WILDERNESS

A Survival Adventure

ELECTRIC TRANSIT

10 9 8 7 6 5 4 3 2 1

Warning: Although *Wilderness: A Survival Adventure* is a realistic simulation, it is not intended as an exhaustive reference for identifying toxic plants or for preventing or treating injuries and illnesses. Electric Transit, Inc. and Titan Computer Products assume no liability for any mishaps that may occur in using the advice or actions in the *Wilderness* program or this manual.

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1

INTRODUCTION

You're alone, miles from civilization, with no hope of rescue. A dusting of snow covers the trees and surrounding mountains. You shiver with cold and wonder how you're going to make it to safety. A ranger outpost is plainly marked on the topographic map you managed to pull from the wreckage of your airplane. But the map covers an area twice the size of the state of Delaware, and your crash-site could be anywhere. Survival depends on determining your location, and then hiking to the safety of the outpost, or . . .

You're an adventurous archeologist determined to establish yourself in the professional community. A long-forgotten map and several obscure bits of evidence have sent you in search of the Lost City of Gold, rumored to contain the riches of Croesus and a priceless statue. Discovering the City will be an astounding find; one that will secure your fame and fortune. You are airlifted to a remote ranger outpost. From there you must trek deep into the wilderness, obtain the statue, and return to the outpost, alive!

Your journey will be arduous, made difficult by rough terrain, dangerous wildlife, inhospitable weather, and your own lack of experience. In the end, your life may depend on common sense, quick wits, and a little luck. And even then, you may not make it.

Wilderness: A Survival Adventure is a unique adventure simulation. It features Pangraphics™, a three-dimensional graphics generating system; infinite dynamic, perilous environments in which to journey; and a series of expert systems, scientifically accurate models of daily weather patterns, and the human body's responses to exposure, injury, and illness. Experts in the fields of toxic wild plants, human physiology, navigation, wilderness lore, thermal models, wildlife habitats, meteorology, and terrain models have pooled their knowledge to create a precisely detailed environment.

Wilderness uses a 300-word vocabulary with which to negotiate the two adventure scenarios. All vocabulary words are clearly identified in uppercase bold type throughout this manual; keystrokes appear in bracketed, boldface type. Phrase sequences that appear as **(USE KNIFE)/MAKE GEAR/USE BAIT/USE GEAR/CATCH FISH** represent a series of responses. Type in the first phrase, press **[RETURN]** and wait for a response from the program. When you see a flashing square (the cursor), type in the next phrase. Phrases in parentheses are optional; they are not required steps in accomplishing a task. Occasionally, you'll hear a "beep". This signals a message that will be revealed when you press **[RETURN]**.

Both the plane crash and the archeological expedition take place in the Sierra Nevada mountain range; your journey can be experienced at ten levels of difficulty. You can extend the boundaries of your expeditions to five additional geographic locations—Bolivia, British Columbia, Burma, Chile, and New Guinea—by purchasing supplemental disks. (See the order form enclosed in this package.)

In this adventure simulation, each day is a challenge. You must cope with basic needs—food, water, shelter; you must deal with life-threatening situations—dangerous wildlife, tropical diseases, the harshness of the elements. To assist you in your struggle to survive, *Wilderness* has six information screens built into its design. These screens are your link to the environment and your physical condition, as well as your most important sources of information. They are:

VIEW	a three-dimensional panorama of the surrounding terrain
TOPO	a topographic (topo) map, complete with latitude, magnetic declination, scale, and major geographic features such as woods or jungles, mountains, rivers, and lakes
STATUS	an up-to-the-minute report on current weather conditions, your physical state, and your progress in reaching your goal
INVENTORY	an itemized list of available supplies
HELP	a list of the most important pieces of survival advice specific to your location and situation
CLUE	a series of hints about the location of the Lost City of Gold (available only for the archeological expedition)

A solo trek in the wilds can be dangerous, exhausting, and time-consuming. A *Wilderness* experience can take several hours and, very likely, will not be completed in one session. So that you can resume your journey exactly where you left off, *Wilderness* allows you to save an ongoing adventure. In fact, you can save as many as five adventures on a blank disk.

As you become an advanced explorer, you can create new environments in which to test your survival skills. *Wilderness* contains all the information necessary for you to construct an infinite number of geographically specific and accurate landscapes. Generated in the form of original topo maps, five new 90×67-mile areas from any of the six world regions can be stored on a blank disk.

Because *Wilderness* is the closest thing to actually being on your own in the wilds, it provides you with an opportunity to experience challenging situations and to explore places that might otherwise be inaccessible. This accurate adventure simulation can help foster problem-solving skills that are not part of traditional classroom instruction; encourage investigation into what makes systems work; make learning an active process by letting you manipulate "reality"; and bridge the gap between theoretical knowledge and practical application. *Wilderness* is equipped with a research mode that transforms the adventure into an interactive atlas. The trials of survival are removed; you can investigate weather patterns, watch the cycle of the sun, study terrain, read maps, sharpen navigation techniques, and broaden your knowledge of animals and plants.

