

The taps run dry, the supermarket shelves have been ransacked, the power is off—for who knows how long—and the low rumble of tanks can be heard in the distance. Those who refused to believe that such a thing could happen in America and did nothing to prepare will live as wretched refugees—if they can survive the crisis at all.

But for the prepared—for the city survivor—though life will be a daily struggle, life will go on.

In this, his ultimate handbook on surviving in the city, Ragnar Benson, America's leading survival author, debunks the myth that the only way to survive a crisis is to stock a retreat in the mountains and shows how properly prepared urban dwellers can make it through any emergency. He tells you how to find, purify, and store water in the city; trap wild game; butcher what you've caught or raised; use the abundant (and free) food sources common to almost every city; preserve food for lean times; position your retreat for maximum safety; avoid troops; and barter with other survivors. You'll learn which weapons are absolute necessities and which aren't worth having, and confront the all-important topic of survival nursing care for the ill and injured.

Gleaning advice from survivors who have lived through catastrophic events in Beirut, Berlin, and Karachi, Ragnar gives you the solid information you will need to make it if the worst-case scenario becomes a reality.

Benson

RAGNAR'S URBAN SURVIVAL

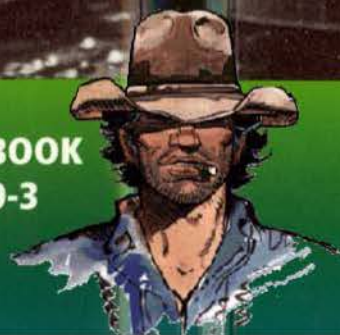
# RAGNAR'S URBAN SURVIVAL

**A Hard-Times Guide to  
Staying Alive  
in the City**



**A PALADIN PRESS BOOK**  
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**Ragnar Benson**

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## Warning

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Technical data presented here, particularly data on ammunition and on the use, adjustment, and alteration of firearms, inevitably reflect the author's individual beliefs and experiences with particular firearms, equipment, and components under specific circumstances that the reader cannot duplicate exactly. The information in this book should therefore be used for guidance only and approached with great caution. Neither the author, publisher, nor distributors assume any responsibility for the use or misuse of information contained in this book.

## Preface

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I am frequently asked if city survival is similar to survival in the country or wilderness. Answering that question is a major premise of this book. Since what many people consider wilderness survival actually refers to recreational activities—frequently practiced by elitist yuppies in SUVs—we must set these practices aside before we can answer the question: Is city survival different from rural survival?

The short answer is that city survival is very much like rural survival, only different. It is identical in that the same basic Rule of Threes applies in either place, and that the Rule of Survival Thermodynamics also is still in force. (You'll learn about these rules soon.) None of these basics has been repealed.

We also know that caching and storage remain cornerstones of any



A great many cities have been the scene of vicious battles already in the 20th century. It is foolish not to plan for such in the 21st century.



survival program. The same is true of the rule about avoiding falling into refugee status.

Hunting and gathering skills are still necessary in the city, however, these skills will be adapted to the city environment. Renewable sources of food can be established, but again, they will be much different from their rural counterparts.

Shelter is perhaps initially easier to find in the city, but the dangers of theft, bullying, and depredation will be much greater. Understanding the need for secrecy while living among large numbers of people is very important.

Rural survivalists can, in my opinion, make do without guns. Some notable 20<sup>th</sup> century survivors, such as Bill Moreland—who survived alone for 13 years in Idaho's rugged Clearwater National Forest—did without guns for an extended period of years. In the city it's an entirely different matter. Not only are firearms vital, at least some must be silenced. We had better know how to make and deploy effective silencers.

As a boy in post-World War I Germany, my father walked 3 miles per day carrying two 25-liter (approximately 5 gallon) cans to the river and back. There was a group of revolutionary German soldiers continually trying to shoot anyone—especially kids—out on the street; the reason why is lost in history. Logic suggests that poison gas from incessant warfare continually swirling around them would have poisoned the water, but no one died from the water. Finding potable water in a city survival situation can be an incredible problem. Without advance preparation, the situation could be terminal.

With a shortage of water, irrigating a garden will be a challenge and may violate the Rule of Survival Thermodynamics. But city gardens are still possible. They are being raised successfully even as I write, although they are too often of an ornamental or hobby nature.

City survivors frequently neglect planning for caching and food storage till it is too late. Raised, or perhaps more accurately, managed, livestock as a renewable source of food is also possible. These activities are not intuitive, and those who try to learn after the flag goes up will become casualties.

What about energy in the city? It's required to cook, preserve food, heat, and provide light. It's necessary for travel and communications, as well. City survivors have more options regarding energy, but these must entail extremely clever procurement and deployment strategies—much more so than in rural situations. My experts who have been there and done that will speak to this issue.

Food in the city, no matter how it's procured, arrives in a great rush. At harvest time, fruits and vegetables must be quickly dealt with before they spoil. Where livestock is available, city dwellers will need to learn all the survival tricks of slaughtering, butchering, storing, and preserving meat.

One thing that will be dramatically different for people used to city life is the extent to which survivors *must* band together for mutual protection and specialization. Voluntary specialization is a characteristic of any free, successful economy. For everyone's benefit, people must be free to do whatever they do best and to trade for their best price. Without these mechanisms, the wrong goods are produced in the wrong quantity and quality. Survivors, unskilled in certain areas, are forced to spend precious hours doing for themselves what other, more skilled people could do better, quicker, and cheaper for them. Every society moves to specialization, either under the table or on the table. Unless specialization occurs fairly quickly, there won't be enough hours in the day to get everything done. Survival is not an activity for the lazy.

Resourceful, learned scrounging has always played a major role in any city survival program. We need to think about these skills now.

In this volume I will share what I've learned about surviving in the city—that is my commitment to readers. Because as many others have learned the hard way, the need for these skills can occur with lightning-like suddenness.

—Ragnar Benson



# Introduction

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Open space between our cities seems to be disappearing, often with a puzzling intensity and speed. What was just a few short years ago raw countryside filled with idyllic little farms, quaint, remote villages, and gravel roads has been developed into government office complexes, apartment complexes, cinema complexes, and parking complexes.

As young men growing up on the farm, we understood that we made up the 12 percent of the nation's citizens who provided the rest of the country's food and fiber. Eighty-acre family farms were not only common, but—much more surprising—economically viable. Ours was a most humble existence, but it provided sufficient goods on which to live.

Then farm efficiency increased, decreasing what we spent on food, and we farmers diminished to 4 percent of the population. There was a hue and cry throughout the land to save the family farm. Speaking personally, I do not know if we really wanted to be saved to the down-and-dirty existence small-farm life provides when our brothers and sisters could more easily go to town and prosper. In any event, the vast majority of us could not put the necessary capital and expertise together required to continue to farm in a modern environment.

Currently, I am informed, less than 2 percent still till the nation's soil. Farm field and demonstration days I still attend reflect this situation. They are a mere shadow of former times

Our military recognizes this widening urban development. *FM 90-10-1: An Infantryman's Guide to Urban Combat* points out that in the past 20 years, cities have spread dramatically. They are "losing their previously well-defined boundaries and are extending into the countryside. Highways, canals, and railroads have been built to connect population centers."

Even rural areas that manage to retain some of their farm village-like character are now interconnected by vast networks of all-weather secondary roads. This is a bureaucratic way of saying that even if an area looks like a rural farm community, we can quickly turn it into a tank park when the need arises.

Contending governments maneuvering opposing armies historically selected wide-open areas in which to operate, but the 20<sup>th</sup>



The era of the family farm has passed.



*FM 90-10-1: An Infantryman's Guide to Urban Combat* contains an analysis of the modern landscape.

century has already proved to be the century of city conflict. Major battles are fought in cities now, not out in open country.

Cities are perceived to be vital because they are the places of politics, propaganda, transportation, storage, commerce and industry, and culture. Soviet Field Marshal Georgi Zhukov, for instance, had no illusions regarding the strategic value of Berlin at the conclusion of World War II. Militarily, Berlin had little actual value; but from a propaganda standpoint Berlin was vital. Instead of retreating to the more easily defended south of Germany, the Nazis were sucked into this Soviet subterfuge, defending the city down to the last plane, tank, and Hitler Youth member.

At least 34 major battles have been fought in large metropolitan areas during the past 100 years. It's a long list, including such notable places as Madrid (if you don't understand the Spanish



Cities are viewed by modern militaries as having three terrain features—underground, grade level, and high-rise—similar to those of open country.



More of us are living in built-up areas characterized by row upon row of apartments.

Civil War, no war in the 20<sup>th</sup> century can be understood), Warsaw (the unbelievably horrible Warsaw Ghetto comes to mind), Seoul (four times trounced in the brief Korean War), Saigon (symbolically drawing the curtain on U.S. involvement in southeast Asia), and Beirut (from which much information for this manual is drawn).

We tend to think of guerrilla warfare as being a product of the countryside, as with Maj. Gen. Orde Wingate's Chindits, who operated in northern Burma during World War II, or Mao's and Stalin's statements that counterrevolutions start on the farm.

This is not true today. Wise military people prepare to fight the next war, not to refight the last. Today our military trains to fight urban guerrillas in built-up areas.

This volume does not directly relate to urban warfare. It does recognize the truth that most of us will likely live in cities, because cities are mostly what there are now. The volume also fully recognizes the survival truth that refugees are never survivors. In its most modern interpretation, survival is living free of government control. Refugees certainly do not fit this definition, probably explaining why they die in such large numbers.

Because contending governments like to fight in cities and because it would be folly to leave our familiar places in cities, we must learn to survive in cities. Like the romantic image of great, sweeping cavalry charges run across grass-carpeted rolling hills, we must face the fact that rural survival is something of a nostalgic notion. Even if wilderness survival was ever really a practical device, it isn't viable today. We don't live in rural areas, and rural areas are not where battles will be fought.

Lightning-fast surprise attacks determined to seize enemy urban strongpoints are a cornerstone of warfare in built-up places. Simply



Rather than on farms, we will be living in housing complexes when crises hit.



Those who rely on the government will probably end up dead.

put, we could instantly find ourselves engulfed in an urban conflict, neither of our choosing nor of our doing. Such an action would instantly require deployment of survival supplies and superb survival skills. This is perhaps more true in Europe and Asia, but this world is a shrinking place.

As a direct result of the 20<sup>th</sup> century's being the century of urban warfare

and survival, we have a tremendous body of experts who have learned how to live off the land in the city. "Been there, done that" is their motto.

Ranging from my father, who survived World War I in Kassel, Germany, to the many Lebanese exchange students currently attending our land grant colleges, there are experts to call on. Many grew up believing there was no other way of life.

When starting this volume, I vividly recalled the comments made by a senior editor of a large magazine chain that, ironically, included a survival magazine. Force of habit, custom, family, and job-related issues kept her in New York City. Admittedly, it's one of the world's truly tough places to survive under even good circumstances.

"When the flag goes up," she very seriously explained, "people like me are all going to die. People in the country will live, but I have no chance."

This is not true. We now know with certainty that residents of Beirut, Berlin, and Madrid survived in great numbers under absolutely brutal conditions. They did not have the benefit of prior experience, a survival philosophy, or any special advance preparation. We can have all these in place, as the reader will quickly discover.



# Chapter 1

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## Basic Survival Philosophy

“When it is extremely important that your pants stay up, use both a belt and suspenders, along with buttons on your shirttails,” a Russian proverb says. This basic homily echoes the Golden Rule of Survival, known as the Rule of Threes.

The Pacific Northwest Nez Percé Indians probably deserve the most thanks for refining this rule into a genuinely workable survival plan. Most likely this plan became part of their culture in about 1730 with arrival of their first horses. The Nez Percé were the only tribe of North American Indians who learned to selectively breed their stock, leading to development of the famous Appaloosa warhorse.

The Nez Percé were unique in several other regards. They were the only tribe that did not routinely starve every winter. They had a lifesaving survival plan that soon became an integral part of their culture.

It was a model of simplicity, explaining in large part its great success. The Nez Percé discovered that for everything really, truly important to life, three separate and distinct methods of supply must be developed. As it evolved through the years, this Rule of Threes proved to be extremely wise. Obviously the Nez Percé applied this rule to their life in the country, but experi-

enced city survivors have found that it works equally well for them.

The system's corollary proved equally profound. The Nez Percé found—especially in the short run—it does not take very much in an absolute sense to stay alive. Elements of basic survival were simply seen as food, water, energy, shelter, and possibly articles of personal encouragement. In our culture these personal items might be art, music, or perhaps a Bible. One woman I know believes this should include a hot shower once a week.

Because these items are so absolutely necessary, positive provision for their supply must be made. Twentieth-century experience suggests that we must include medications, clothing, and self-defense in this list. But we also now know passive defense systems—such as simply laying low and hiding—are often as effective as active ones.

First contact with Europeans for the Nez Percé came on September 20, 1805, when Lewis and Clark rode down out of the mountains into their remote area of what is now the state of Idaho. At that time the Nez Percé already owned six modern (for that era) rifles! These had been bartered from the Mandans and Hidatsa, who had bought them from French and British traders. Because their Appaloosa horses were so valuable, the Nez Percé were able to trade for equally valuable items such as rifles, powder, and balls. Another rule of survival comes into view.

Even before firearms, the Nez Percé were able to survive using



Nez Percé Indians lived well as a result of their survival philosophy.

their Rule of Threes. Later on, having a few figurative trade dollars in their pouches allowed them to survive in much better style. It's still true today—those with their financial houses in order will survive better and more easily than those who are forced to live under more basic conditions. Those with money for guns and ammo, especially in cities, have a far better chance at survival.

While the basic Rule of Threes works in a day-to-day, practical sense in the city or country, it can also be deployed by those who are into recreational nuts-twigs-and-berries primitive survival. The rule gently draws all of us into a workable plan. People don't have to leave their current homes for mice-infested, drafty cabins in the hills in order to live.

## FOOD

Employing the Rule of Threes, we know that when food is vital for you and your family's survival, you should develop at least three separate and distinct sources of supply. No one source can in any way be dependent on the other for its implementation. Each on its own should be capable of feeding you and your family during an emergency.

My father and his family in post-World War I Germany, for example, relied on the rabbits and pigeons they tended, the garden vegetables they raised, and wild edibles they found in the fields and city parks, as well as what they bartered for with surrounding farmers. They lived in the center of a large city.

In a more modern context, city dwellers can expect to rely on their domestic rabbits, their gardens, and scrounged edibles gathered from surrounding fields, parks, and rivers, as well as consumption of stocks of previously stored supplies as needed.

The other vital rule is the Rule of Survival Thermodynamics. This means that you must never put more energy into a survival activity than is taken out. Those who fail to heed this warning quickly become casualties.

This generally rules out sport hunting and fishing, but opportunistic shooting of critters for the pot in the course of other survival-related activities probably would not violate this precept.



Survivors who have adequately prepared can expect to go to the food shelf to resupply.



Rabbits are ideal food animals for city survivors. They eat virtually anything green and are extremely prolific.

Keep in mind that in Indian cultures, most edible critters were caught in snares or deadfalls. Theories of fair chase and conservation did not enter the equation.

