother. I had a corkscrew on my little Swiss Army knife, and stood ready to leap to the rescue if their cork puller failed. Being ready to take advantage of emerging situations is a survival skill. Alas, their cork puller extracted said corks without a hitch, depriving me of the opportunity to demonstrate my survival skills and equipment. I was, however, deeply grateful for the nice Chardonnay. As counterpoint to their lanterns,

flashlights, and headlamps, I had a candle, but sadly, little else material to contribute to the party.

We shared dinner, and here we were able to make a contribution: seven small trout caught a few hours earlier and transported wrapped in ferns. We cooked them on a flat rock in my small cook fire and shared them with our new acquaintances. To their salad we added watercress and miner's lettuce we picked by the pond. (See chapter 14, Hunting and Gathering.) One of the ladies in their group expressed concern that we were contributing to the degradation of the environment by picking the greenery and taking fish. Discussion ensued. I showed her that we had not pulled out the roots of the wild greens and explained that the plants would quickly regenerate, and in any event these plants were common and grew along streams all through these mountains. I said that the trout family would likely be around long after *Homo sapiens* were gone. She was reassured. Dinner continued.

We made a stack of poorly shaped but tasty tortillas from cornmeal and cooked on the same rock as the fish. The tortillas quickly disappeared. All agreed that the fresh fish went well with the wine, and that the cress and miner's lettuce were tasty. I ate some of the dehydrated lasagna and complimented them on it. After dinner I passed around my bottle of snakebite medicine—cognac in this instance—and we got to know one another, told stories, and talked about the vast difference in our respective approaches to the wild. The backpackers retired early, exhausted from their trek and zipped securely in their tents.

I very much enjoyed their company and sharing dinner. They were nice folks. Their tents were impressive, but out of place in this benign woodland. They sprayed DEET all over each other and around the campsite as they made camp. Having previously had quite enough exposure to neurotoxic pesticides, I avoided the spray. Their perimeter of lanterns drew squadrons of flying insects, effectively ruined night vision, and shut out the world of night—except for the small war zones around each lantern, insects strafing the citadel. Kamikaze moths scented the air with the odor of barbecued bug. Following the "leave no trace" ethic, they built their fire, a large campfire, in the previously established steel fire ring. They cooked all of their food on stoves. It was pleasant to sit around their campfire and talk. Doing so shut out all the nightlife around us, but the lanterns had already accomplished that, and it was fine for this evening.

For our cooking fire, we had scraped away earth to a depth of about 3 inches, lined it with rocks, and kindled a fire about a foot in diameter. When the fire died down, we cooked in the coals. The next morning, when I was certain all the coals had died (they were cold to the touch), I scraped the earth back over the fire hole and scattered duff over it. Only a good tracker could find the spot. The

charcoal will nourish the earth.

I was awakened a little after midnight when a momma raccoon and her three kits came into the campsite. The moon was full and bright. Everyone else was asleep. The little raccoon family ate the remainder of a baguette and other scraps that the backpackers had left out. I nudged my friend awake and we enjoyed watching Momma teach her kits where to find tasty food. Sitting up and holding a chunk of bread in her hand, and with her kits gathered around, Momma looked like any mother teaching her kids a lesson. In their zipped-up tents, the backpackers missed the show.

In the morning the backpackers were surprised to find some of their food gone and vowed that they would in the future put everything in the bear-proof containers. They were slightly annoyed that I didn't rescue their food. I made up for my security lapse by showing them how to see and follow the tracks the raccoons had left as they wandered off. Over an hour was required for the backpackers to pack up all their gear, during which time they missed the jays waiting in the trees for scraps we might leave and two squirrels running and playing in a nearby redwood. Butterflies fluttered by without their notice. The living forest of tiny souls was lost to them, never found, never seen.

We said our good-byes and waved as we went our separate ways, the backpackers continuing along their well-marked trail, the two of us drifting back into the trees, moving softly through the great green world.

Do not think I consider these folks and their methods in any way inferior to me or mine. They were enjoying the out-of-doors in their own way and doing no harm to the local environment. Certainly they had contributed more to the American consumer economy than my friend and I had done. They were tolerant folks, to a degree, but clearly they regarded my friend and me, and our methods, as bizarre, something out of the distant past. We didn't tell them our dinner the night before we met them had been a marmot (not a momma) taken with a throwing stick. That would have been too much for their sensibilities. Marmots, large rodents, cousins to groundhogs, are much cuter than trout. Marmots are not protected and are considered varmints. I do not think of them, or of any creatures, as varmints or vermin. We'll all creatures of this world and all have our place in it. Both marmot and I had been in our places the day I took him, and I did no harm to the ecosystem by doing so.

Hundreds, perhaps thousands, of these folks tromp up and down trails everywhere, and it is incumbent upon them to at least do no damage, and to try to leave no trace. And bless them, they so do, to the best of their ability. What would happen if these folks adapted my methods and gear and spread out over the millions of acres of wilderness, rather than staying on trails and in established campgrounds? What if they caught fish, picked grass and other wild

established campgrounds? What if they caught fish, picked cress and other wild pants, maybe even took a marmot? I don't know what the impact would be. I'm not worried about it because it's not likely to happen. But for the few who might choose to wander in wilderness in this way, I can tell you doing so offers rewards that cannot be obtained in any other way I know of, and that learning wilderness survival skills is only a small part of it.