Gardening as a survival technique may also be impractical for many people who haven't gardened before in their specific area. However, survivors who are already practiced in their city-based gardening skills can probably see a net gain for their efforts.

Foraging in the city can also yield food, but it is difficult. Our early Indians learned to properly treat acorn meat (washing out the tannic acid), hunt wild bees, dig edible flower bulbs, and collect cattails and many other edible plants. Today, in the city or country, the only foraging technique that practically qualifies for most Americans involves gathering cattails. Other edibles are sparse, hard to recognize, of little food value, and generally unavailable in winter. As a practical matter, collecting nuts, berries, and twigs generally makes little survival sense.

But the good news for city dwellers is that cattails are every-



Even when very large game is targeted, sport fishing and hunting is not usually viable for survivors.



Only opportunistic game shooting done while undertaking other jobs is a viable survival technique.

where. My old, old account regarding cattails with which many survivors are already familiar, involves the time I was riding in a taxi from National Airport at Washington, D.C., (now Ronald Reagan National Airport) into town with a skeptical newspaper reporter anxious to discredit all survivors. We passed acre upon acre of cattails growing wild along the Potomac River. My point about these being an excellent survival food that was commonly available in an emergency was instantly made.

During the fall and winter, cattail roots can be sliced and boiled, substituting for potatoes. In spring and summer, tender shoots can be harvested and steamed for the table. In season, cattail pollen is relatively easy to collect, substituting for flour as much as 50 percent by volume in biscuits. Green cattail flowers are also

nutritious and abundant when collected and eaten before they mature and brown. Most important, easily identified cattails grow everywhere in the United States in great abundance. Nothing else



looks like a cattail and they are never toxic. The danger is, of course, that over time, many city survivors will obliterate limited city cattail beds, but so far this has not happened. Despite my best efforts at promotion, few people seem to know about and use cattails!

Another valuable food source available to city dwellers is rabbits and pigeons. Those who have never raised livestock before will find these animals fairly easy to raise. Rabbits are some of the best composters available, and they eat just about any cellulose at hand. After learning how to handle them, three females and a buck will produce enough meat for two rabbit-meat meals per week, while simultaneously fertilizing the garden. And they are good city animals. I recently discovered an extensive, mostly hidden, rabbit enterprise in a crowded English city.

As a food source, common pigeons are another critter with great charm when raised in the city. They fly out to get their own food and water from a roost that can be established virtually anywhere. Fifteen adults easily produce sufficient meat for another two meals per week. There will be more about raising these critters in the city in subsequent chapters.

Game animals of all kinds from rabbits to carp are best



Cattails grow next to a housing development. This vegetable does not pick up surrounding pollution and, when well cleaned, is always safe and nutritious.



Members of this family raising rabbits in the heart of a large industrial English city are practicing survival skills and don't even know it.



Survivors in a life-and-death setting must trap all of their game. Sport hunting and fishing risks using more calories than are earned.



Getting raw grain from farmers may not be practical or possible for city survivors.



Grain terminals, if they can be reached, have sufficient food for a city for a year. Fresh water is a plus.

trapped. Learning how isn't difficult. Set out great numbers of traps, repeating what works. In cities, expect to catch cats, dogs, and rats; in the country, look for deer, rabbits, and geese.

Trapping wild or semi-wild game is part of the Rule of Threes for both city and rural survival.

Bartering with farmers and stockmen for edibles is another alternative. Those living near farms may be able learn how to preserve harvests themselves. Like country survivors, the city variety must be willing and able to preserve their own food.

## CACHING AND STORING

Most city survivors will elect to make stockpiling a large part of their three-legged food survival program. Understanding how to effectively stockpile intimidates some folks. Here's a simple way to determine what you'll need: Instead of guessing about what you think



Plastic barrels can be used for deep, long-term hiding and caching of survival supplies.

you'll need, just start buying doubles of all the essential items you normally purchase. For 8 months preceding the hour of need, start saving all these extra supplies in one set-aside survival area. Soon there will be more than enough lightbulbs, hand soap, sanitary napkins, coffee, and so on, to see you past an emergency.

### WATER

Three sources of potable water are a must. One source could be the municipal pipe into your home, but is not a source you can count on. City dwellers might consider renting a shallow well auger to sink their own backyard well. It is not too early to think about the availability of pond, river, or lake water as part of one's water Rule of Threes. You'll also want to consider a rig to catch and store rainwater from house and building roofs. All that is needed to implement this collection storage plan in most city circumstances are some extra gutter, plastic tarp, and plastic storage barrels (which for some reason are most often blue). Other suggestions are

to store water in bottles, bladders such as waterbeds, or fiberglass water tanks.

### ENERGY

Planning three sources of energy is not tough once you overcome the realization that they probably all must be purchased well ahead of need or, within cities, actively scrounged up by creative survivors. I plan to use 1,000 gallons of stored fuel oil to run my generator and provide some heat, and 1,000 gallons of propane to cook, heat water, and perhaps warm the house. Large propane storage tanks may not be legal in cities, but I know of two current survivors who have 1,000-gallon propane tanks buried out of sight under their garage floor. My third energy source is 25 cords of scrap wood that I can replenish from abandoned buildings and storage areas as needed. I could heat, cook, and survive with scrap pallet wood alone.

Depending on one's specific circumstances, there are also coal, geothermal devices, solar cells, and fuel cells. Small, increasingly inexpensive fuel cells used for direct electrical conversion from LP (liquid propane) gas are coming on the scene. There are also very unconventional fuel sources. My father ran out every time a team of horses came by to scoop up any road apples, which were either dried for fuel or shoveled into the garden as fertilizer. Although road apples have gone the way of dinosaurs in most places, your city survival plan will eventually entail these sorts of improvisations.

### SHELTER

Shelter in our list of threes also encompasses clothing and emergency medical supplies. Most people in our outdoor-oriented society have sufficient boots, jackets, and warm, woolly sweaters to wear when the place can't be kept at 62 degrees. Emergency medical supplies are a complex, separate, and very philosophical issue that should be addressed by survivors as quickly as possible.

Shelter might be your present home or apartment. First backup can include an abandoned cellar, backyard dugout, a tent, or per-

haps a cooperative area, depending on risk levels. Others may have a travel camper, old bus body, or even an old warehouse in which to hide a shelter. You may make tentative plans to move in with your kids or back to your parents. Anything just so long as the Rule of Threes relative to shelters is addressed.

It's tough advice for city people, but no matter what, never, never become a refugee. Survival rates among refugees with no control of their destinies are dismal. Refugees are totally the wards of government. If you believe the government does an adequate job of running the post office, Social Security, and the military, then you will probably be satisfied with the way it will run your life as a refugee. Effective hiding is an important part of city survival as it relates to the Rule of Threes.

Our technology is changing quickly. For this and reasons of



Russian survivors also postulated the Rule of Threes, but it didn't maintain their Soviet Union.



A Russian flag flies over the old Soviet embassy in Bangkok. Russians' use of the Rule of Threes often covers only social situations, e.g.: If you want your flag pole to stay up, set it in concrete and use double-strength metal pipe and guy wires.

personal circumstances, skills, and likes and dislikes, our personal survival plans are never final. Readers should include survival means that I have never dreamed of within their own Rule of Threes. A survivor in east Boise, Idaho, has his own private geothermal heat well, for instance! We will miss opportunities unless we are constantly alert for them.

This is the overall guiding philosophy to survival. Obviously it applies to city survival. Commit to it and you will live. To gloss over parts of it is to suffer extreme consequences.



## Chapter 2

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### Combat in Built-Up Areas

Warfare once took part largely over natural terrain, including mountaintops, rolling hills, jungles, and barriers such as rivers and lakes. However, most battles are now fought on urban terrain, which consists mostly of man-made features. Chiefly, these are tall buildings, rows of solidly built, difficult-to-breach concrete factory buildings, rows of flammable dwellings two stories high or less, wide open four-lane highways leading to places commanders don't necessarily wish their infantry to go, and elaborate sewer and subway systems.

In the eyes of the military leader, city buildings provide cover and concealment to the enemy, block potential fields of fire, limit observation, and severely limit use of armor and artillery forces, which cannot elevate or depress their guns sufficiently to reach many targets. As a practical matter, only high-angle mortars are thought to be effective in city terrain, and even then three to five times as many of them are required.



Many buildings will be reduced to rubble in the course of urban combat.

In spite of this great disadvantage, arrogant commanders often order their troops and armor into cities when encirclement—trapping defenders in a city—might possibly be a wiser tactic. Cities have grown so large and of such strategic importance that commanders no longer have the advantage of starving them out, many experts claim. Grozny in Chechnya is a good, fairly recent example; rebels there got more than 100 Russian armored vehicles before it was over. But, nevertheless, we often wonder at the bravado with which generals sacrifice their men and equipment engaging in city warfare.

The end result for city survivors is about the same. Either they must avoid hostile attackers, or their own defenders might become hostile and create as many problems as the attacking infantry.

The North Vietnamese tunnel system and our tunnel rats got a lot of publicity, but starting as early as the Spanish Civil War (1936-1939) defenders actively used underground workings to either infiltrate or exfiltrate cities. Some people estimate that the defenders of the Warsaw Ghetto could have held out against the Nazis as many as 30 additional days by clever use of Warsaw's extensive sewer system.

Underground works are currently one of the first places attacking soldiers attempt to secure. Unless completely walled off and cleverly camouflaged, interconnecting sewer works and utility tunnels are not places of choice for city survivors to take refuge. Modern urban soldiers with good leadership no longer make uninformed snap decisions regarding underground terrain. Reportedly, survey maps of the world's major cities underground are part of our covert military information-gathering process. Saddam may be



Tall, imposing buildings will become like major high hills dominating an urban area. Commanders will likely use these for gun positions.



Communications and helicopters will be important within contested cities, but their usefulness will be limited by the nature of the terrain.

rightfully paranoid about our efforts to find out about Baghdad's sewers.

City warfare is similar to warfare in the country in many regards. Modern, properly led infantry elements preparing to take a hill no longer line up at the base to receive a pep talk from their leaders, listen to martial bagpipe music, and then charge on up. Instead, a huge bomb is probably dropped on top of the hill and the infantry instantly helicoptered in for an assault from the top down. Urban combat is envisioned as being only slightly different.

Commanders will identify the tallest, most impressive high-rise building in the center of a contested city—one that is

sufficiently stout to support rocket launchers, heavy machine guns, and mortars. Incredibly, modern urban warfare doctrine suggests that these prominent buildings should be taken by helicopter assault groups moving from the top down, often after high explosives placed on the top floors clear them of defenders.

When enemy fire and other considerations preclude helicopters, it is the current wisdom that attacking infantry forces first climb to the top of targeted buildings on fire escapes or inside stairs. Once on top, they begin their assault, fighting their way back down again. Defenders will no doubt attempt to hinder these assaults by placing barbed wire, antipersonnel mines, and other obstacles in stairwells to impede the progress of attacking forces.

Out in the country, high-profile hills are not good places to survive. The same is true in cities. The tallest buildings will likely be at the center of heavy fighting. Survivors should avoid these.

Radio communications between soldiers and commanders in cities are often poor, resulting in both good and bad conditions for

city survivors—a soldier on his own may be easier to deal with, but on the other hand he is also unencumbered by his commander's ethical directives.

Incredibly, commercial phone systems—most of which operate through deeply buried conduit-encased lines—are seen as being more resistant to attack. Contending parties will each attempt to appropriate civilian phone service for their own use. Survivors near central telephone switch facilities may be subject to some rude treatment.

Groups of attacking infantry, as well as defenders, will quickly be splintered into small, isolated units, operating completely independently. Each will be responsible for its own decisions, many of which may not be wise or—at a minimum—may not fit into the big picture. The loss of a small group of infantry may not be immediately obvious. Exactly why it was lost, under what specific circumstances, may never ever come to light.

This brings us to realize that often within cities under attack, small groups of isolated infantry may possibly be taken out with no repercussions for the survivors. But the probability is that one never knows when this will be true: Battlefield communications capabilities are increasing dramatically. It is best not to count on this defense when other devices such as deep hiding are available.

City survivors who very cleverly hide their presence in unobtrusive, untargeted places often survive nicely. This will probably entail removing all signs of their retreat. They will have to learn the art of camouflaging and carefully hide all survival supplies—all



Arrogant, inexperienced urban commanders often send their armor into situations where it cannot maneuver and is subsequently destroyed by defending citizens.



Small, individual actions fought with great intensity characterize urban combat.



Huge quantities of supplies will disappear during any urban combat situation. Survivors with their limited resources should think carefully before committing themselves to urban combat.

signs of their presence—while simultaneously not participating in the war raging about them.

This is not easy. City survivors report that because of crowded living conditions, accompanied by great sanitary and disposal problems, retreats are frequently located by smell alone! Even cooking food among the smell of destruction can be an instant giveaway.

Military targets in cities, when they are exposed, are most frequently visible at ranges of 100 meters or less. As a result, urban conflict tends to be low-tech. Infantry units will have to have some compelling reason to come into your immediate area; otherwise, your retreat may be completely overlooked.

Close, violent combat with light auto and semiauto weapons, flamethrowers, hand grenades, mines, and light antitank weapons (taking the place of artillery), is common in urban warfare. Obviously, many traditionally civilian weapons likely to be in the hands of urban survivors will work nicely in these situations. Defenders will not have to rely on standard military equipment to make an adequate showing. Knowing that the reliable, scope-sighted semiauto .22-caliber rifle could be used at the short ranges in cities to trump well-armed attackers is certainly a source of comfort.

Urban conflict is notorious for the vast, virtually disproportionate amount of munitions it chews up. Internal defenders without regular lines of resupply are at an advantage if they have enough prepositioned supplies. Theft of war materiel is a great concern for attacking forces, but since capturing enemy supplies is risky, experienced city fighters report that most of their stuff came from pre-existing, internal stockpiles. Again, city survivors should only get involved if their most immediate area is compromised.

The rule of thumb in this case is that, again, city survivors should not get involved in battles. If they do, their precious private supplies will be quickly exhausted. Replacement by capture does not work and should not be part of a survival plan, experts claim.

This advice proved accurate in the reduction of Berlin and Beirut, but not so accurate in the Warsaw Ghetto. Certainly it's a matter of





Modern cities have grown together, producing situations in which the military commanders will send their troops and equipment through buildings rather than down streets.

how badly either side wants to continue to fight and what sorts of skilled manpower are available.

City combat is different from combat in the countryside in some deadly regards. A veteran of World War II city fighting recalls that whenever a city had to be taken, he and his fellow soldiers never, never allowed themselves to be channeled down existing streets and roads when entering the city. Instead they used satchel charges, tank guns, and tanks as bulldozers to punch holes through lines of houses and through factories. By moving through the insides of existing structures they kept out of the enemy's sight and out of his ambushes, he said.



Armor used in cities can be decisive, but deployment always carries great risk.



The top of a partially destroyed building can provide excellent cover.

But predictions are tough. Houses along main thoroughfares were often targeted, while those behind were frequently spared. Attacking soldiers also avoided remote neighborhoods where no obvious resistance was organized, especially if barriers and minefields were in place. Another lesson for city survivors.

Fortunes of war are indeed fickle. Absolutely no one can really know ahead if they will end up in harm's way. I think of the Englishman so disgusted by World War I he moved to a remote coaling station in the Pacific. Vessels had then begun to burn Bunker-C fuel, not coal, so "nobody will ever bother me here," he reasoned. But, of course, Midway Island became a major battleground in World War II.

As long as they are tall, buildings that are not strategic and less than dominant can successfully be turned into protected fortress-type structures for use by city survivors. Beirut provides several excellent examples. Survivors there often occupied apartments of high-rise buildings whose top two or three floors had been reduced to rubble, either intentionally or by enemy artillery fire. Layers of ruin above provided excellent protection from artillery or mortar fire, while both giving the impression of being a dead building and giving defenders high ground among protective rubble. But there were other considerations.

Was the building damaged to the point of near-collapse? Some residents lived in great danger in this type of rubble. Additionally, past six or eight floors, walking up to an apartment on a daily basis becomes a real chore (obviously no elevators ran). Survivors argue both ways. While hauling in food and water was difficult, these buildings offered high-rise inaccessibility in uncontested neighborhoods and provided great security.

Some movement out of the retreat will be unavoidable. Know ahead that leaving the retreat is accompanied by great danger and that this must be planned for. Sending a boy or girl out for essential food, water, or medicine often presents an unacceptable risk, because torture is a common and, many claim, necessary element of urban warfare. I have spoken with German women who lived in Berlin at the time of the Soviet occupation, who recalled that if they were caught out on the street they were raped often six or eight times before escaping and hiding again.

Rubble produced by enemy artillery and air strikes can hinder the movement of attacking infantry while simultaneously providing cover for defenders. Attacking commanders often attempt to minimize this problem by ordering their troops to torch cities. The success of this device depends entirely on the type of construction and nature of building contents. Under the wrong circumstances there is little to be done to save one's city, urban survivors claim. Some survivors report having been able to remove combustibles while simultaneously putting out fires as they started. Others took shelter in fire-resistant buildings.

With the battle past, some even re-established living quarters in fire-gutted buildings. This doesn't sound terribly practical, but many of these folks reported living through what seemed like horrible, large, citywide fires.

Sandbagged emplacements are recommended to control fire and to afford some protection from small-arms fire. These can be quite clever, including sandbagged overhead racks, frontal barriers, and floors. Often these structures take on the character of gun emplacements. While those who intend to fight with the urban guerrillas need to know the theory behind these, they are mostly unnecessary for city survivors and will not be covered here, except in passing.

Those interested can secure U.S. Army training manuals on urban warfare as reprints from Paladin Press or in their original form from military manual suppliers. Most military manuals are available in local university libraries where they can be freely copied. Look for anything on combat in built-up places.

Not only is warfare likely in cities where we live, it is also like-



Small, portable weapons that give individuals great firepower will be a decisive factor in urban combat.

ly that this warfare will be bitterly fought. Modern commanders know from past experience that a well-prepared and mutually supported position in a city can usually be defended by a small force. Attackers are likely to suffer heavy losses and perhaps even temporary defeat against a smaller defending force.

At one time wise commanders bypassed built-up areas, allowing

defenders be gradually starved out. East of the Mississippi and in Europe, urban development is so extensive that this tactic is no longer considered practical.

In this and most other cases, survival has proven possible if we limit our defense to our own immediate area. Personal defense in cities, especially when the distinction between the military and police is blurred, is complex. More about this in subsequent chapters.

Urban warfare is old hat to some and terrifying to others. Recently some good friends in the militia movement argued at great length that because our military has studied warfare in built-up areas, it was planning to attack Citizen America. In that regard, the topic was terrifying to them. More likely our military studies this situation because it is the one that must be dealt with. We who plan to survive in cities also need to study it to know what lies ahead.

If anything, this situation demonstrates that successful city survival is the ability to remain flexible, creative, resourceful, and knowledgeable under city warfare conditions. It's about knowing how urban warfare will most likely be undertaken and how to pick places least likely to be heavily affected. It's not about banding together to engage in open, violent urban warfare against a common enemy. People surrounded, identified, and cut off will always eventually be destroyed.

Those reporting the greatest success claim that they husbanded and hoarded all their resources so that, after the enemy had passed, they had the necessary supplies to allow them to hunker down for the long haul—the real work of city survival.

## Chapter 3

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### The Government's View of Survivalists

"So, you define a modern, practical survivor as being an individual who is not dependent on government for any kind of help or assistance," a reporter assigned to a nationally known modern men's magazine quoted back somewhat skeptically.

"Yes," says I, "but add in the fact that government help is always intervention, not help. They try to put a human face on things but look how many people have been manipulated, ruined, and even murdered by their own government in the 20<sup>th</sup> century alone."



Governments never trust freedom-loving, independent citizens.

It seemed especially curious that he had called from New York—not an especially notorious center of freedom or survivalism or individual liberty.

Judging by the trite little collection of shallowness and trivia he eventually came up with for an interview, the fellow really

didn't get it. Even as brief as it was, his article was shot through with scorn and ridicule toward survivors or anyone who would ever dream of living free. It was the same day the Albanian refugee crisis hit the front page. People are being murdered *en masse* by their own government and he ridicules anyone who would think of living free from government "help."

I asked which goods and services he personally depended on that came directly from central authorities.

He didn't want to hear it, but Mao, Stalin, Lenin, and even Heinrich Himmler, director and early organizer of the Nazi Schutzstaffel (SS), fully recognized that counter-revolutions traditionally have started in the countryside. Himmler believed it could be a good revolution if it was kept entirely under his personal direction, philosophy, and control. Perhaps this is part of the origin of Mao's and Stalin's intense paranoia regarding rural freedom-loving survival-type individuals. Yet, keep in mind, Lenin predated any serious SS philosophy by at least 10 years. Why he really feared country folks and wanted to herd everyone into cities is probably lost in history. Lenin said it was to industrialize the country. So they became worker bees in his own private hive!

We see it today in our own society. There are people who believe the government can solve problems and are willing to allow others to take control of their lives. There's no question that the bureaucracy still believes that if it herds enough citizens into cities and provides enough essential services, the rank and file can be brought under their control. Substantial amounts of propaganda regarding the indispensability and wisdom of government are a prime ingredient in this formula. Then those who wish to continue this feudal system under their own superior "leadership" can prevail over the rest of us.

This simple little concept in this brief chapter is the core of city survival: Those who are and/or will allow themselves to be wards of the government don't have the slightest prayer of making it in a truly grinchy city-survival situation. In times past it was said, "Understand this concept and live free. Neglect it and become a slave." In cities it's life and death, not just freedom and slavery.

The problem is that city survivors have a greater struggle in



Observation and police helicopters will be used against city survivors.

avoiding this evil trap. Providing essential goods and services to naturally independent, widely scattered, historically self-sufficient country people is so inefficient that governments that try quickly go broke. Currently few make the effort. There are just not enough people concentrated any place out in the country to be worth dealing with.

Also, I strongly suspect that in our modern times, other than in a few remote and insignificant regions around the globe, there no longer are enough people in the country to carry out a successful counter-revolution.

This does not suggest that government officials are no longer paranoid in the finest Maoist-Stalinist tradition. Although it is not widely known or popularly understood outside certain regions, significant numbers of freedom-loving citizens in Washington state, Oregon, Idaho, and western Montana view current government Wild Lands proposals—which are plans to move people from their rural homes and into cities to allow the land to go back to nature—as being little more than a thinly disguised method of putting the people in the position of becoming wards of the government. The fact that Wild Lands proponents receive huge amounts of under-the-table government money in direct defiance of congressional oversight or approval—very similar to CIA fund-



ing during our Vietnam era—does little to calm citizen fears.

Yet changes in our society are occurring at a breathtaking rate. Our military recognizes this truth when it prepares to fight in cities. Unstoppable events, including dramatic advances in technology way beyond our control (and perhaps even our understanding), are pushing all of us into living in built-up areas. These areas are characterized by high population densities and large numbers of buildings, and put us in great danger of dependence on government for goods and services.

But back in New York on the phone with the men's magazine reporter, my question was, "What absolutely vital goods and services necessary to daily existence do you rely on that are provided by the government?"

His answer was a no-brainer in more ways than one. "Absolutely nothing," he quickly thundered back. That these people are all cut from similar cloth should not be a surprise. He was now had by the ears, but he didn't quite know it. Sounded familiar.

"Oh," says I, affecting my best innocence, "then you can own a firearm of some sort, thereby taking personal responsibility for your own immediate security?" Keep in mind it was New York on the line, where personal responsibility for security has been lost for decades.

"Why would I even dream of owning a gun? I don't want to attack anyone," was his instant response. Obviously he was from one of those new touchy-feely type of men's magazines that wouldn't touch articles about guns, cockfighting, cigars, or bear hunting on a bet.

There are those among us who believe that our president's cur-



The modern Bradley fighting vehicle, often used to deliver a squad of infantry into built-up areas, has more firepower than World War II main battle tanks.



An actual Soviet tank used by Fidel Castro to crush insurgents.

rent tirade against gun owners is *not* really about diverting attention from his many other shortcomings, but rather a thinly disguised attempt to make average citizens more dependent on government. This theory gains credibility when we realize again that our police forces have no binding legal responsi-

bility to protect us! Citizens have repeatedly tried to sue for damages when they were denied permission to own a gun for self-protection and were subsequently attacked. Suits for damages against their police departments got nowhere.

It's true that Thomas Jefferson believed Americans should own firearms as a final last resort against government officials who oppress them. But in this era of wall-to-wall cities, it may be more than that. There is also the matter of government ownership and distribution—either through direct ownership or indirectly through licensing—of electricity, heat, water, communications (radio, phone, and TV), transportation, and postal services. But self-protection is even more at the core than these.

Numerous experts have pointed out that Stalin could never have murdered and carried out deportations in the Ukraine, Mao in northern China, Pol Pot in Cambodia, or England in Scotland (during their 18th-century war of independence) had average citizens been even modestly well armed.

Aleksandr Solzhenitsyn, author and philosopher, believes the Russian people could have even successfully resisted the secret police and going to the gulags with little more than resolute application of axes, butcher knives, harvesting tools, and meat hooks. Sounds like lots of resoluteness, but his idea is duly noted.

The reporter never did admit to seeing the connection between private firearms and freedom, but he seemed to warm to the idea that official provision of sewer, garbage, and water service could

quickly lead to significant control. "Fact is," he said, "I vividly recall our garbage strike and what an incredible mess that turned out to be," he finally admitted.

He did weasel a bit by claiming garbage service was private in New York. "Yes, private, but maintained by a government-enforced monopoly," I suggested. "All they have to do is threaten to pull the company's permit and your garbage collectors will do whatever the bureaucracy wants. You cannot legally go into any business in New York without official sanction," I reminded him.

Water is extremely important to city survivors. Failure of supply could be as serious as going without personal protection, and could arguably be as vital or more vital than personal gun ownership. But to claim that garbage is more important than guns is just that.

Other than electric utilities being government-controlled monopolies, is the electrical system in very many big cities in America still directly owned and controlled by the government? During the 1920s and '30s many small, more rural cities developed their own electrical systems—mostly small-scale hydro projects. Currently, even when utility companies are not collectively owned, the authorities can throw their considerable weight around, denying service to anyone they wish. This is exactly how it works in



Governments in most places handle waste and garbage. Disposal of these can be a weak link for hiding city survivors.



Downtown Havana, Cuba, where compliant citizens are herded into places of complete subjection.

Cuba, where average citizens don't receive enough power each day to successfully run a refrigerator!

Wise city survivors had best look at their own situations now, before the crisis. What essentials to your life do your central authorities provide? Can they arbitrarily and capriciously cut you off, forcing you into becoming a ward of the state?

Forms of government dependence are not all obvious and may vary in priority according to a person's philosophy. Service may vary from city to city, and from country to country. In Britain and Canada, for example, citizens must go hat in hand to the bureaucracy for permission to have a vasectomy, a hernia repair, or knee surgery. A close friend flew his mother to the United States for a hip replacement because she was too old to receive one in Canada! Bypass surgery is not done in Cuba past the age of 50 because recipients do not have sufficient working life left to give to the state. The United States is headed in that direction. More distressing, some people really believe this is a good thing!

In Beirut, shortly after the very bleak days, private mail courier services sprang up. Again, we must keep our eye on the ball. Establishment of private medical care might be very important. But is mail delivery on our list of absolutes required to sustain life?

On one occasion a woman told my daughter, only half in jest, that she could not envision life without her daily soaps (low-grade melodramatic entertainment). Possession of a functional TV cable, satellite dish, or computer connection might possibly be a requirement for her life. That is certainly not a judgment I wish to make.

Like any other survivors, city survivors must start planning now if they hope to provide their own services. It's very important to note that, on close inspection, we often find many of these services are provided by central authorities. Anne Frank, the young Jewish girl in World War II Holland, almost survived. She wrote that at times a chronic lack of sewage/waste disposal actually threatened their sanity, security, and immediate health.

Personal responsibility and self-reliance require great attention to detail. An unlicensed private nursery in Salem, Oregon, for

example, was discovered and summarily shuttered when authorities were tipped off to its existence by the quantity of disposable diapers found in their trash. This is not city survival, but a down-home example of the length to which bureaucrats will go to maintain their control.

My list of vital services that may be controlled by the government and for which city survivors should make other arrangements includes the following:

- Sewage systems
- Garbage collection and disposal
- Communications including radio, television, phone, mail, and Internet access
- Fuel
- Medical services
- Utilities such as gas and electric power
- Transportation
- Water
- Food
- Self-defense/security
- Shelter

Of these, only food, water, shelter, and self-defense are definitely on the list of must-haves needed to survive. Others may also be there, depending on one's personal circumstance. My advice is to never, never rely on people who don't give a damn—such as government officials—for something really important.



Citizens squashed by enemy armor at a watering area.

## Chapter 4

### Water

“Successful city survivors will have to drink lots of brown and green water.”

After hearing this a second and third time from survivors of Berlin and Beirut, it was obvious that this was going to be a very nasty chapter.

It's akin to the social structure in socialistic economies. Everyone is equal, but some comrades are more equal than all the others. Supplies of water are like that! All absolute elements of survival will lead to death when denied, but depending on weather, workload, and physical condition of the survivor, water is the most immediate. Without it you die quickly and cruelly.

The Rule of Threes is an iron rule in the case of city survivors and water.

But there is great cause for hope. In a very few cases, water continues to run from the pipe. It may not be usable without further treatment, but it is something to work with. For purposes of this chapter, though, tap water is not a consideration. Few experienced been there, done that city survivors mention using it.

It isn't an accident of history that many cities in the world were built around natural waterways. Easier transportation using boats

and barges in the early days led to that. Cities grew around profitable commerce. Securing adequate potable water may simply be a matter of laying in securely covered, easily filled and cleaned plastic buckets, a carrying yoke, filter racks, purification chemicals, and larger retreat-type storage tanks to be used to haul, treat, and store water from rivers and ponds running through or lying around our cities.