If you do decide to follow this path, you'll need knowledge and skills in addition to the gear described in this book. Acquiring this knowledge and these skills has for me been a lifetime endeavor, but you can learn the basics of route-finding and so on in a short time. You'll also want to learn how to *see*, really see, and hear, and smell, and feel the wild world. I once read in a book about the Himalayas that one of the local people said to the author, "Many people come looking, looking. But no one sees." This is true not only in the Himalayas, but in all of life. If you want to learn to *see*, among other skills, once again I refer you to *The Tao of Survival*.

Beyond those considerations, people who enter the wilderness as these backpackers do are totally dependent on their elaborate equipment. Every year we read about them getting lost, falling off cliffs, drowning, dying of exposure. Every year search and rescue teams are called upon to save them, if they can. Whether or not you approach the wilderness, or survival, as I do, self-reliance and the acceptance of personal responsibility, and not being overly dependent on equipment, will go a long way toward keeping you out of trouble, and save the search and rescue teams a lot of work.

Those huge backpacks stuffed with gear do not lend themselves to climbing, crawling through brush, stepping silently in the forest, slipping up on wildlife—nor do they protect against misadventure. Actually those top-heavy, overloaded backpacks and stiff boots lead to falls and blundering about while trudging with head down. I could have easily walked close enough to touch any of these backpackers without their awareness. So could any bear. Also, the over fatigue produced by carrying such loads can lead to campfire and other accidents. I know a fellow who sustained third-degree life-threatening burns for just this reason when an exhausted companion overturned a pot of boiling water on him.

Backpacking, being a popular recreation, has attracted quite a bit of attention from major companies, which have invested considerable money in developing products for this market. Some of those products are superior to military issue and are sourced by special operations units, and by those interested in survival. If you follow the general guidelines in this book, resist the blandishments of the ever-helpful salespeople, and hold tight to your wallet, you can find good basic gear at some backpacking retailers.

CHAPTER TWELVE

Military Clothing and Gear

MY FIRST SET OF JUNGLE FATIGUES WERE THE MOST COMFORTABLE hot weather clothing I had ever worn. I wore them every day for the remainder of my enlistment. I took them off on my last day of military service and never wore them again. I would no more wear military uniforms as a civilian than I would wear a wetsuit to work, unless my work was as a scuba diver. To me it just seems inappropriate to wear military uniforms as a civilian. But, that's just me.

Many civilians do wear military clothing, and some of it is quite serviceable for survival. Wool socks, some parkas, cargo pants, and other surplus items are good value and can be found online, often for modest prices. I won't comment further on the topic, other than to say that military camouflage often draws unwanted attention.

Most military field gear is not the best choice for civilian use in that it's overbuilt to withstand years of rough use and abuse at the hands of many people. Field gear is issued to soldiers, used by them, and then turned in for issue to other troops. When I first enlisted in the army, I was issued gear that had been in use by generations of soldiers who had gone before me. Lighter-weight and more purpose-built gear is available on the civilian market. In fact, as previously mentioned, many special operations units source their own field gear from civilian suppliers rather than using the issue gear.

That said, some military surplus is well suited for civilian use.

An example is the US Army poncho and poncho liner. Heavier than the lightweight civilian silicon-coated ponchos, the army poncho is sturdier and more durable. It can be used as a litter to carry the sick or injured, with brush as

an improvised flotation device, and as a robust roof for a hooch (an expedient shelter) that will last for extended periods, as well as for its basic function of keeping the wearer dry. The poncho liner is a synthetic quilt that ties into the poncho. Combined they make a functional warm-weather sleeping bag. The liner by itself is a good blanket or sunshade.

With a minimum of skill, you can make a slit in the liner to match up with the head opening in the poncho and whipstitch the edges to avoid unraveling. Worn together they become an inclement weather serape. There was a company that offered a kit to effect this customization, but they seem to have gone out of business.

I would have no hesitation in taking to the wilderness with only poncho and liner as rain gear, shelter, and sleeping gear, and have done so many times, as have my students. These are inexpensive products, very effective and useful.

Other examples are the various European military surplus rucksacks available from online retailers. These are relatively lightweight, inexpensive, and functional. For example, the German Army Alpine Rucksack is available online from a number of vendors. It's similar to my old canvas rucksack, 26-liter capacity with two outside pockets. At a little under 2 pounds, it's no ultra-lightweight, but it's not a heavyweight either, and is durable enough for hard use. The actual military surplus appears to be of higher quality than the aftermarket copies.

The old US Army ALICE pack is, with its frame, a backbreaker. The small and medium ALICE rucksacks, without frames, are okay rucksacks. I consider the current US Army MOLLE system to be overbuilt for civilian use. Many soldiers consider it overbuilt for military use.

Oh, and another other military surplus item—the P38 can opener—is a perfect example of a minimal tool. The one on my key ring is decades old, still opens cans, and acts as an expedient screwdriver. The concave sharp edge also will serve for other cutting functions. It weighs next to nothing and costs pennies.

CHAPTER THIRTEEN

Expedient and Improvised Gear

IMAGINE YOU GET CAUGHT UP IN A CIVIL DISTURBANCE, OR EVEN A war, in another country while traveling. All transport has been taken over by warring factions. Cities and roads are not safe due to fighting. All roads have roadblocks where combatants are detaining anyone they choose. Noncombatants, refugees, are fleeing on foot. Some are headed for the nearest border, others for the hills. Mountains are traditional places of refuge in wartime. How would you fare if you had to walk a hundred miles out of a danger zone over rough terrain, or hide in the mountains until danger passed? What if you had no outdoor equipment?