In real life it is seldom that easy. Survival is never particularly easy or convenient. It is not a game for lazy folks who cannot or will not plan ahead.



City survivors must creep unseen into public areas to fill their containers with water from ponds, marshes, and streams.

### COLLECTING WATER

Getting to and from a pond, canal, swamp, lake, stream, spring, or any other natural water source may be dangerous. It may not be practical or even possible. Many city survivors recall hauling water over as much as 3 miles one way once a day. Figure that on your return trip, weighed down with water, it'll take you twice as long to cover the same ground. On the return haul, slow-moving, heavily laden water carriers may fall under observation, suspicion, and perhaps enemy fire. Great care and extreme caution are definitely in order.

Cities, especially the shot-up variety, provide great opportunity for cover and concealment. At times, large numbers of people will

be milling about, providing even greater confusion. This can be a type of cover and concealment itself. City survivors obligated to haul water from great distances had best pick their route and an emergency alternative, as well as time of day with care, lest they compromise themselves and all the others at the retreat. World War II city survivors in occupied countries were in constant danger of the Gestapo and many instances are on record of food or water gatherers simply disappearing. Like smoke in the wind, no trace was ever seen of them again.

How to keep out of enemy clutches? Here are some suggestions from our been there, done that folks: Plan to leave the retreat at a time of the day when surrounding activity is minimal. Travel by a route that does not cross enemy lines and is least likely to lead to exposure, even if this is a very long, circuitous route. Leave the retreat by a route hidden from view.

Humans can walk at a rate of from 3 to 4 miles an hour. Send two water carriers out together, allowing switching of the heavy return load while still maintaining maximum speed and alertness. When not carrying, the other should act as a slightly forward lookout. Survival is about not being lazy or inattentive to details. Don't pick the shortest route unless it is also safe. Always pick the safest route. At the first sign of danger, abandon hauling equipment to run off and hide.

Undertake haulage in 4- to 5-gallon covered cans balanced on a shoulder pole assembly. Carrying heavy buckets long distances over rough terrain by using only hands and arms is not practical.

### Precipitation

Collecting rain and its close cousins, snow and ice, is another good, practical, city-survival water-gathering technique. One observer said that he saw it often in Beirut and even in Karachi, Pakistan. I have personally observed many rainwater collection systems in several Yugoslavian cities.

Modern technology helps loads. But just as water from ponds and rivers must be filtered and purified, so must precipitation be treated. And collecting it is just as risky for city survivors as hauling water.



To catch and funnel falling water we have large sets of plastic tarps strung in almost tent-like fashion. It doesn't take a Phi Beta Kappa to realize that someone is around maintaining and using the device.

Collecting water from rooftops that would normally gush down a drainpipe into a storm sewer is also possible. Use plastic sheets and pipe to direct this water into your holding tanks. No precipitation in a city is particularly sanitary. Catching from rooftops that people may walk on and that may also catch dirt and debris is especially unsanitary. Clean collected precipitation similarly to the way you would treat water from ponds, swamps, rivers, and lakes by using a sand filter rack and bleach.

Except in some particularly sodden parts of the world, rain falls infrequently. Bountiful quantities must be stored when it arrives from the heavens. Plastic barrels weighing about 450 pounds when full are ideal. Do most readers realize how absolutely awful water stored over the long term can become? Thank God few people have to drink out of cisterns these days.

There's a lot of work to be done here. Try to filter and purify precipitation stored in the blue plastic barrels as soon as possible. Let's not even talk about water stored 3 or 4 weeks in hot climates that hasn't already been filtered and chlorinated.

At the first sign of trouble, purchase twice as many large plastic tarps, plastic barrels, and plastic pipes and gutters as you expect to need. All of this is very inexpensive, so there's no need to skimp or cut corners.

Been there, done that people report that out-in-the-open, obvious water collection systems on roofs, in parks, or in parking lots are virtually as much of a threat to survivor security as sending the young men out with buckets. These collection devices are easily



Those who plan ahead can put together a system to collect rainwater from roofs and gutters.

spotted by members of the enemy forces, who quickly learn what this is all about. Many really don't like it.

Expect them to respond by posting sentries or by tearing up the collection system, if they can reach it. The end result is often predictable, especially when no backup collection supplies are available. You die from lack of water.



City parks with ponds and streams are found in most cities in the United States.

Ice and snow are sometimes sources of water for city survivors. Just hope you also have an excellent energy supply. Ice and snow as sources of drinking water are not as effective as we might wish. Very few examples of using ice and snow are on record as sources of supply for city survivors. Once



It may be green and stale, but little ponds nestled in parks in our cities can be a source of drinkable water.

melted, snow and ice water should be treated the same as any other scrounged surface water. Great quantities of often scarce energy are required to melt ice. Humans cannot normally pack in enough calories to continually exist on ice water thawed in the mouth. Ice has to be melted first or users sucking on it for hydration will risk hypothermia. Cold-weather native survivors can only use solid ice when they are on an extremely high-calorie diet of mostly animal fat.

### PURIFYING WATER

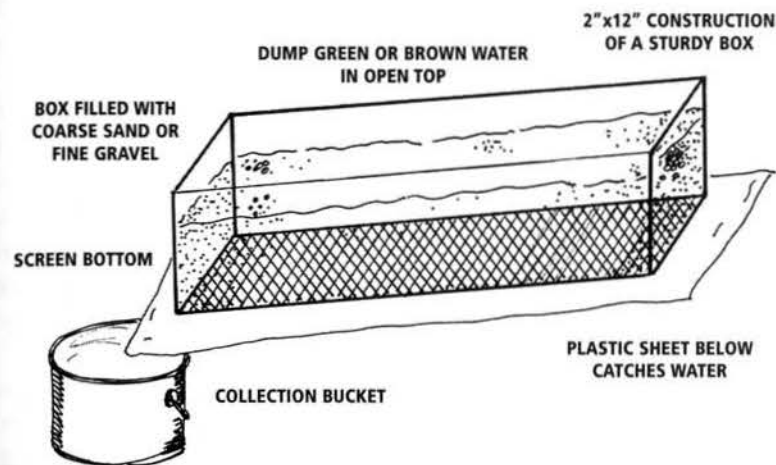
At the retreat, allow any surface water to stand and settle quietly in covered containers for at least 12 hours. This isn't always possible, but it is recommended. Is it necessary to mention that water should be brought from an area of as little pollution and contamination as possible?

When the storm sewer discharge is south and north is just as safe, go north. Yet don't be surprised when this isn't practical. Even though this may be a time of great exposure, fill each container in as sanitary and chunk-free a manner as possible. Our practical objective is a supply of drinking water. It is nice if it has as few big brown lumps and stringy green things as possible, but the objective is life-giving water. Obviously not much water ends up hauled by the fellow who tarries overlong and is shot.

Great numbers of really slick little water purification gizmos are available, mostly from stores selling to recreational survivors, backpackers, skiers, and cyclists. All work nicely, but are expensive and not really designed for long-term city survival requiring purification of hundreds of gallons.

#### Using a Sand Filter

For practical survival use, we'll need a sand filter rack. After the water has settled for 12 hours, carefully pour the top 90 percent of the water through a sturdy fine-weave cloth and then into the sand filter rack. Discard any really scummy settleings. Thoroughly clean the cloth and bucket, setting them out in the wind and sun for a day or two to purify.



Construct sand filter racks by building a box out of 2-x-10 lumber or something equivalent. Fill with coarse or fine sand. Either will work, but of course they will have much different speeds of filtration. Place the sand-filled rack directly over a seamless plastic sheet. Fastening a piece of screen from an old-fashioned screen door makes the process a bit easier and more convenient. This screen must be replaced every 60 days or so. Let's hope the trouble doesn't last that long.

The sand-filled rack, which could weigh almost 300 pounds, is placed on a slight angle. The plastic collection sheet slopes down into a clean collection bucket. Water poured through the 10-inch-deep sand gradually seeps through to the sheet and runs into the clean storage bucket.

Several additional maintenance chores are in sight here. Unless survivors have an endless supply of clean, new sand with which to replace that in the rack, they will have to empty the filter once a week to spread the sand in a thin layer out in the sun to purify. Sand in heavily used filters will get disgustingly grody very quickly, especially in humid, warm climates or where first settling is rushed or not done at all. Placing very many green and brown chunks in the filter degrades it faster. Carefully clean and dry the underlying plastic sheet.

There is great discussion about specific water purification

methods and chemicals. True enough, most survival stores have material that can kill more little water critters than bleach. If you are so inclined, lay in a large to huge supply of this chemical now. Most people, however, are going to have to use common household bleach because that is what is available and what they can afford and find.

### Using Bleach

Common chlorine bleach is in a category with pickling salt for city survivors. At the first sign of trouble, clean out your local store of all you can afford, carry home, and store. It is an essential material. Any excess easily becomes trading stock.

Calcium hypochlorite, available in powder form from most plumbing and hot-tub suppliers, is also a valuable chemical for water treatment. Makers of homemade explosives are already familiar with this stuff. You need add only 1 ounce of calcium hypochlorite per 325 gallons of filtered water to purify it. The cost is about \$5 per pound or 31 cents per ounce. But, cost aside, it doesn't keep as well as the laundry bleach. The only way I know to store calcium hypochlorite is to seal it in a heavy plastic bag and then again in a wide-mouth plastic bottle. The best storage life I can get is about 18 months; after that, it swells and is neutralized as a result of sucking humidity out of the air.

Both calcium hypochlorite and sodium hypochlorite can be used to make bleach at home. Generally, survivors are best served who leave their excess hypochlorite supplies safely sealed in plastic bags and jars. But if your hypochlorite starts to go out of condition and/or there is lots of space in the old bleach bottles, consider using the chemical to top up your bleach supply.

Most packets of hypochlorite purchased from plumbing or hot-tub



Common bleach and hot-tub chlorinator found in many stores can be used to help purify water.

suppliers will be about 65-percent strength. Here's how to proceed to make bleach:

There are 128 ounces in a U.S. gallon. Two ounces of hypochlorite chemical in a gallon produces a 1-percent solution. This is not sufficiently strong—it has to be at least 3 percent. Add 6 ounces of chemical to a gallon of clean water, add the stopper, and let it sit overnight. Use this solution at the customary rate of 1 ounce per gallon to purify water. Eight ounces of hypochlorite will produce a 4-percent solution and 10 ounces produce a 5-percent solution.

Poorly filtered, dirty water requires higher quantities of bleach as well as more time to become purified. This explains why we take care to settle and filter our water. Because bleach will be difficult to impossible to replace, we will want to use as little as possible. To purify 1 gallon of water, add 1 ounce of liquid bleach (3- to 5-percent solution) and let it stand for at least 12 hours.

Some survivors I stayed with in northern Kenya rigged a large aquarium-type bubbler to aerate and purify their water. Without bleach it didn't work well. Even with bleach, it is doubtful whether most city survivors could take advantage of this trick. When I lived in Africa, I regularly dreamed of standing in a fresh, flowing mountain stream drinking snowmelt water in cupped hands. After a few weeks of city survival, thoughts of clean, fresh-smelling, cool, untreated water will be in the category of vague dreams of a past life.

One ounce per gallon is a lot less bleach than most publications on the subject recommend. But conservation of scarce supplies is a primary goal here, and taking the time to let water settle is better than using higher quantities of bleach.

If anyone, especially the very young or elderly, acquires a dose of diarrhea, up the bleach a bit. Several M.D. types in our survival culture reckon that most Americans consume unrealistically pure foods and water. As a result, our guts are not immunized against real-world bacterial conditions. Foreign survivors who have built up an immunity have the edge on us in this instance. Don't forget that under the best of circumstances, city survivors are going to drink lots of brown and green water. It's a given.



## WELLS

For a brief time in World War I Germany, my father hauled his water from an obscure shallow well. The well was reasonably close as well as being sheltered from view. Because the water was drawn from a depth of only about 20 feet, it probably contained contaminants and growies. At least these weren't large, lumpy green and brown ones, and the family all lived through it. Then somebody stole the handpump. His mother traded for another. Somebody stole that one, too. The pump should have been taken off between uses, but it was too late. Now it was a long hike to the river.

I don't know of a community well left in any large city anywhere in the world. In some places where there are larger, open spaces occupied by gardens, parks, backyards, or even median strips in roadways, it might be possible to drill, drive, or auger in private, shallow wells. When these are put in place, they usually



Some survivors with backyards can install their own shallow wells and old-fashioned hand pumps.



Controls and tanks for a do-it-yourself water system.

provide sufficient water for a family. I recently saw one not too far from the center of London. And a survivor from Atlanta wrote that he had produced a shallow well in his backyard behind a three-story apartment complex! These things do occur, but of course won't unless survivors look for opportunities to put them in place before an emergency.

When much younger I used a gasoline engine power head that slowly turned a 2.5-inch auger shaft to drill shallow wells. It was OK technology for wells no deeper than 25 feet where the underlying material was sandy and rock free. How times have changed! Everything is more sophisticated, expensive, and certain. Deeprock Manufacturing, 2200 Anderson Road, Opelika, AL 36801, sells a small two- or three-man well-drilling outfit, complete with mud pump (to lubricate and flush out the hole) that will go down 200 feet! Other than those living in the arid West, everyone is assured of water using one of these outfits. The cost is about \$3,000 for their smallest model, #2000, which will even drill through solid rock. It takes two people about a day to drill their own private well. Frequently these rigs are available from rental shops. In areas where they are commonly used, a good resale market exists.

All well bores must be cased. For ease of operation and speed, use the smallest drill or auger possible that will also produce an adequate sized well hole. Bore a hole about 1 1/2 to 2 inches larger than the well casing. The casing can be plastic if it will slip straight down easily. When additional pounding is required to set the casing, steel is a must. Plastic or steel, a pointed brass well screen is installed on the bottom end of all well casings. Install a well of a size on the very low end of what is common in your area—usually a 1.25-inch one.

Old-fashioned drill augers we used long ago did not have reverse. We quickly learned not to get into this business without a large, rugged set of pipe wrenches with which to back the auger out if stuck by a rock.

Standard power heads are available to rent just about anywhere in the United States. Contractors use them with 12-inch augers to dig postholes. With careful planning, it is possible to purchase 20 feet of 2-inch auger shaft that fits on these standard



contractor-type power heads, allowing insertion of a standard 1.25-inch well casing.

How do you tell whether there is water at the bottom of the hole? Pour water into the hollow well pipe. If it rapidly flows away through the sand and gravel screen, there is water below.

Another detail that makes life easier for do-it-yourself well developers: Three or four 7- or 8-foot well-casing sections with appropriate connections are easier to place than trying to insert a single 20-foot length of pipe.

It ain't easy, but shallow wells can also be driven down into sandy, rock-free ground by hand. The presence of tough clay or any coarse gravel or rock precludes using the following method, which is already so much work that I am reluctant to mention it.

The tools required are a 10-pound (or larger) steel maul, two 36-inch steel pipe wrenches, a 5-gallon water bucket, and some very sturdy boxes, logs, or scaffolds to build up a place to work from. Start with three 6-foot lengths of heavy, steel 1.25-inch well pipe. Special heavy-duty drive couplings needed to connect the pipe sections and a special drive cap to protect pipe threads while whacking away at the pipe end are also required. You will also need a special, heavy-duty well point screen made for this type of mauling. These fittings are not common, but all large plumbing shops I know of can order them. If not, try Lehman's Hardware and Appliances, Inc., Box 41, Kidron, OH 44636. Their stuff is a bit pricey but is of very good quality and fully guaranteed. Lehman's sells predominantly to the Amish community and are very nice folks indeed to work with. I recommend paying up promptly, gladly, and without a whimper, no matter what the price.

Deploying three or four stout men, take turns pounding the point and pipe down into the ground. Two things make this marginally easier. Using the two pipe wrenches and a section of pipe over the handle, keep rotating the well pipe and point as it goes down. Keeping the pipe full of water is messy when it is hit, but will marginally lubricate the point as it goes down.

The maximum depth is 20 to 25 feet. Never assume that this will be easy, but in areas where surface water rises to within 20 feet

of the ground and where there is no gravel or rock, it works like a champ. No expensive equipment is needed, there's not much mess or fuss, and it can usually be undertaken in an afternoon. It's all we had when I was a kid. Many wells of this type were driven right in our friends' backyards in the middle of town.

Water can, theoretically, be pumped by hand from as deep as 200 feet using special handpumps. These and more practical shallow-well pitcher-and-stand pumps are available from Lehman's Hardware.

What can you do if you have the opportunity to rope-haul fresh drinking water up from a steep canyon or perhaps a very deep abandoned well? Climbing down to the water may be impossible, so what to do?

Lehman's sells a special 2-gallon bucket with a unique valve that opens when it hits the water, closing again automatically

when the bucket is withdrawn. A rope the length of the drop is required. It's lots of work using this method, but it may be the only game in town when the water cannot be otherwise reached.

## STORING WATER

The need for potable water is of such a high order that an initial emergency storage supply must be provided. Waterbed bladders, cheap fiberglass tanks, blue barrels, or whatever else work nicely, just so long as you don't use those ridiculous small packets and cans that



Little cans or bottles of water are not practical for city survivors. The large quantity of trash they create may expose the survivors' retreat.

some survival houses sell. The huge amount of trash generated by these little packets alone may expose the retreat. I personally use a 250-gallon fiberglass tank purchased for \$150 (peanuts, given water's importance).

This storage will get you past the onset of an emergency, but it's absolutely not meant as a continuing means of survival. How much water will you need? Figure about 1 gallon a day per person if no one washes anything except teeth and a single cup or plate. As a simple matter of hygienics, this is practical only in the very short run.

In other words, when the sound of gunfire can be heard in the distance, fill all the fiberglass tanks, blue plastic barrels, waterbed bladders, 5-gallon jugs, and whatever else. Uncovered water, as in bathtubs, usually doesn't work. There's too much pollution accompanied by evaporation. I don't even own a bathtub, but if I did, I wouldn't want it full of slimy, green water!

Shallow-well water must be chlorinated, but does not generally have to be filtered. As always, common sense in your individual situation is advised.

### SALTWATER

Saltwater will be available to many city survivors. Lehman's has small, reverse-osmosis water purifiers and filters. Model TEC 25D for about \$325 looks like it might work. Under normal conditions it is rated at 18 gallons per day. I called Lehman's to find out whether this unit would function as an emergency small-scale desalination plant. One person said "probably," another "might," and the third, most knowledgeable, guy said, "Probably not, because ocean water carries salt concentrations that are too high." I personally would like to field-test this outfit. Let's say it cleaned half its rated capacity, or 9 gallons per day, and that the membrane lasted 1 year rather than 3 (replacements cost about \$100). These would be good units for some city survivors. The only restriction is that a water pressure of 40 pounds per square inch is required to operate. This pressure could be achieved by generator-run electric pumps or by a 2-story column of water in a standpipe. I live 500



Inexpensive and small desalination plants such as this one in Cabo San Lucas, Mexico, provide potable water. Reduction in unit size is occurring, but most are still too large and expensive to be of practical use for individual survivors.

Practical for some cheap, deserted islands, but certainly not for most city survivors.

One fellow survived several weeks under really desperate conditions in Mombasa, Kenya. He had made a tiny distillery unit that produced about a gallon per day, but his method doesn't sound particularly practical because of the vast amount of energy required. He soldered a long coil of 3/8-inch flexible copper pipe to the lid vent of a 16-quart pressure cooker pot. During the cool of the evening he slowly boiled away salt water, allowing water vapors to condense in the tube. Mere cupfuls of water were all he got. Had he not been able to supplement this with rainwater, he probably would have been toast.

### BUYING WATER

In aggressively capitalistic Beirut, water sellers quickly took to the streets after the city collapsed. Theirs was a profit motive that ended up saving lives. They trucked in relatively safe, pure drinking water they loaded at outlying springs and wells and sold it by the liter. While you can't depend on entrepreneurs appearing, unless you are in a previously hard-core socialistic area with few remaining entrepreneurs, it is reasonable that such suppliers will quickly evolve.

miles from the nearest salt-water, so field-testing a model TEC 250 probably won't happen.

Common reverse-osmosis desalination units require very little power. Smaller and smaller sizes are increasingly on the market. I looked at one in Cabo San Lucas, Mexico, that cost U.S. \$175,000 installed! It produced 80 gallons of pure, fresh water per minute.

But you can't always count on the marketplace. I know about the tremendous importance of this firsthand. It involved my being sent to Algiers on business. Really the end of the earth. There were many, many things to do, all heavily hindered by the fact that I had to spend large blocks of time each morning in search of drinking water. The climate was hot and loathsome, requiring lots of water. Much against my will, the experience became deeply educational.

After 3 days I had a regular route moving from shop to shop, inquiring about the day's supply. No Wal-Marts in Algiers or anywhere in Algeria. For unfathomable reasons, the owner of one obscure little shop or stall might have a liter bottle to sell, when previously he just shook his head. Price was about \$1.80 but I certainly didn't quibble.

Usually only a single bottle was available; when it was a half-liter, I continued the march. For about 10 days I lived on 2 liters of purchased bottled water per day. Most days it took 3 hours to line up a supply.

I'm sorry to report that finally, good old intrepid Ragnar was done in by the Algerian system. No busi-



In many places throughout the world, private suppliers with transport trucks step in to provide safe drinking water when other supplies fail.



Downtown Algiers, where the author wandered from shop to shop each day searching for bottled water.

ness could be done; everything was too inefficient. I booked the next flight out. Back in Paris I sat in a tub for 3 hours!

City survivors often talk about stealing needed supplies. Of lining up with the enemy to receive water from the supply truck, of breaking into factories, or hospitals, and so forth, to appropriate supplies. These targets of opportunity may work on a temporary basis, but along with windmills, eating seaweed, apples, or whatever else are not considered here. The Rule of Threes requires that we plan for what at the time appears to be a certain source.



## Chapter 5

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### Sources of Energy

Mannan Sheikh was 12 years old when Britain dissolved its Indian Empire on Friday, August 15, 1947. Independence granted to the subcontinent led to immediate, serious—often vicious and irrational—violence. Mannan, a Muslim, vividly remembers the terror, bloodshed, pain, and great destruction as Hindus and Muslims sorted themselves out into two separate countries. Mannan and his family walked from their previous homes in New Delhi, India, to their new place in Karachi, Pakistan.

I asked what they did for fuel along their exit route.



Downtown Karachi, Pakistan, filled with refugees after Britain's dissolution of the Indian Empire.

"We scrounged and stole it," he responded softly. "Those of us who did it best lived the best. We had sticks, grass, camel dung, and some kerosene with which to warm ourselves and our food each morning with all the tens of thousands similarly engaged. It is little wonder governments



take such a dim view of refugees, treating them so horribly."

Sources of fuel required to sustain life will certainly be on almost everyone's list of threes. I cannot imagine a situation where this vital requirement is taken lightly and there will still be survival.

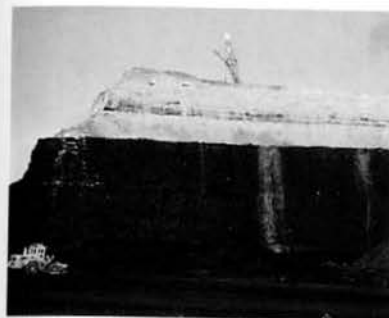
Some city survivors will be located in sufficiently warm places that they will require little more than a sweater at night and some fuel to cook with and to warm wash water. In many U.S. cities, even at their nastiest time of the winter, survivors will need do little more than put on an extra sweater. In other places in the northern United States and Europe, great quantities of fuel and the means to use it will be essential for city survival.

Rural survivors generally rely on stored sources of energy. Several thousand gallons of fuel oil, large cylinders of LP gas, barrels of gasoline, and piles of coal are common. In many instances these comprise only a year's to 18 months' supply. Anything more than that must be scrounged up from renewable sources such as a seam of coal in the hill behind the house, firewood, windmills, or even solar energy of one sort or another.

Renewable sources are not as far-fetched nor as impossible for city survivors as one might initially suppose. Storage and renewal of energy in a city is possible for those who plan ahead. Many are doing it right now.

A city survivor in Knoxville, Tennessee, wrote to tell me about the seam of low-grade coal he discovered in a roadcut about a mile from his home. His intention was to stockpile about 30 to 40 burlap bags of purchase coal and then to strip coal from the seam as needed. He said that probably no one else knew about this little "gold mine of energy."

Here is another unique source of fuel for city survivors that readers have written about. A survivor from Minneapolis suggests stockpiling packed compressed and wrapped bales of common peat as sold by garden supply stores. He uses a small cast-iron stove both to cook and to heat his small retreat area in the big city. One 40-pound, 4-cubic-foot bale heated his basement apartment for about 3 weeks, he claims. On that basis, eight bales would just about see him through the cold time. More remarkable, he also found a way to renew his peat supply.



Some properly situated survivors can collect native coal from large or small seams of coal for use as emergency fuel.



Where corn is abundant, it can be used as a fuel source.

An old, now-drained swamp lies to the north of his built-up area. It contains a vein of peat 40 feet deep in many places. During the summer dry time he carefully dug several large trailer loads of wild peat, which he took back to his apartment. Attempts to sun-dry the material on plastic tarps were only modestly successful, he claims. Still, the material burns, cooks, and heats just fine, but it is very difficult to compact and store, he reports. Also, it is messy. I reminded him that while not perfect, it was an energy source he could live with.

Perhaps the important concept for city survivors involves looking around with a knowing, intelligent eye. Other renewable sources of energy besides miscellaneous sticks, grass, firewood (from parks and arboreta), animal dung, old furniture, garbage, and refuse are out there. Several friends report successfully using dried kernel corn and wheat in pellet-type stoves. Seems like an incredible waste of something that should be eaten. But we never know. How far do you live from grain terminals? The claim is made that no city dweller in Portland, Oregon, lives more than a mile from a grain terminal. Turning dried grains into a flammable energy source takes some additional stove maintenance and operator skill, but it apparently is a feasible plan.

But, back to advanced purchase and fuel storage in a city. History shows that city survivors in the very center of an intensely built-up area may not be able to take advantage of very many

renewable sources of energy, and they may not be able to store same with ease. But, they can definitely store some energy for emergency use and there is always the possibility of some scrounging.

Right now, city survivors are unobtrusively laying in bales of peat, tanks and drums of diesel oil, cans of gasoline, and stacks of firewood in the backyard, garage, or against the side of the duplex. Purchase of older, used, steel 250-gallon fuel oil tanks is possible. These are common in places where natural gas lines have recently been laid and homeowners have converted their oil burners. Used fuel oil tanks are still common in junkyards and at heating and plumbing shops. Right now, there are at least six in a building recycler's yard within 2 miles of my desk. I have purchased many of these used tanks in good, sound condition for \$50 each. I set them in the garage, the basement, or along the side of the duplex where I had them filled with oil. After several weeks the out-



An emergency 1,000-gallon fuel oil tank waits at the retreat.



Firewood is a renewable resource for those who know how to gather and use it.

side tanks blended in with their surroundings. No one paid them notice any longer.

The important concept for city survivors is to not to make assumptions. Storage of energy is probably possible and it probably won't be very high-tech or complicated.

How much to store? The ugliness in India took 2 years to pass. Madrid, during the Spanish Civil War, was besieged for about 8 months, and Berlin was back to some idea of normal after an especially harsh winter season (of about 6 months). Using Berlin as an example in this case is tough. City survivors would have had to act at least 3 years ahead of total collapse.

Most been there, done that folks recommend a 1 year's supply of energy under storage. Of course, this amount should be supplemented by at least two other independent and separate sources of supply. The Rule of Threes is never suspended.

Knowing how these energy sources will be used at your specific retreat is very important. Many concepts are workable, but not particularly practical or efficient. I looked at an inner city apartment retreat recently. There was a workable fireplace in which fuel could be burned for cooking. Not wise, it seemed. Certainly meals would be prepared, but little to no heating of the room would be accomplished.

## USING STOVES AND HEATERS

I advise the purchase of a simple, small, inexpensive cast-iron stove and about 6 feet of vent pipe plus an elbow to run the pipe up the chimney. Total cost, including a fireproof mat to set the stove on, about \$450. Without the fireplace, the little stove could have been set in the middle of the room with vent pipe out through a hole cut in a side wall. Larger vent pipes additionally heat the room and cool sufficiently by the time they exit the wall, so they pose little fire danger. Little heating and cooking stoves of this type are a bit tricky to operate, but survivors learn surprisingly fast. The stoves' additional charm is that they will burn just about anything, even diesel fuel, if set up correctly.

To efficiently burn diesel fuel in a cast-iron stove made for logs,

coal, and other such combustibles, construct or scrounge a heavy pot or iron/steel container as large as possible that will sit inside the stove. Fill it two-thirds full of diesel oil. Place a piece of burning cardboard or heavy paper in the oil. Fumes from the warmed oil will burn at the top with a low-grade, warm glow. Intensity and heat output plus oil consumption are controlled by the air intake in the stove and outlet on the rear stove vent. These are very much similar in operation to commercial "spark heaters."

Because they require storage of bulky, tough-to-handle, highly refined kerosene, I am not particularly fond of the little oriental space-heating stoves often sold by Wal-Mart and Home Depot under the trade name of Sun (or something similar). Numerous city survivors, including my son, claim they will use these because of the following:

- They are inexpensive to purchase and install.
- They are commonly available without hassle from local hardware and builder supply outlets.
- They require no outside source of electrical energy.
- They nicely heat a modestly well-insulated four-room apartment.
- They are light and easily portable.

Similarly informed people often differ in their opinions. And keep in mind that city survivors, including me, may pay with our lives for bad decisions and lack of prior planning. I dislike these heaters because of these factors:

- The fuel is expensive and difficult to find and store.



Common fireplace inserts or stoves can be converted into "spark heaters" by using a large pan full of fuel oil. Fumes from the oil are burned to produce low-grade, economical heat.