An improbable scenario? Not at all. These are more common events than you might think. I've experienced them in more than one country. These things are taking place right now on the Syrian/Turkish border, not far from where I am as I write, and in many other places around the Mediterranean. It is not only Syrians and Libyans who are fleeing the fighting in their countries, but also others who were simply in the wrong place at the wrong time. And no, being an American doesn't provide you with immunity or guaranteed evacuation. In some instances being a Westerner makes you a target.

Well, you think, I'll be safe if I stay at home. Those kinds of things don't happen in the United States. Really? Remember Katrina? Remember how many people couldn't get out of the flooded area, how many were forced to seek shelter in a football stadium? Remember how emergency services failed? Remember Mount St. Helens? Remember . . . just check the news.

Having to flee a danger zone on foot is a common event. Having to do so unprepared with no specialized equipment is usual, normal, and all too typical.

Few people are prepared for such events, or to travel on foot for days, foraging for food and water, sleeping outside in whatever weather prevails. What do these folks do about survival gear? They improvise, use what is available, and get by.

Improvised materials can be as effective as purpose-designed survival equipment. A shower curtain can be an effective tarp. The story of Grandmother Gatewood, who hiked the entire Appalachian Trail in Keds using a shower curtain as a tarp, is well known among backpackers. Homeless people use cardboard as sleeping pads, and it works quite well. A scrap of carpet is also good ground insulation. Turks and other nomads have used carpets for that purpose for centuries. Nomads use handsome handmade carpets, but a scrap will serve. The old mountain men used ordinary kitchen knives as survival knives.

Of course, it's best to have a purpose-designed survival knife, shelter, clothing, and so on. But those things are not necessary for survival, or even for enjoying yourself under what many would consider survival conditions. It's sound survival behavior to learn to use improvised equipment at your leisure, before time of need.

Recently ML and I met a young American woman here on the coast of Turkey. Annie is a world traveler and had been traveling for some months when we first met her. During conversation she told us that she had a deep desire to hike the Lycian Way on her own without a guide, and to camp along the trail. She had no equipment—sleeping bag, tent, stove, and so on—and was constrained by budget. She asked if we knew of a source where she could find inexpensive, possibly used, backpacking gear.

The Lycian Way runs along Turkey's Mediterranean coast through rugged mountains ranging from sea level to about 6,000 feet, and amounts to a series of ancient footpaths, donkey and caravan routes that have been way-marked (more or less—many hikers lose the trail) for today's hiker. The trail passes through remote country and connects mountain villages and ancient Roman and Lycian sites. It is a spectacular route, but not for the faint of heart. Especially not in March, which is early in the season when storms and freezing weather are to be expected in these mountains, and especially not alone, especially not for a young woman alone.

We talked at some length with Annie and advised her of the conditions she would likely encounter. In addition to harsh weather, the trail is steep, rocky, and in places precarious. She would have to climb and scramble over rocky goat paths next to cliffs. The Turkish people are friendly and hospitable to a degree that most foreigners find exceptional—but there are people of ill intent everywhere. Annie told us she would have a companion for a few days, another young woman, but proposed to do the trip mostly alone. She said she was an

experienced backpacker, had solo hiked the Cascade Range in Oregon, and had traveled on her own in rural Southeast Asia, not only in tourist centers. She felt she could take care of herself, but admitted that this proposed trek would be a personal challenge.

I asked her some casually presented but acute questions and learned that she knew how to make fire and find her way, possessed certain other outdoor skills, and seemed to be an unusually resilient and self-reliant person. ML, who has a very sensitive people meter, agreed. We were both very impressed by Annie's independence, experience, and courage. She has a winning smile and projects a cheerful, confident manner. She is not a shrinking violet. Clearly she was in excellent physical condition. It also became clear that her budget was very limited. Specialized backpacking gear isn't inexpensive anyplace, certainly not in Turkey, and we knew of no place where she could get used gear. After some consideration, we decided to advise this intrepid young woman on how to equip herself with improvised and expedient bivouac gear.

The next morning Annie came to our apartment with a notebook. Further questioning revealed that she was traveling with a large, 60-liter backpack. I expressed concern that this pack would be too heavy for the conditions—it weighed about 6 pounds empty—and that she would be tempted to fill it with too much stuff. Aside from being too heavy, this pack could become a challenge to balance during some of the scrambling she would have to do in steep, rocky places. I was concerned about the possibility of her falling and being injured far from help. Even though I'm much older than this young woman, I am far stronger, and I wouldn't choose to carry the load she was thinking about carrying on these mountains.

I showed her ML's gear, all of which was contained in a 26-liter North Face Verto summit pack. The pack itself weighs 12 ounces. With three days' food and water, extra clothing, and survival and bivouac gear, ML's total load runs to about 12 pounds. Of equal importance is that the pack carries close to her back and balances well. She can scramble over rocks, climb, run, and jump with it. Annie responded to the concept and told me she had a daypack with her, an 18-liter REI Flash 18, but thought it would be too small. I told her my youngest son had traveled the California Sierra for weeks with that exact model, and that it handled all of his gear, but that he has much experience and selected his gear carefully, some of which is highly specialized. I offered to go shopping with her and help to find an inexpensive daypack of about the same size as ML's pack.

ML showed Annie how to make a hobo stove from a tin can, and together we explained that she could use a shower curtain for a tarp and a fleece blanket in place of a sleeping bag, both of which were available in the local bazaar for a

few dollars, and that salvaged cardboard from a local store could serve as a sleeping pad, especially if padded with grass or leaves. We discussed methods of pitching this gear, campsite locating, cooking, clothing, and other details. Annie already had a fire starter and a small kitchen knife.

We had thought we would see Annie again before she departed, but after that morning we did not. We received word she had become ill, and thought that perhaps she had decided to cancel her plans. Days passed. Our place is located where the mountains meet the sea. We watched storms came down from the mountains and cause rock-and mudslides. Roads were washed out. Power failed. Hard-driven rain beat on our windows and seeped inside. High winds howled, blowing open doors and windows. I thought about Annie from time to time and was glad she had not ventured into these mountains with only expedient-survival-level gear, or really at all in this weather. I called the friend with whom Annie had been staying, but received no answer. Perhaps she had moved on. World travelers often acquire a momentum that can be difficult to halt.

Making a hobo stove from a #10 can with an OKC Cayuga Hunter © JAYRES

Two weeks passed. One sunny morning at the bazaar, Annie called out to us. I was happy to see her with her radiant smile, bright as the sun was that day. Thinking that she had been ill, ML asked if she was feeling better. “Oh,” she said, “I’m fine. I just returned from walking eleven days on the Lycian Way.” We were both stunned for a moment. Annie said she had outfitted herself as we had suggested, and for only a few dollars, by shopping at local stores and the bazaar, and bargaining. The next day Annie came to our apartment to tell us her story and to show us her photos from her journey, some of which are on these

story and to show us her photos from her journey, some of which are on these pages.

During weather that was unseasonably harsh, this remarkable young woman had on her own accomplished a trek that some survival schools would consider a graduation expedition, a trek that most hikers only undertake in good weather, and many of them only with guides. She didn't hunt or forage wild food, but she had traveled on foot more than 60 miles of rough country from sea level to 5,000 feet, with steep ascents and precipitous cliffs. She had found her way without guidebook, GPS, or map; drew her daily water from streams and springs; made fire each night; avoided scorpions, snakes, and in one village, a group of drunken men; and withstood storms and cold nights with gear that most would consider survival gear at best and grossly inadequate for conditions—this in a foreign country where she didn't speak the language, and didn't have a cell phone or any way to call for help. And, she had a great time.

Annie along the Lycian Way with her outfit ©ANGELA PERRY

Annie experienced small adventures, dealt with minor threats and major storms, creatively managed her gear, bargained for food in villages without having the local language, was invited into homes and given meals and food to take with her by some villagers, and enjoyed days of solitude, sunsets, beaches, ruins of ancient cities inhabited only by goats, and wild hills fragrant with herbs.

I have no doubt she would have thrived if she had by circumstance been forced to forage or hunt for wild food. She was comfortable with her simple little outfit of expedient gear and could have continued indefinitely.

Along the way she met a friendly German fellow with a backpack large enough to contain a safari camp and a servant to set it up. He told Annie he got cold at night, even with goose down bag and tent. Annie said that on some nights the temperature dropped, the wind howled, and it did become very cold, especially at higher elevations. On those nights she added more grass and other materials as insulation under and around her cardboard sleeping pad, and wore all her clothing. She used stones as a windbreak and to reflect heat from her little fire, and on the coldest night brought heated stones from the fire in her hobo stove into her tiny shelter. By doing so she kept warm, and apparently more comfortable than the fellow in his tent and sleeping bag.

Annie with her bivouac and gear ©ANGELA PERRY

Annie admitted to having many fears about the journey. She had dealt with them by facing them, letting fear flow through her as she had learned to do during a meditation course in Thailand, and by preparing as sensibly as she was able. She also said she had “unlearned the culture of fear that now exists in America.” During her many months of travel in many countries, she had slowly come to realize that she, like many of our countrymen, had previously lived in constant fear of one thing or another, and that the rest of the world did not.

During her travels she had as much as possible disconnected from the media and its constant fear-mongering and discovered that the world is really not all that scary. This awakening contributed to her ability to deal with her fears and to accept the challenge she had set for herself of making this trek through the Taurus Mountains of Turkey on her own.

Transcendence ©ANGELA PERRY

Annie's rucksack with some essentials ©ANGELA PERRY

She said that our conversations had inspired her to go ahead with improvised equipment, and that doing so taught her how little she really needed, and that she now fully realized that marketing and advertising made people think they *needed* many things that they really only *wanted* due to advertising.

The accompanying photos show a smiling, attractive, young woman in casual clothing with a bag no larger than a purse, a bag that when third-level gear is removed, serves as a ready bag and, yes, as a purse. The notion of a wilderness trek by this young woman with her purse, casual clothing, and makeshift gear might cause consternation to the macho, camo crowd and to gear-head backpackers. But, this is the essence of practical survival gear, and survival, and really, of life. Keep it simple. Keep it light. Use what's available. Have some fun.

At a local general store and in the bazaar, Annie found plastic sheeting, a plastic tablecloth printed with strawberries, cord, a plastic container with a lid, and a single-wide fleece blanket. She used the sheeting as a ground cloth under the scrap cardboard she had foraged from behind a market, and the heavier-gauge plastic tablecloth as a tarp. The fleece blanket was her primary insulation while sleeping. She wrapped her blanket and some other gear in the tablecloth, made a bundle of it, and secured it to the back of her pack.

At the bazaar she found a length of fabric she used as a shawl, wrap, and extra blanket. Also in the bazaar she found a copper Turkish coffeepot that she used for both coffee and cooking. While hiking she wore loose-fitting meditation pants from Thailand. In the single cargo pocket, she carried snacks. At night she layered those pants over spandex tights.