- They have a relatively low energy output that can only be used to heat. No cooking can be done on these units.
- The kerosene fuel has a relatively low energy output per gallon and can only be used in these little stoves.
- These heaters are cantankerous, difficult, and short-lived in an environment screaming for rugged simplicity and long life.

I like common diesel fuel that can be used in both machinery and heaters. Diesel is the likely fuel you will get from military fuel dumps, old petroleum distribution points, abandoned vehicles, and street merchants. Diesel is what you will probably store in 55-gallon barrels or in the big tank next to the fence.

Some very nice, entirely commercial space heaters are available for city survivors who want to heat with diesel fuel. First, be sure it isn't possible to scrounge one of the old army surplus, collapsible, multifuel stoves. A few new ones with only storage corrosion are still out there. Second, consider converting a small cast-iron stove to use oil as previously mentioned. These units are very versatile.

Local plumbing/heating/hardware people will have diesel-oil-burning stoves and space heaters. Stoves run on oil fumes. They require no electricity and are very reliable (Oil is gravity-fed from a storage barrel to the stove). Most weigh about 200 pounds and will heat a small house (six rooms) nicely. They cost about \$1,200.

Try Wolf Steel, 9 Napoleon Road, RR 1, Barrie, Ontario, Canada L4M 4Y8 if your local dealer doesn't have something suitable. Wolf Steel manufactures a stove called the Napoleon. It's expensive, but very nice and extremely simple.

Oil space heaters use electric pressure pumps and high-capacity fans to turn diesel oil into heat. They range in price from \$160 to \$2,000 (for great, giant units used to heat airplane hangars). These are nice units if power is available. Order from Granger Supply if you draw a blank at your local dealer. Granger has one outlet or more in every state in the union.

Oil space heaters are often used in hunting camps, summer homes, garages, and barns. City survivors may wish to purchase their heaters now to learn how to operate them. I, for instance, have burned up three of these units when they accidentally became



unplugged. Chickens sitting on the power cord burned one and also the chicken house. Who said true intelligence only comes from actually doing something? This sure is true of my experience with oil space heaters.

Stoves require venting, but no electricity. Space heaters are not vented, but consume lots of electrical energy.

## GENERATORS

This brings up another important point. Do city survivors need to plan to have some small amounts of self-generated electrical power? Based on advice from the been there, done that crew, the answer is yes. But it needn't be a large amount. A small generator—perhaps 4,000-watt capacity—is almost a necessity to run a heater, the freezer, the fridge, or perhaps a water pump on a short-term basis, they claim.

Because city survival involves so much long, grueling, hard work that continues into the night, it may be tempting to run a light. This is not recommended unless you are willing to risk a mortar round down the elevator shaft, or unless all soldiers have left the city and no danger from aggressors remains.

The noise from generator operation can also attract attention. It wasn't quiet, but almost, during city survival in metro Manila, where the power frequently and repeatedly died. I vividly recall the noise of various generators, small and great, as they fired up.

Tracking down one noisy generator among many might be impossible. Finding a lone unit in operation in the middle of a quiet city would be relatively easy unless it was high up and deep within a building. Some city survivors mention using snipers or armed guards to protect their rain-collection systems and generators, but I would suppose it is the better part of wisdom not to plan to get into firefight situations.

The problem with simple little 4,000-watt generators is that for true city survivors, they really don't cut it. After long, long years of living with generators, I have concluded only diesel-fired models made for commercial application are practical for survivors.

Gasoline, for gasoline engines, is difficult to store. Its volatility is



Many survivors who have reviewed their options have concluded they must use a generator.



LP gas heaters are useful in some survival circumstances. This city survivor has just refilled her small, portable LP gas tanks from the larger tank.

a storage curse in the medium to long run. Diesel fuel packs a great deal more energy per gallon, and diesel generators are virtually always continuous-duty, industrial types. They initially cost more, but will run dramatically longer before wearing out and breaking down.

Most generators doing city survival duty are plugged directly into the appliance they are powering. By contrast, large, 8- to 10-kilowatt generators at country retreats are often backfed into the entire power complex at the retreat. Backfeeding is very illegal some places, and won't work at all in small apartments that are part of a large building complex.

When backfeeding, the main power panel fuses are removed from the retreat power box. This keeps the generator power from feeding back out across the transformer into the line again, where it can be a life-threatening hazard. A sort of heavy extension cord with two male plugs is used to backfeed power from the generator's 220-volt circuit to a commercial welder, shop, or electric range outlet.



### Storing Fuel

Diesel oil isn't always used to generate power. Recently two city survivors I was working with buried 1,000-gallon LP gas tanks in their garage, right in the city. This is very illegal in some places. These city survivors have another source of energy should they need it. This is another good example of city storage of energy for those who act resolutely.

Small LP gas space heaters are available virtually everywhere. LP gas heaters are inexpensive, mobile, easily maintained, and effective if some way exists to refill the little 1- and 5-gallon pressure tanks they run on. They require no electricity, and they are not obvious.

Is the installation of a 1,000-gallon LP pressure tank advisable for city survivors? One of the friends who put his tank in intends to run his generator on LP gas. Many gasoline generators will also run on LP gas. The power output using LP gas is lower, especially at higher elevations, but the versatility is nice. Many tank owners also have a tank filler hose and fitting installed so that they can refill smaller tanks.

LP gas suppliers are reluctant to sell large pressure tanks outright. They will lease, which could end up working against survivors who may suddenly have their tanks "recalled." Guaranteed, you won't bury anybody's leased LP gas tank. It will almost certainly take at least 8 months of persistent pushing to finally take delivery of your own private LP gas tank. That's how it worked with me, and with my two acquaintances who buried their tanks in the city.

One thousand gallons of LP gas will generally last about 1 year when used to run a generator in intermittent service. Cost is about \$1,600 for the tank and about \$850 to fill the first time. Whether or not this is practical depends on each individual. Is there enough personal energy to push this kind of project through to completion, the money to do it correctly, a place to hide the tank, and application within the retreat?

### SOLAR POWER AND WINDMILLS

Solar power, windmills, and perhaps small hydroelectric pro-



A bank of expensive, high-maintenance storage batteries are a necessary part of a solar power system.

jects are trendy now among city survivors. They are frequently mentioned as the 21<sup>st</sup> century's answer to individual electrical power in cities. Solar power systems are being installed around the world with increasing frequency. As a result, we know a bit more about them. I looked at three recently. All are in smaller cities: Pullman, Washington; Kodiak, Alaska; and Boulder, Colorado.

The system in Boulder is extremely simple, with a hot-water pipe on the roof warmed by the sun. Given installation, price, simplicity, and lack of

maintenance, it may still be the most practical. Small, discreet copper pipes laid on a south-sloping roof section warm the water, which heats the house. Its installation 20 years ago was very inexpensive. Most people who visit the house are not aware the system exists. Over its life, the system has saved at least \$200 to \$300 per year in energy costs, the owner claims.

The extent to which a real solar power (sunlight-to-electricity) system would stick out, compromising a retreat, is still subject to debate. One owner says people never notice. The other says it's obvious what he's doing. One thing is certain—if an enemy observed and decided to destroy a retreat's solar power system, damage in a survival sense would be serious. All hope of having electrical power would be gone if this were the only means of providing it.



Solar panels have come down in price, but they constitute only a small fraction of the expense of an entire system.



Control and converter panels are the heart of a solar power system.

In other words, even though it works like a champ, solar power still may not be practical for city survivors.

Great misconceptions continue to be attached to solar power. The greatest of these claims is that it will become more practical and cost-efficient as prices for solar panels continue to fall. Well, yes—but really, no—might be the real best answer to this one. Most of the very high cost of a solar power system is *not* in the panels!

The system in Pullman, Washington, that I examined very closely cost about \$65,000 complete. On a bright summer day it supplies enough power to run a large house, a guesthouse, and an extensive shop.

Of this 65 grand, 16 solar panels at \$375 each total \$6,000. The inverter needed to turn the 48-volt direct current to 220-volt alternating current costs right at \$9,800. Forty-eight-volt direct current is produced because of its easy storage in twenty-four 2-volt lead acid batteries.

It's another fallacy that solar panels generate enough electricity on cloudy, short, or wintry days for any practical direct use. This fellow spent more than \$9,000 on storage batteries alone. There were also automatic combiner boxes, transfer switches, power panels, and several hundred feet of very expensive, very heavy-gauge wiring. Add another minimum \$25,000 to the system for this stuff alone.

His system automatically took power from the solar system till

the latter could no longer keep up, then from the grid, and then from batteries. When all of these failed, a diesel generator kicked in. (The diesel generator was not included in the price of the system.) I liked his system, but he only had 300 gallons of diesel oil in reserve.

It seems likely that this is a workable solar power system for real big-city survivors only if they can accommodate the expense. One thing is certain—it would be an injustice and fraud for me to try to set out a specific system that would perform in any reader's personal circumstances. The one thing I know about solar power today is that is still very, very complex and, overall, very expensive.

However, many people are installing solar power systems specifically designed for their application. In Kodiak, Alaska, we were 12 miles from the grid. Bringing in power costs at least \$10,000 per mile. There'd be no chance for any electricity here if it were not for solar power.

Windmills, similarly, are more complicated than many people believe. They also require collection boxes, storage systems, and wiring. The man in Pullman intends to put in a windmill if the city fathers will allow it. (This is university country.)

In conclusion, solar power and windmills are currently practical for city survivors. But great diligence during the research phase, as well as deep pockets, will continue to be required. My suggestion is to become familiar, at least in part, with solar power so that you can install the system you need when you can.

Start the process by subscribing to Home Power Magazine, Box 520, Ashland, OR 97520. Home Power's real strengths are its main advertisers. Without a magazine of this type, we have no idea where to go for needed component supplies. I have written to the magazine suggesting a decrease in articles and an increase in advertising, which is of much greater value.

## SCROUNGING

Instead of owning a generator, many city survivors steal electricity. I was skeptical, but several been there, done that said yes, they had tapped into a factory or government office line for their own retreat use. Seems like an overly dangerous process, but sur-

vival is not a safe business, especially in the city. Stealing electricity has the charm of not having to fool with a generator.

For those who fail to preplan, what about stealing or scrounging other energy supplies?

Experienced city survivors believe there is more opportunity to scrounge energy in the city than out in the country. One can only hope this device does not encourage or become an excuse to neglect preplanning of storage and caching.

Looking in abandoned vehicles, at military fuel dumps, at old tank farms, and at construction sites have all been mentioned. But what about gathering combustibles such as boards, pieces of plastic, and charcoal scavenged from abandoned buildings? Perhaps a wooden warehouse lies near your retreat, or trees from the park, or tires from vehicles. I burned tires in my shop stove for years. It was a pain to keep cleaning the stove, and everybody for miles could see the dense smoke, but this was the only downside. The upside was that the tires and their heat were absolutely free. Do the best you can to



Storing 55-gallon drums of emergency gasoline or diesel is not difficult using a common steel barrel.



A small electric-drill pump is essential to pull fuel from large storage tanks.



They may only have a gallon or two each, but energy-hungry city survivors may siphon some gasoline for their use from these types of machines.

vent the fumes from burning tires or plastic, which can be toxic.

Ever wonder why the Germans in the old East Berlin revered their old linden trees? They were the only older trees that survived. For some reason every other tree in the entire city—both east and west—had ended up as fuel in somebody's stove.

If there are parks and tree-bearing green strips that may yield burnable fuel near at hand in your city, laying in an ax, handsaw, or even small chain saw may be extremely wise. These tools are also useful when scrounging wood out of damaged buildings. As trading stock they would be hard to beat.

Khartoum, Sudan, is a city that has been in perpetual collapse for at least 15 years. No fuel is available from government or private vendors. But this has not slowed entrepreneurs working in the black market. One sees them on street corners and pedaling around on their bicycles selling gasoline, diesel, and kerosene in old liter-size Coke bottles. A few sell fuel measured out of 5-gallon containers into your container. Wholesalers, no doubt. There were also dozens of women with small bundles of split wood branches, bags of charcoal, and animal dung. This brings two more concepts of importance to city survivors into view.



### Planning Ahead

The first is perhaps obvious to the point of being trite, but should not be overlooked. City survivors might be able to purchase fuel containers after the start of a crisis, but I wouldn't recommend planning to try it. Purchase now when they are cheap and available. Store three or four 5-gallon containers to transport diesel and as many for gasoline as seems appropriate. You may delay filling these till you hear the guns, but these containers are mostly for transport and scrounging or for transport from stored supplies. Major quantities of gasoline and diesel should be stored in 55-gallon barrels or in 250-gallon steel tanks, not in little 1- and 5-gallon containers.

### Learning to Trade

The second is that more than any other class of survivor, city survivors have the opportunity to purchase or trade for needed supplies of everything. Unlike survivors out in the open country where few people live and there are even fewer accumulated survival goods and tools, there will be an abundance in cities. An incentive such as cash or trade goods will bring these items out.

This leads to another basic rule of survival—whether you're in the city or country doesn't make a difference. Survival for everyone is possible. Random events produce some real surprises. Yet, down through history, those who have their financial houses in order will generally survive best.

What is also being implied is that cash and trade goods might be one of the better sources of energy for city survival. Trading goods is a complex subject. See Chapter 10 for more ideas.

Some of these scrounged sources for fuel will require the use of small, portable pumps, probably like the \$4.95 plastic one currently on my electric drill. It regularly pumps diesel oil up to 6 feet out of an underground tank. A minuscule amount of electricity is required. Currently I get this from a wall socket, but a 12- to 110-volt vehicle inverter designed to plug into my car's cigarette lighter socket would also work.

There is also the possibility of finding coal in an old electricity generating plant storage area or along railroad tracks where



City survivors will require large supplies of matches.

steamer coal was once hauled. This was one of several sources of energy for my dad's family during their stay in World War I-era Germany. Fortunately, they lived close to a rail switching yard. But this could have been deadly had the Allies ever started bombing the way they did in World War II.

Been there, done that folk mention mountains of coal at factories in larger cities quickly overtaken by collapse. These mountains of coal quickly walked off, they claimed. So be one of the first to discover this largesse.

Bunker-C, a very thick grade of almost crude oil, is used by many power generation plants. Bunker-C has one of the highest energy-to-volume ratios of any fuel. It is so viscous that it must be heated to 40 degrees before it will run through a pipe. City survivors who scrounge this stuff should mix it with sawdust, leaves, or wood chips to produce a humble, homemade sort of fuel bar. Burn these in the open as a sort of supercharged campfire log.

Burning asphalt from the street was the most exotic energy source I could discover. People in some eastern Russian cities have torn up the blacktop layered on their streets and burned it to cook food and keep warm. Certainly a low-intensity, smoky, sooty deal, but if it's the only game in town, it's the only game in town.

In conclusion of this very important chapter, please recall again that it is dramatically easier to start a cooking/heating fire with matches. Keep a huge supply on hand in your emergency supplies.



Also, keep several dozen small throwaway butane lighters as well as a few scratch-type flint sparkers.

Matches aren't glamorous or high-tech, but they're so handy when every second counts in the fight to stay alive.