Annie's rock camp ©ANGELA PERRY

Annie's nest ©ANGELA PERRY

Annie cooking dinner with hobo stove and Turkish copper coffeepot © ANGELA PERRY

Annie decided to go with her 18-liter daypack rather than her 60-liter pack because she realized that she would drop more than 5 pounds of her load by doing so and she thought the large pack might cause balance problems in places where she would have unstable footing, and for the challenge of getting by with so little. During our post-trek conversations, she told us that if she had used the larger pack, she would have been tempted to take more stuff simply because there was more space available. The shoulder straps of her daypack were unpadded, and uncomfortable when the pack was fully loaded. She pulled some of her wrap under the straps to pad them, and that worked out okay. Before departing for the rest of her journey, she told us that she thought she would get a 26-to 30-liter pack, like those ML and I use.

While working on the manuscript for this book, I received an e-mail from Annie that contains information and insights I think would be useful to the reader. With her permission, here are Annie's words.

Hey James,

I thought of a few things I wanted to add to our conversation yesterday. I see two main benefits to using minimalist/lightweight/improvised gear:

1.) As someone who has been traveling for several months on a small travel budget, it allowed me to spend very little on gear and not have to discard new expensive gear (such as a heavy tent) as I travel on to new adventures. When I first met you and you said that I didn't need to buy a tent, sleeping bag, sleeping pad, or stove, I was very interested in trying it out because I had already practiced some survival skills in various outdoor clubs and classes, but also simply because I wanted to save some money. Less gear meant simplicity, convenience, and cheap.

2.) The greater benefit, which I didn't see initially, is that having "limited" gear challenged me to think creatively to get my needs met. For example, knowing that each night would bring darkness, cold, and the potential for wind and rain, I worked to prepare a shelter using not only what I had with me (plastic tarp, plastic ground cloth, cardboard pad, cord, sleeping bag liner, and thick blanket) but also what was available to me in my immediate surroundings. Thus, I cut grass to build an insulating nest around me, heated stones in a fire to warm my bed up, put hot coals in my hobo stove to take to bed with me, and built a stone wall around 2 sides of my tarp to keep out the wind and rain. This process always inspired an awareness of what resources were available in my surroundings instead of relying on specialized gear as a quick solution. In the end, it was

empowering to discover that I can survive with very little and wake up quite happy. I gained a deeper appreciation for the morning time, and with it light, warmth, and safety, too.

Of course there are other benefits as well, such as simply having a lighter pack. If I were to do it again, I would want a slightly bigger pack (maybe 30 L) that is built to carry weight (comfortable straps and waist strap). I would also take a lighter weight warmth system for the nighttime such as a sleeping bag, survival bag, or reflective tarp (rather than a heavy blanket).

Annie

Before she departed for the next stage of her adventures, we gave Annie a Blizzard Bag to try out and report on. It will be interesting to receive her feedback.

Note: Just today I received an e-mail from Annie. After departing Turkey, she traveled through the Greek islands and mainland Greece to Italy, then north through other European countries. During this journey she used the Blizzard Bag many times, including sleeping on the deck of ferries. She said it was "warm and comfy" and will take it instead of a sleeping bag on her next trip, which is to Alaska. She also confirmed her decision to go to a smaller pack and minimal gear.

On a more somber note, millions of people in dozens of countries live each day and make do with whatever is to hand. Plastic sheeting, tin can stoves, and cardboard are home furnishings for them. Visit any undeveloped country or refugee camp to see real-world survival gear and meet people who are true survivors. You might find doing so inspirational and instructional.

To show how you might build an expedient urban shelter using only the contents of a ready bag and urban debris, as you might find after a disaster, we have built a number of such shelters. The accompanying photos show two of them.

To further illustrate the viability of improvised equipment, I set up this imaginary scenario: Due to a regional conflict that has grounded planes and halted ground transportation, ML and I are stranded in a small town in the Middle East. The fighting has not yet reached the area we're in, but civil order has started to fragment as people flee the encroaching war zone. While trying to get cash from an ATM that we discover has been shut down, we're confronted by two criminals with automatic weapons. We surrender our rucksacks and ready bags, and the contents of our pockets. We're left with the clothing we're

wearing, some cash hidden on our persons, and a space blanket that the robbers discarded while searching us and our bags. We were not injured.

This example of an urban shelter was built from discarded cardboard, an Adventure Tools Emergency blanket, and found plastic debris.

A reflective blanket can be combined with cut saplings or long branches to provide protection if nothing else is available. This shelter was constructed in less than twenty minutes. Even without a small fire, it can provide up to 20°F difference in temperature. It can also provide shade in extreme heat conditions.

In this simulation we decide to quickly reequip ourselves as best we can at the local bazaar, which is nearby, and then exit the area—fast. In the accompanying photo is gear we purchased for a cost of about 30 dollars. Starting at the top (12 o'clock) and going clockwise, the first item is a shopping bag with long handles that can fit over ML's shoulders. ML will use this as her ready bag /rucksack. In it she will carry items similar to those below and a portion of the food, soap, and toiletries that we will share.

Next is a sweater I found in a stall that sold cheap and used clothing. On it is a hat and a small pouch. In the pouch are a box of matches, a foldable toothbrush and dental floss, and nylon cord. Next is a small water bottle; rather than two large bottles, we bought four small ones. This allows better weight distribution and protects against the loss of much water if one is punctured. The compact umbrella's primary use is as a sunshade. The salvaged cardboard is to be used as a sleeping pad. The rolled blue fleece blanket will serve as blanket and wrap.

Above the blanket is a thin nylon rucksack that weighs about 2 ounces and holds about 15 liters. On the rucksack is a traditional handmade folding knife with goat horn handles, a design that's been in use for more than a century around the Mediterranean and still used by Yoruk nomads for everything: slaughtering, skinning, and dressing goats; slicing bread and cheese; splitting firewood; and in extreme cases, as a weapon. The knife has an excellent carbon-steel blade and will serve my needs. Below the knife is the space blanket the robbers discarded, a plastic poncho, and a butane lighter. The blue amulet is used all around the Mediterranean to ward off the evil eye, which seems like a good idea. To this gear we added nuts, dried fruit, goat cheese, and flat bread.

Improvised outfit with expedient gear purchased at a local bazaar

We accomplished shopping quickly, and in less than an hour from the time we were “robbed,” we were on a footpath leading into mountains where we could, according to this scenario, travel on footpaths and from village to village until we were clear of the conflict zone. The combatants have no reason to come into these mountains. Anyone with area knowledge and their wits about them could do the same. In actual fact, to play out the scenario and just for fun, we bivouacked in an olive grove in a valley beyond the first ridgeline above the town. We foraged wild greens and prickly pear for salad, had an enjoyable dinner under the stars, and slept quite well.

CHAPTER FOURTEEN

Hunting and Gathering

THIS IS NOT A BOOK ON FORAGING WILD FOOD, BUT SINCE I MAKE reference to hunting and gathering, and mention tools for doing so, I'll provide some basic information and in the back of the book recommend some titles on the topic.

We, *Homo sapiens*, survived and thrived for at least 200,000 years by hunting and gathering. Humans who lived during this period acquired, of necessity, a profound understanding of their environment, including knowledge of what could and could not be eaten. Since the development of agriculture about 10,000 years ago, much of the deep knowledge of the wild world acquired by our distant ancestors has been lost—an exception being the knowledge retained by small groups of first peoples, and the knowledge passed down as folklore in some communities. We have become dependent on farmed crops and domestic animals. This, taken with urbanization, has led to most of us being out of touch with the wild world and lacking knowledge of wild plants.

About 10 percent of wild plants are edible, at least some of their parts. The other 90 percent are either inedible or poisonous. Many plants that have edible parts have other parts that are inedible. Many edible plants have poisonous lookalike plants growing near them. Poison, in the form of toxic enzymes and other substances, are the plant's way of protecting itself from being eaten. To put it plainly, plants can and will kill you.

Therefore: *You should never eat any plant you cannot positively identify*.

Gathering and eating wild plants should only be done after learning exactly which ones are safe to eat. Although field guides are useful, they should be supplemented by direct teaching in the field by an experienced person. Edible

wild plants provide relatively little nutrition when compared to domestic plants or to animal food.

It is clear from extensive archaeological and anthological research that animal foods high in protein and fat were required for the development of sapiens, and in particular the human brain. *Homo sapiens* is, by nature, a meat eater and an omnivore. Although wild plants played an important role for hunting and gathering bands, no group has been discovered that were vegetarians. In fact, there have been groups, such as the Plains Indians who hunted buffalo and the Inuit and Masai, who lived on meat with little or no plant food in their diet. Vegetarianism is an artifact of agriculture and cannot be sustained for any length of time in the wild. We can eat any and all animals, after properly dressing them and removing any toxic parts. Poison sacs in snakes and insects, the skin of amphibians and reptiles, polar bear liver, these are all toxic; few other animal parts are. Sushi notwithstanding, all animal parts should be cooked to kill bacteria and parasites. Even insects carry parasites harmful to humans. Do not, as seen on television “reality” shows, eat insects or other wild creatures raw.

Most of us can live for some weeks without food. If lost in wilderness for a short period, and if you have no knowledge of wild plants or of hunting, it’s best to not try to forage and eat wild foods. In such circumstances it might be best to stay in one place and limit activities until the mind fog that usually accompanies fasting passes; this usually requires about three days, individuals vary. If lost for an extended period, you will need to forage, or starve. The safest approach is to avoid plant food, unless you can positively identify it, and focus on animal food sources. Survival in such circumstances becomes a task of balancing calories expended against calories gained. The most nutrition for the least effort is from insects, followed by small amphibians, reptiles, and mammals.

If you are interested in this topic and desire further information, read the books I recommend, and go online to locate reliable teachers.

CHAPTER FIFTEEN

Various Items

TREKKING POLES

If you shop for a rucksack or other gear in a backpacking shop, there's a good chance the salesperson will try to sell you a set of "trekking poles." These are similar in appearance to ski poles. They are the result of brilliant marketing that has convinced thousands of perfectly healthy bipeds to use canes and become awkward quadrupeds. There are only two kinds of persons I know of who can benefit from their use: those who have a physical hindrance, and those who are so overloaded by outsized or poorly designed backpacks that their balance is destroyed. In the second instance these people would be far better off to go with a smaller, lighter, better designed rucksack rather than adding aluminum canes to their outfit.

Do not believe the salesperson who tells you that these poles will save your knees and make trail walking easier. They will not. They will make you awkward when walking, impair your agility, distract your vision by requiring you to look for pole placement as you walk, slow you down, give you two useless pieces of gear to buy and haul around, and might just lead to a fall. Do not buy them. Do not use them. Just don't.

UMBRELLAS

Umbrellas are not only useful in the city. If you ever go hill trekking in India or Nepal, you will see many Westerners with the standard Western outfit (large backpack, heavy boots, etc.) trudging through the mild rain overheated in rain parkas, while local folks in flip-flops with daypacks and carrying umbrellas

breeze by them. They won't do much good in a severe mountain storm, but umbrellas are a good all-around survival tool. An umbrella will save you from being baked alive in the desert by providing shade from the searing sun, and preserve your sanity when it rains day after day after day . . . as it does in the Pacific Northwest, northern Spain, and most of the tropics during rainy season. A lightweight, folding umbrella is a useful tool during those times and in those places.