## Chapter 6

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### Food

Average Americans, even those who are somewhat self-sufficient, firmly believe that survival in the city is impossible.

I encountered such a couple recently from Spokane, Washington, who flat-out told me, "If there are serious disruptions, we are all going to die." Spokane is only a modestly sized city, but she couldn't make up her mind whether to nod her head ("yes, we are all going to die") or shake it from side to side ("we don't have a prayer").

Maybe yes and maybe no, I always respond. My father survived World War I in a very big city in Germany. Abdullah, an exchange student, made it right through the worst of Beirut, and Martin Fischer's grandmother lived through the entire Soviet occupation when she was a younger woman and wouldn't dare leave the house.

"But what did these people eat?" is always the response.

"Same thing survivors out in the country eat," I tell them.

Survivors—city or country—have a Rule of Threes with which they must operate. This means that, for every one of life's absolute needs, they must make advance provision by three separate and distinct methods. City or country, renewable food is provided through storing supplies, gardening, raising livestock, hunting and gathering, scrounging, purchasing, or bartering.

Pick any three. They all have worked in the past and will work again for those willing to make them work.

Hunting and gathering inside a city is possible. I asked a couple from rural Kenya whether tribal taboos prohibited their eating dogs, cats, and rats in a survival situation. "No," she responded, "we can eat those animals even outside of survival. It's critters with scales, like fish, snakes, and even chicken that are taboo."

Their prohibitions were not nearly so severe as those found among Muslims, but they could—nevertheless—lead to some nastiness. She quickly assured me that she often ate fish. "Grandma still won't eat them," she said, "but I have no problem. Thankfully these taboos are in retreat."

### FOOD FROM LAKES AND PONDS

City or country, it has always been my recommendation based on long experience and observation in dozens of countries around the world that the first, best place for survivors to look for a meal is in bodies of water lying near at hand. Swamps, ponds, rivers, lakes, and even lagoons lying within cities all have potential. There are fish of several kinds, ducks, geese, herons, frogs, crayfish, turtles, and perhaps even muskrats and beaver.

#### Fish

We have a much more profound concept here than most city survivors realize. I returned to Cuba, where I had spent some of my youth, in the spring of 1994 and again in 1996. Some of the Cubans I met were hungry even for a small chunk of meat or fish. Many were thin to the point of malnourishment from lack of protein. At the same time I noticed that the rivers and lakes were overrun with lunker largemouth bass. Seems nobody had fished for them for 30 years or more. These bass could easily have been trapped or even taken using sport-hunting techniques to some extent. Maybe the locals' apathy was due to their ingrained dependence on the government. Other than begging, no Cuban I met seemed willing to seize an opportunity to feed himself or herself by taking personal responsibility.

In many instances sport-hunting and fishing techniques violate

the basic Rule of Survival Thermodynamics. Remember, this iron rule says a survivor cannot ever put more energy into a survival project than is taken out in the form of food, fuel, and fiber. It's the same for sport fishing unless the fish are so abundant that one is caught on virtually every cast.

Even if there is uncertainty about whether fish live in a pond, river, or lake, it will cost little to check the water out by construc-

tion and deployment of a fish trap. Sometimes, but certainly not always, it is possible to sit quietly in a hidden position near a body of water to observe evidence of fish firsthand. They may be seen rising to the surface for bugs, roiling around in shallow places, creating underwater ripples, or even swimming about.

Fish traps are giant cylinders made of chicken wire or, in a few cases, wooden slats or hardware cloth. One end of the cylinder is covered with a chicken-wire door. A long, thin,



These small Asian fish traps are handmade of split bamboo. They are basically large cylinders (top left) with funnel entrances (bottom left) on one end and a door for retrieving the catch (right) on the other. Traps made of chicken wire are made on the same pattern.

tapered cone of chicken wire is inserted in the other end. Fish attracted by bait inside the trap swim into the cone. Once they clear the funnel at its narrow end inside the trap, they are had. Fish are insufficiently smart to figure their way back out again.

Use mesh with 1- to 2-inch openings to build fish traps. Larger mesh sorts smaller fish out, allowing them to escape and fatten up. When survivors are very hungry or do not control the pond, they may elect to construct their fish traps of 1/2-inch chicken wire so that every edible morsel is retained. Very small, fine-meshed traps of this basic design are used to catch 2-inch minnows and 4-inch crayfish.

In times past, we were able to purchase 6-foot-wide chicken wire. This item seems to have gone the way of dinosaurs. With practical limits of weight and portability, bigger fish traps are better. The initial cylinder forming the body of the trap should be at least 3 feet in diameter and 6 feet long.

About 9 running feet of chicken wire or mesh is needed to form a cylindrical tube 3 feet in diameter. If it is only 4-foot-wide wire, purchase and construct a second tube of 2, 3—even 4—feet that is securely sewn with thin wire end to end. Any length cylinder can be made by combining two or three.

At its widest, the entrance cone should attach smoothly to the 3-foot-diameter cylinder body. Quickly taper the cone down to about 3 or 4 inches inside the cylinder, depending on size of fish targeted. The small end of the cone should be capable of being bent and adjusted as needed. This wire cone should extend into the trap about two-thirds the trap's length. Use heavy-gauge #9 wire to strengthen and support the trap as required. This wire can be deployed as hoops around the outside of the cylinder, or the ends, or as supports in the core.

Again, using chicken wire, construct an end for the tube. This flat piece should fit reasonably tightly, keeping the catch inside while still allowing easy access to clean out interred fish. I have caught as much as 30 pounds of fish in a single trap over a 3-day period in traps like these.

Never assume that any pond is cleaned out of fish. During colder periods, fish eat little and move very sluggishly. They may

reject any bait till next week when the weather and the water warm slightly. Ideally, bait should be a small can of cat or dog food punctured hundreds of times. Old fish heads, cat guts, fish entrails, and whatever else come to hand to which fish might be attracted can be used. Often I use old roadkills.

Little fish and crayfish swipe soft or fragile small baits out of the trap. This argues in favor of a smaller mesh trap or large, solid baits. Set the trap in a deep hole in a river, or out 12 to 15 feet into a lake.

Exercise caution setting these traps out, even when enemy observation is unlikely. Supposed friends may appropriate the trap's largesse for themselves. Often I throw these fish traps out without retrieving lines attached. This is a more secure system. Retrieval for checking, emptying, and rebaiting is done with a single grappling hook on a line. Without this gear, it is impossible to check these traps even if you know exactly where they are. Attaching a neutral-colored piece of poly line is not as safe regarding detection by the enemy but will make it easier to haul in your catch. Attach this line out of sight to a root or branch a foot or more under water. But don't check your traps too often; continually hooking and hauling in the trap is destructive.

### Turtles

These basic-style fish traps modified slightly to a 4- or 6-inch cone opening can also be used to catch turtles. Where they are found, turtles are good food for city survivors. They are often found in great numbers in swamps where there are few or no fish. Catching turtles in traps is a bit tricky. Improperly set traps will drown and waste turtles. One end of the trap has to be up on the bank an inch or two out of the water to provide them a place to breathe. Exposed ends of turtle traps can be hidden a bit with reeds and grass, but hiding is not as easy as fish traps that are 6 feet under the water.

Solid, old, smelly roadkills make excellent bait for turtle traps.

Turtles are dressed for cooking by cutting the bottom shell away from the critter through the soft underbelly hinge. This exposes neck, leg, backbone, and tail meat. Turtle muscle continues to

twitch even in the frypan an hour after butchering.

Scooter or box turtles have solid shells which, in most cases, must be sawed away. Not much meat on these guys, but enough for a pot of excellent soup.

Catching turtles by hook and line is probably preferable to using traps if the hooks can be rigged unseen and then retrieved after making a catch. Turtles can be caught on unattended setlines, but these lines must be properly deployed or results will be disappointing. Manufacturing turtle set lines at home is reasonably easy.

Ideally, use a 6/0 hook. I fully understand that most city survivors will have to use whatever fishhooks they have on hand or can trade for. More important than hook size, an 8-inch piece of wire leader should be placed between the hook and line. Turtles have tough, sharp beaks. They quickly gnaw through any non-metallic line.

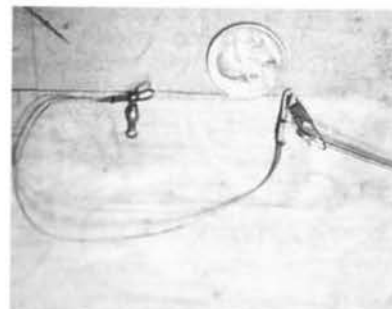
Baited setlines can be attached to floating plastic bottles, overhanging branches or roots, though floating bottles may be too obvious. It is very important to keep any turtle bait well up off the bottom and 1 to 2 feet below the surface of the water. This is a very important concept. Don't use a long line—simply throw it out into a pool on the bottom. Baits held relatively near the surface won't attract crayfish and it might possibly catch a larger fish rather than a turtle. Turtles hooked near the surface on short lines cannot tangle and hide easily.

The hook should be baited with a solid chunk of muscle or gristle. Fat, skin, and feathers are not good baits. Piles of roadkill often make excellent hook bait.

Keep turtles alive till needed for the pot. They keep in water-filled barrels, tubs, or small cages, but the very best way to keep them is by drilling a small hole in the shell edge and attaching a long wire. Simply throw the turtle back into the lake, tethering it



Some critters, such as wild turtles, can be kept alive till needed for the table.



Turtle and bird hook lines. Note the fine line and small hook on the bird model, left, and the steel wire on the turtle line, right.

by wire to a stake, root, or branch. They live and eat on their own and may even fatten a bit.

### Other Aquatic Food Sources

Many other critters of interest to hungry city survivors are found near or in water. Crayfish and minnows are not much, but are something. They can be caught in small fish traps.

Muskrats live in water. They are excellent eating, tasting much like very lean duck or goose. The easiest way to catch them is to place a fish trap with a 3- to 4-inch cone in front of an underwater muskrat burrow. They swim out into the trap and are caught.

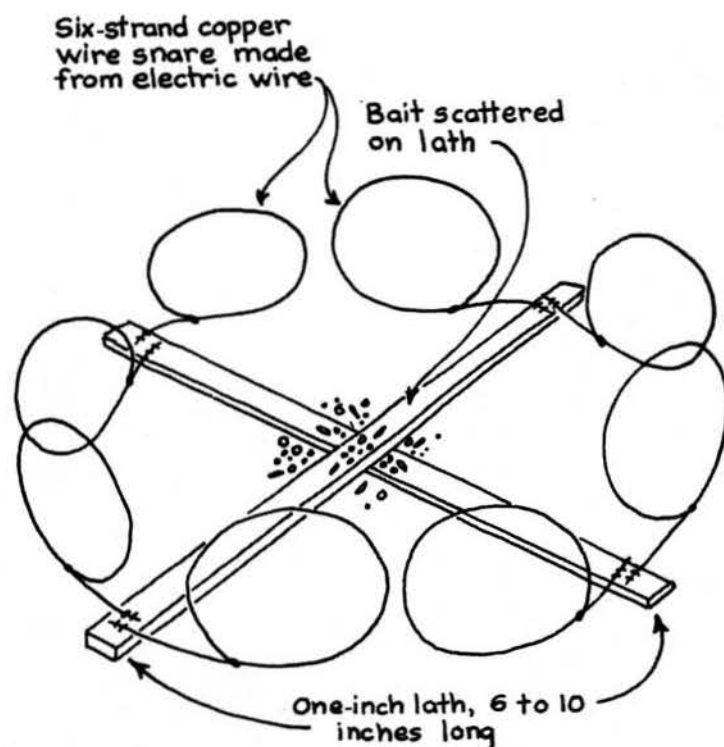
Frogs are good eating but I don't know of an energy-efficient method of collection unless it is with a powerful flashlight and spear at night. This method may not be practical or possible in many areas.

Ducks and geese often frequent ponds, lakes, and rivers. They can be caught in a variety of traps. The easiest way is to place a tiny hook or a thin piece of light fishing line baited with a single kernel of corn or wheat. This gets them about as easily and often as virtually any other method.

### SNARES

Other than water critters, many other different animals that could advantageously end up in the pot are available in the city. Cats and dogs are some of these!





The African bird snare.

For some unexplained reason, some cities have many more dogs than cats and vice versa. Both critters are fairly easy to trap using snares in places they commonly run. They can also be taken with silenced .22 rifles when the opportunity is there. Carry your gun and shoot them when you see them; don't go out hunting.

Snares are a kind of wire lasso into which critters push themselves resulting in their capture. Pushing into a snare is fairly natural for wild critters that move around through tight holes, under fences, or through openings in buildings. Professional snares have one-way locks that prevent the cable from loosening.

Ideally, city survivors will have a few snares in their tool kit. If not, snares can be made from light wire. A man living in a western suburb of Chicago caught two marauding beavers by using home-made soft copper-wire snares the first time he ever tried.

Out in the wild, rabbits are often snared with nylon cord or shoelaces. Readers who wish to purchase the real thing similar to ones pictured can write Neil or Rhonda Bock at The Snare Shop, 13191 Phoenix Avenue, Carroll, IA, 51401. The cost, complete, is about \$1 per snare delivered in dozen lots.

Snares have been used to catch every animal on earth. Longtime readers are aware of my exploits using snares on moose, deer, and bear. Snares often strangle critters, especially those set to catch by the neck. Leghold snares are also reasonably easy, but not as easy at catching critters about the neck as they push through brush and grass.

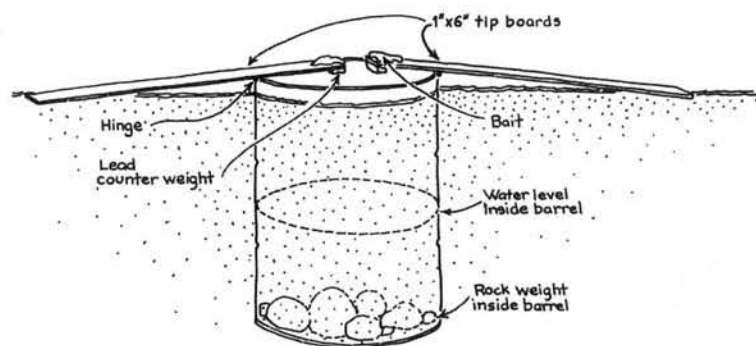
Check snares at least once every day unless many critters start falling victim; then check more often. Unless set by experienced trappers, baits are seldom used. Set snares with an 8-inch loop from 12 to 14 inches off the ground for dogs. Smaller critters like cats are caught with smaller loops set closer to the ground.

### RAT TRAPS

To city survivors, rats are an absolute bonanza. It is impossible to deplete or hinder a large, active colony even by taking as many as three or four 1-pound critters per week. Six to 12 young are born every 30 days to females, which rebreed 4 or 5 days after giving birth. Females start bearing at four to six months. Rats thrive on virtually any food, including power cables, feed bags, paper, nutshells, fruits, vegetables, or anything else of cellulose they can get a tooth into.