BUSHCRAFT GEAR

"Bushcraft" and "bushcraft gear" are currently popular. Many confuse bushcraft and bushcraft gear with survival and survival gear. Without getting too deeply into the difference, in short, bushcraft has to do with living in the forest as our ancestors did about 150 years ago—not primitive or aboriginal skills, but more or less pioneer skills. Bushcraft gear, as it's commonly understood, includes wool blankets, canvas tarps, canvas rucksacks (almost anything in canvas—clothing, bedrolls, and so on), axes, wood-carving knives, iron skillets and cooking utensils, enamelware dishes and cups, basically anything you might find on a covered wagon circa 1870.

Most of this stuff is pretty good gear—but it's heavy. Very heavy. A good wool blanket weighs 5 to 7 pounds. A large canvas rucksack will be about 4 to 5 pounds. The weight of those two items combined amount to about the same as my entire outfit, including extra clothing and food. A minimal bushcraft rig will tip the scale at about 30 pounds, before food, and will do the job no better than my 10-pound outfit, in some ways not as well. Lacking a fire, I'll be warmer in winter and far more comfortable in summer—and therefore, better equipped for survival. There's not a thing wrong with bushcraft gear, it's just not as efficient as modern gear.

If we were, however, to make some adjustments in what's commonly understood to be bushcraft gear, it could become more efficient. Lightweight cotton drill rucksacks, such as my old rucksack (the one pictured with the cook's knife in chapter 7), are as functional as heavy canvas rucksacks, weigh a fraction as much, and are still available from traditional outfitters. The notion that thick, heavy canvas clothing is authentic bushcraft clothing isn't even close to being accurate. Old-time woodsmen in North America typically wore lightweight woolen garments (see Nessmuk in suggested reading). In the tropics they wore lightweight cotton.

During the latter part of the nineteenth century and early part of the twentieth, there were silk tents available that weighed less than 2 pounds and tarps that weighed only a few ounces. Silk was replaced by nylon during World

War II due to a shortage of the fabric and the availability of the new synthetic. But silk is once again widely available and is still an excellent fabric, stronger on a thread-by-thread basis than any other fabric. A length of thin silk would be every bit as effective as a canvas tarp at a tiny fraction of the weight, and still be in the spirit of bushcraft.

SILK

All that aside, I recommend silk clothing and fabrics as excellent survival gear. Officers of the People's Republic of China's army once wore silk padded jackets in place of down jackets in winter. So did I when I lived in Asia. A silk padded jacket is as light as down and as warm for a given weight, does not become useless when wet as does down, dries quickly, compresses well, and is hypoallergenic, which down most certainly is not. I also used a silk quilt with silk padding in winter that weighed about a pound, stuffed into a sack smaller than my current sleeping bag, and kept me warm at temperatures below freezing.

Some Closing Thoughts

From the Bronze Age to the Internet, and Back

Laptops, tablets, and smartphones can be used to call for help during an immediate survival situation; witness earthquakes and other natural disasters that fill the media. The first notices of such events are usually by ordinary people who are on the spot with such equipment, not by news agencies. Those first notices and calls for help alert first responders and save lives. One of these devices, and an extra battery, should be part of every survivor's gear. The Internet and cell network might go down and render these devices useless, but until that happens the networked devices can be lifesavers. They can also be effective, and are proving to be so, in a more existential survival situation—one that looms over us all.

Civilization is itself an organism, changing, evolving, and adapting, as is the entire biosphere of this planet. Will our civilization adapt and survive, as others in the past have failed to do? Or will we, through the use of our civilization's mega-survival tools like petroleum, industrial agriculture, or weapons of mass destruction, destroy our own civilization and the biosphere that supports human life?

Perhaps these new tools will help us to survive, by enabling worldwide communications between individuals and groups. By getting to know people in other countries, even on the other side of our planet, we learn that they are much like ourselves, and by so doing we lose our fear of them. Perhaps these tools, by enabling us to connect with others and form worldwide affiliations, and to organize groups that act for the common survival of us all, can help us avoid global disaster.

If we do not, the “great die-off ” predicted by the Club of Rome and many other knowledgeable and respected organizations, and most of the world’s scientists, might actually happen. Agriculture might fail. Petroleum might run out before new sources of energy are developed. Global climate change caused by our technology might prove fatal to the biosphere we depend upon. Billions might die. The lights might go out permanently.

If our civilization falls, the guns that survivalists are hoarding will fall silent when the ammunition runs out. No one will remember how to make gunpowder, or where to mine the necessary elements. The guns will rust and became nothing more than awkward clubs. No one will remember how to operate complex machinery, and it too will rust. Cell phone networks will fail. The Internet will fail. Satellites will die, and their remains will silently circle the earth, artifacts of hubris and our limitations.

Those of us who live in Western Civilization who survive such a disaster might revert to a degenerate form of the Bronze Age, with survivors rooting through the detritus of civilization, using scraps of auto bodies for arrowheads and fragments of circuit boards as ornamentation, the original uses of these things lost in myths of life before the fall.

If it comes to that, we may need to look to the few first peoples who now survive in corners of the planet where no profit is to be made from their land. We may need to look to Otzi, a Neolithic man who lived and died 5,000 years ago and who was frozen in time. His simple, minimal outfit was different in materials but not much different in concept from the tools and weapons I recommend in this book and other books—tools we would need to survive in a post–Western Civilization world until and if we could adapt.

Unless we totally wreck the biosphere (yet to be determined), there will remain small pockets where tribes still live in the old ways, and a few villages where life will continue. When the oil is gone, and if the solar and other forms of power do not appear in time, these people will pick their way through the remains, plant gardens, raise domestic animals, and hunt the wild animals that will return in our absence. They will survive. Will we?

Otzi wore a goatskin coat over his loincloth and leggings. He wore deerskin moccasins with grass insulation and a bearskin hat. His clothing was stitched together with animal sinew. He wore a belt with a pouch containing an igniter and tinder. He carried a small rucksack woven from grass. His weapons and tools were bow and arrows, a flint knife, a copper ax, and tools to make and repair those weapons and tools. His medical kit was birch fungus, an effective antibiotic still in use today. He carried in his mind/body an encyclopedia of knowledge about his environment. He knew where to find what he needed and

how to process those things, and had the skills to use them.

All in all Otzi's outfit was not much different than the modern survival kit I suggest—except that Otzi sourced all his materials and made his own gear, or possibly traded for some items such as his ax. Which items in our survival kit could we make? Which must we depend upon the complex web of commerce to produce for us?

Otzi also had a mind/body tool kit that is possessed by few today: the ability to blend with and become part of his world, the ability to sense animals he couldn't see with his eyes, the ability to move with the wind—abilities that could serve us all well, and which can be learned from *The Tao of Survival*.

Are we destined to be Otzis, with hatchets and knives scavenged from the detritus of civilization, the Internet a legendary thing, like Tolkien's plantir, the globe of farseeing? Will satellites, airplanes, autos, and rockets become myths of an all-but-forgotten past?

Maybe if we use our modern survival tools—laptop, tablet, smartphone—to reach out to others, maybe if we form affinitive groups to join together to change our society, maybe if we stimulate our civilization to evolve, to adapt to the world as it is rather than what the captains and kings imagine it to be, maybe then these survival tools can save us all.

It's our choice.

ACKNOWLEDGMENTS

Without ML, and her constancy, determination, down-to-earth practicality, and courage and good humor in difficult and sometimes dangerous circumstances, this book would never have been written, and my life would be poorer. Thank you, my Love.

Joseph Shields's continued support, unflagging encouragement, and wit inspired me to return to writing after a decades-long hiatus. Thank you, Joseph.

While teaching the skills in this book to my sons, I learned more from them than they did from me. Thank you, Shawn, Ashley, and Justin.

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Thanks to Kate Toope for providing ML and me with a sanctuary above the sea while writing this book.

Thanks also to my teachers, from Wabash Pete to Master Sergeant Leon Jarozusky, all of whom helped me learn how to stay alive.

DIRECTORY OF GEAR MANUFACTURERS AND SUPPLIERS

The contact information below is current at the time of this writing. All information is subject to change.

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Logan, UT 84321
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www.aquamira.com

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(800) 603-6100
www.badgerbalm.com

Black Diamond Inc.
2084 East 3900 South
Salt Lake City, UT 84124
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www.blackdiamondequipment.com

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www.marmot.com

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SUGGESTED READING

Department of Defense. *Map Reading and Land Navigation*, Department of the Army Field Manual No. 3-25-26. This field manual is the standard. It has been used to train generations of service members. Free from Department of the Army

———. *The U.S. Army Survival Manual*, Department of the Army Field Manual No. 21-76. This field manual is a how-to of basic survival methods covering global conditions. It has been used effectively by generations of service members. Free from Department of the Army.

Diamond, Jared. *Collapse*. New York: Penguin Books, 2011. How it has happened, how it might happen to us.

Hawke, Mykel. *Hawke's Special Forces Survival Handbook: The Portable Guide to Getting Out Alive*. Philadelphia: Running Press, 2011. Mykel Hawke is a retired Special Forces (Green Berets) captain and a certified Special Forces medic who has been deployed in hot spots around the world. I know Mykel, and he knows his topic. This book, based on real world experience, differs on important points from the standard manual.

Lovelock, James. *A Rough Ride to the Future*. New York: Overlook Press, 2015. This book is by the scientist who developed the Gaia hypothesis, which is now accepted by scientists worldwide. A survival manual by a person with impeccable credentials.

Nessmuk [George W. Sears]. *Woodcraft & Camping*. Mineola, NY: Dover

Publications, 1920. I first read this book at age ten. My mentor, Wabash Pete, could have written it. Many of these old-school methods are not appropriate for today's outdoorsmen; no longer can we down trees for a night's camping. But the spirit of the book, lightweight minimalism, is as valid today as ever.

Wescott, David, ed. *Primitive Technology: A Book of Earth Skills*. Layton, UT: Gibbs Smith, 1999. Dave Wescott was director of the Boulder Outdoor Survival School for many years and is a recognized authority on survival with primitive skills. I've trained with Dave and highly recommend this book if you're interested in this subject matter, and even if you're not. You may one day need these skills.

ABOUT THE AUTHOR

James Morgan Ayres has served with the 82nd Airborne Division and the 7th Special Forces Group, worked as a consultant for US government agencies and private corporations, founded four companies, and lived and worked in over forty countries, often in what many consider survival conditions. He's written eleven books and has been a student and teacher of survival, Asian thought, martial arts, healing, and meditation for more than forty years. Before hopping a freight train at fifteen out of a Midwestern state, he was employed as a news-boy, strawberry picker, and crow hunter. He currently lives in Southern California. Visit his website at www.jamesmorganayres.com.