A slick colony trap can be constructed out of a 55- or 30-gallon steel barrel. Rig a smooth board or length of slick aluminum on a hinge on the barrel so that the board or metal extends to the ground but is carefully balanced at the top. Construct it so that a 12-ounce weight on the end over the barrel tips the beam into the barrel, dumping Mr. Rat inside.

Rub a very small amount of cheese or meat onto the end of the balance arm. Rats that walk from the floor up onto the barrel on the balance arm are tipped, screeching and scratching, into the smooth-sided barrel. Empty the barrel twice a day or they will eat each other.



Colony traps are useful for live-trapping many critters.

The first trapped rat will call others to come have a look. These traps must be set in among colonies of rats. At times, larger barrels must be dug into the ground a bit; otherwise the balance arms, which must reach the ground, are too long to balance correctly.

Rats can also be caught in small cage-type live traps set in their runs or with bait near the run. Commercial cage traps are available, or you can simply make a little cage trap out of 1/2-inch hardware cloth with a front door that only swings inward as the rat pushes on it to get to the bait.

Snaring rats with very light cable is practical, but you gotta be very hungry. Make snares out of six or eight hair-thin wires pulled from an appliance cord. Loops are set about 1 1/2 inches in diameter in rat runs. Set out eight or 10 snares at a time. After sufficient rats are caught, pull the snares for a week.

Ductile copper acts as its own irreversible slipknot. Hung up, rats quickly strangle themselves, explaining why the traps should be set out in large numbers and checked frequently, and why this is such a disgusting procedure. Even I question regularly eating strangled rat!

## BIRDS

There are a few edible birds in cities. Especially cities with older

buildings, damaged and opened so that roosts are convenient. There are pigeons, seagulls, starlings, and even an occasional robin or thrush. Birds are good food for survivors when they can be caught without great effort. Birds fly out to get their own food and water without outside help or direction. The been there, done that folks tell me my large flight traps as described in *Survival Poaching* and *Live Off the Land in the City and Country* are impractical for real hard-core city survival. Too big, obvious, tough to build, and too tough to move, they say.

One effective method, previously mentioned for ducks and geese, is to bait very small fishhooks tied to light fishing line with single kernels of corn, a pea, or grain of wheat. Fishhooks can be set unobtrusively in large numbers on building tops in parks or wherever birds feed and where hooking them will not attract attention.

African bird snares are a practical, efficient alternative to larger, cumbersome, obvious bird traps. African bird snares perform nicely on all birds from sparrow size up through turkeys. Snare sizes must be adjusted, but realistically there are only three: small for robins; intermediate for pheasants, grouse, and ducks; and larger sizes for turkeys and geese.

These snare assemblies are made from cross-strips of flat wood. Simple laths, pickets, or even paint can stirrers will work for little snare assemblies. Two-by-four limbs or pieces of wood make a good basis for goose and turkey snares.

Small, hair-thin wires are pulled from copper-wire appliance cord for the snares themselves. Each device has four snares, one on each arm of the wooden cross. Use five or six strands of wire for little birds and 10 or 12 strands on larger critters.

Bait is placed in the middle of the cross. Birds that come in to eat quickly get their legs or necks caught in the snare. Loss of the device is sometimes a problem. Even very small birds can pull the snare assembly out of sight in rough, rubbly areas.

Other, much more complex bird-catching devices are out there, but hooks and African bird snares will virtually always do the job without a great deal of stumbling around.



Cattails growing in the upper Amazon Valley in eastern Ecuador. Cattail plants grow everywhere.

### CATTAILS

Absolutely every city in the world I know of has cattails growing someplace within its boundaries. I have observed them from Barrow, Alaska, to Washington, D.C., to Quito, Ecuador.

Cattails were real manna for our Indians. They specifically camped near large cattail beds so they could feed off the plants. Cattails are always nutritious and healthy, even when grown in heavily polluted waters. There's no question about their identity. They are the ones with brown, tufty, wiener-like flowers at the end of a long stem that we used to dip in diesel and burn for torches when we were kids. It is impossible to mistake these guys for something else.

Cattails as a source of food have so many ways of treating you, you are bound to like one of them. Starting at first blush of spring, shoots grow up from the main roots that eventually become this year's stem and leaves. These fresh, new little shoots are good eat-



Springtime brings new cattail shoots, which are good eating.



Cattail roots can be dug in fall and winter. With a rabbit or muskrat thrown in the pot, whole families have survived the winter on boiled cattail.



When fresh food is at a premium, cattails offer an easy-to-find solution.

ing. Dig and cut up these shoots when they are about 4 to 10 inches long. After 10 inches, the shoots start getting stringy and tough, with a kind of bitter taste, but they still can be harvested, steam-cooked, and eaten up until the plants are about 18 inches tall.

Cut the young shoots into macaroni-sized chunks. Boil or steam. They are best with salt and butter, but these seasonings probably won't be available in survival circumstances. Reportedly they are nutritious. These shoots can also be canned,

frozen, or pickled, much like asparagus. When the main season is on, production from just a small patch can be surprisingly large.

Next comes a harvest from the flowers. These are the dry, brown wiener-shaped tops that all of us have seen in cattail patches. Before maturing, these flowers are green, tender, and good, much like ears of corn. Pick them as early as possible. Steam in a flat, covered pan for about 15 minutes.

Shortly after the flowers mature, they pollinate. We often see clouds of yellow dust flying about bodies of water without knowing the pollen is from the cattails. This pollen ranges from edible to quite good. Collect it by placing a thin plastic bag over the flower and shaking vigorously. Usually a teaspoon of pollen will be harvested per plant.

Use this pollen half-and-half with wheat flour or use it straight just like flour. The resulting biscuits are heavy, filling, and hard. Some people say they may even be as nutritious as biscuits made with flour. Realistically, I have no way of measuring this nutrition.

Cattail roots actually fatten up in anticipation of winter's lean times. During fall and winter these roots are dug up, cleaned, and cut up to be boiled and eaten. Eat the whole porridge-like mess or filter and dry the starch from the fiber as a kind of super-bland mashed-potato mix. Entire families have lived through winters on these roots with only addition of a small rabbit, a rat or—in some cases—a muskrat to the pot. Don't mistake this for good, but it is life-sustaining. All survival food is monotonous.

Exercise care with winter harvest of cattails. The bed will be slowly killed by removal of the roots.

### CITY GARDENS

There are common edible items that city survivor hunter/gatherers can expect to find and use to augment their food supplies in or near built-up areas. All will definitely not be available all of the time. When available, all are relatively quick and easy, nicely meeting survival-thermodynamics criteria. Cattails are the exception, in that they are always available in some form or another. In spite of

my best efforts to call attention to their value as emergency food, few survivors seem to know or care about cattails.

Gardens are possible even in the most intense inner city situations. Even in the heart of the asphalt jungle, gardens can be eked out of vacant lots, along boulevards, in grassy median strips along superhighways, and in highway cloverleaf structures. I have even seen nice rooftop gardens in downtown Rome and Chicago. These gardens raised ornamental plants, but could easily have contained something as practical as beans, zucchini, carrots, and potatoes.

Available water seems to be the limiting factor in cities, much more than locating a patch of suitable topsoil.

Theft from one's survival garden in the city was a concern for me, personally. Out in the country garden theft is common. "Not to worry," the been there, done that committee says. "Most inner city people don't know a green bean from an edible pod pea," they say. "(The) average city slicker will know large, typical vegetables, such as pumpkins and carrots, tended in neat, orderly, weed-free rows. But they fail miserably to recognize carrots or potatoes growing randomly in the ground."

City survival gardeners require very fast-growing, high-yield garden vegetables that average people won't recognize growing out in what seems like the wild. That these vegetables are also easy to process and are nutritious is another bonus. These are the garden items experts always suggest: potatoes, green beans, carrots, and zucchini.

Potatoes just barely made the list. Even though they produce more food per unit of land than any other crop on earth, they are relatively difficult to grow and store. Raising successive crops of potatoes on the same ground is a sure formula for devolution into nothing yields.

A multitude of fungal and bacterial diseases limit amateur potato production. Successfully keeping potato tubers for seed over the winter is never easy. Anyone who has ever kept spuds under the sink knows that even treated, commercial potatoes sprout and spoil easily. Potatoes are a 120-day crop in the northern hemisphere. They should be started as soon as the soil temperature reaches 54 degrees.



Potato tops are not good for anything except nourishing and supporting the tubers below. Few people will actually recognize a potato plant growing out by itself. Plant seed pieces about 4 inches deep. Sprouting occurs within 3 weeks. Soil should be mounded up around the plants to give the spuds more room in which to grow.

Carrots yield well, and they are fairly easy to raise and store. In most cases, mature carrots are simply left in the ground over the winter. Cover with 6 inches of leaves, grass, and duff. Dig up as needed for the pot.

The devil with carrots is getting the seed sprouted in the spring. Their minuscule seeds are easily buried too deep and lost. I cover cover the seeds with a light layer of peat moss and a piece of heavy canvas for 10 days to give them a chance to warm and sprout.

This leaves green beans and zucchini. Beans are excellent for city survivors because the mature pods can be left to dry on the plant when there are too many green beans to be otherwise processed. Production of food from 200 bean plants can be prodigious. Beans manufacture their own nitrogen fertilizer. Seeds saved from the last crop are always viable. When finally induced to sprout, beans do well on even very tired, poor soil.

Most zucchini are also open-pollinating, meaning seeds can be kept from one year to the next. Zucchini are a very short-term crop; it only takes around 53 days from planting to harvesting mature fruit. Everyone knows about the production ability of zucchini. In many places it is the subject of jokes. The biggest problem is storage; zucchini can be kept fresh for about 60 days, but after that they get moldy and deteriorate. Long-term storage entails freezing or canning.

All gardening, city or country, requires practice. Learning curves can be steep, but no two areas in the world are exactly the same relative to gardening techniques. City residents who believe they might someday become survivors can easily learn by placing a few hills of beans, zucchini, and potatoes out in the flower patch for practice. Few seeds and little space are required to experiment. Knowledge gained will be invaluable, especially when spread over

a whole lifetime. Small-scale fooling around with garden vegetables leads to a continued supply of fresh seeds at the retreat.

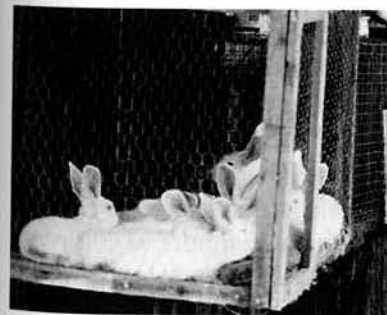
I raised beans, carrots, and zucchini experimentally in a small plot across the street from a condo in which I lived in Boise, Idaho. There was abundant space in the lawns and flower beds among the high-rise buildings. But these flower beds were well tended and I risked having my little experimental garden mistaken for weeds and pulled up. Across the street I noticed a landowner who never mowed, pulled weeds, or fussed in any fashion with his yard. I planted there during the dark of night—just a batch of seeds to see what would happen.

Nobody expects very much activity on the part of greenskeepers or gardeners during a city's collapse. No doubt, concerns about errant weeding would not be justified if everything else around has turned to worms. My experimental seeds sprouted and grew, but languished when I was unable to water them. Boise receives only 7 inches of rain per year, on average—it's really a desert.

City survivors could successfully learn hunting and gathering techniques on the job. They could also learn to garden in 3 to 4 years. By then, the emergency will have passed or you will have died of starvation.

## RAISING LIVESTOCK

Livestock can be successfully raised in the deep inner city.



Eight-week-old rabbits will be butchered in about 2 more weeks when they weigh 3 pounds.



Chickens and other domestic animals can be raised by city survivors.

Third-worlders do it all the time. It is generally small livestock, with goats being the largest. But, as with all animals, they are made of meat and will sustain life. My father raised rabbits and pigeons for 3 years; it was his and his brother's duty to keep the critters alive. This is probably more responsibility than most 12-year-olds in our society could assume.

### Rabbits

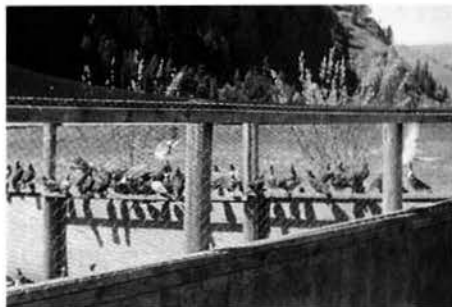
As mentioned earlier, three doe rabbits and a buck will produce sufficient young that survivors can count on at least two rabbit meals per week. Figure a litter of six to eight young weighing 3 pounds every 8 weeks

throughout the year. Dad claimed he rebred their does 4 days after they gave birth. The does then started production of the next litter while still nursing the first litter. I never wanted to crowd my rabbits that much, but dad pointed out that this is the way it happens all by itself out in nature.

Rabbit hutches are roughly 20-x-18-x-30 inches deep, made of 1/2-inch chicken wire top and sides. The bottom is made of 1/2-x-1-inch hardware cloth. Rabbits produce huge quantities of compost, which is useful in the garden. All this must fall through the hardware cloth on the bottom. Does like having a nest box, about 1 foot on a side and 18 inches deep. Cut a 4-inch access hole in front. The top should be hinged to open for inspection. Each buck and doe



Small animal pens and nest boxes are stored against the time of need by the city survivor.



Common pigeons are the perfect livestock for city survivors—they are prolific, hardy, and fly out to find their own food and water.

should have a hutch, plus one extra hutch per litter to keep them from weaning for 10 weeks, when they are butchered. Any older and they start breeding among themselves as well as consuming huge amounts of food, with little additional size gain to show for it. Figure one nest box per doe. The buck doesn't need one.

Bean stalks, leaves, hay, grass, cornstalks, zucchini rinds, carrot tops, and any other cellulose material can be gathered as feed for rabbits. During spring, summer, and fall they can be fenced into small grassy areas to eat on their own. Summer and fall are also the times when grass and weeds are cut, cured in the sun and then piled for winter food. I also recommend storing a bit of commercial feed against the time when the home-produced kind runs short. Don't try running rabbits out in areas where hungry soldiers, owls, or dogs are likely to find them.

Rabbits are easy, but not really easy to raise. Now and then, especially in the winter, domestic rabbits fail to breed or lose their litters. There's no obvious explanation, the litter is just born dead or quickly weakens and dies. Often it is the doe's fault. I give her two chances and then off to the pot.

### Pigeons

Semidomestic pigeons are another kind of livestock city survivors can use to great advantage. Once established, pigeons mostly care for themselves. They need a protected, secluded roosting area more than a pen. Pigeons fly in and out for their own food and water. They pair for life, producing eight pairs of young per year, always setting two eggs. The young weigh almost a pound dressed at maturity in 30 days.

Fifteen pairs of pigeons produce enough young that, at a minimum, city survivors can figure on four pigeons for dinner per week. Theoretically it should be more than that, but things seldom work out perfectly. The process of producing young is materially speeded by a biological oddity of pigeons. Males take over the chore of raising the young from about day 26 till first flight, while she starts the next two-egg nest.

On the downside, pigeons are extremely dirty and full of parasites. They reportedly carry virtually every disease and parasite