The information you carry with you is perhaps your most important line of defense in unknown territory. This manual is indeed a survival manual; it contains a large part of the training manual used by the United States Air Force Survival School. Much of the information is necessary for staying alive in *Wilderness*, though sections related to survival techniques not used in this simulation are also included. These sections appear as shaded blocks. The manual is organized so that it begins at the outset of your journey, and then presents you with information for dealing with situations as you encounter them. This *Wilderness* manual also contains several appendixes with additional survival information and an extensive glossary.

For those adventurers anxious to start their journey before reading this manual, *Wilderness* includes a Travel Pass that will drop you right into the unknown. The reverse side of the pass contains a listing of the vocabulary you need to survive your journey. If you get stuck, refer to the detailed information contained in the following pages.

2

YOUR ADVENTURE BEGINS

Wilderness, like real life, is made up of many interwoven and interrelated systems. Decisions you make about one facet of your journey can have far-reaching and extreme effects on other aspects of the adventure. Take advantage of the information contained in these pages. There is a lot to learn before you can successfully survive a solo trip into the wilderness (literally or electronically).

Use your first *Wilderness* adventure as an exploratory journey; make its purpose one of experimenting and experiencing. It is an opportunity to gather the information and knowledge you will need on future adventures. We suggest that you consider the following instructions as a passport into the possibilities *Wilderness* contains; they afford you the best means of fully appreciating and experiencing this adventure simulation.

Entering the Wilds

Insert the Sierra Nevada side of your *Wilderness* Disk into the disk drive and turn on your computer and monitor. (Do not put a write-protect tab on any *Wilderness* disk.) After a few moments the title page appears. Press [**RETURN**] and you see the *Wilderness* Main Menu. This menu contains seven options:

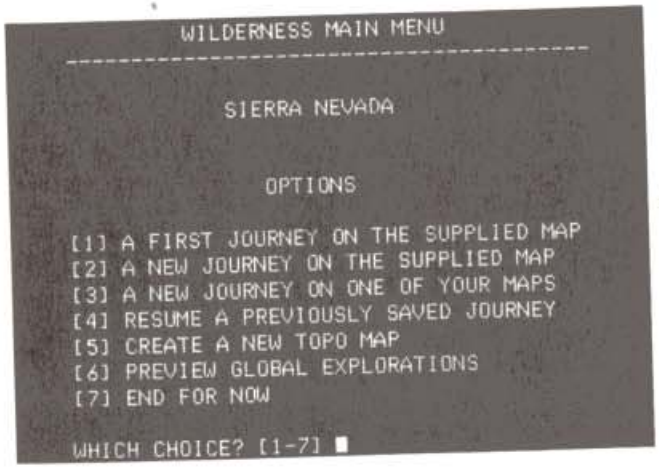


Figure 1: Main Menu

Since you are a novice adventurer, select [1] **A FIRST JOURNEY ON THE SUPPLIED MAP** and press [**RETURN**]. This first journey option lets you get right into your adventure. We have answered the 11 setup questions (discussed on pages 75 through 77), packed your supplies (discussed on page 18), and created optimum conditions for a successful trek. The next screen you see, YOUR FIRST JOURNEY, asks you to insert the Journey Disk and press [**RETURN**]. Your Journey Disk is on the reverse side of your Sierra Nevada Disk. If this is the first time you are using a Country Disk, you are asked to reinsert the Country Disk, press [**RETURN**], reinsert the Journey side, and press [**RETURN**] again. Each disk carries a serial number; your Journey side is checking the number on your Country side.

After substituting the Journey side for the Country side, you are presented with an introduction to your first adventure in *Wilderness*. (The other Main Menu options are discussed in detail in Chapter 8.)

Carefully read the two-page introduction that appears on your screen. It contains important facts about your location, physical condition, and possible local hazards. You'll need this information when you make decisions about what supplies to take with you. It also will come in handy in your determining the direction your journey will take. You may want to jot down the facts for future reference. Once you have read the introduction and pressed [**RETURN**], you are transported to a remote location somewhere in the Sierra Nevadas. We suggest you use a color monitor or television to more vividly recreate nature. Make sure the tint is adjusted so that the sky is blue and the world appears in its proper hues.

You are looking at a panorama of the area surrounding your crash site. The shattered fuselage of your airplane is in the foreground. There may be mountains off in the distance; some of the higher peaks may be snow-capped. You might see rivers or lakes, and trees. What you are looking at, in *Wilderness* terminology, is the **VIEW** screen. It is one of the six information screens built into this adventure simulation.

Each screen, and its function, is discussed in detail in this chapter. Before embarking on your adventure, you should be completely familiar with all six screens. They may, in some life-threatening situation, hold the information that keeps you alive.

The VIEW Screen

This is the primary play screen; it is a three-dimensional, color representation of the terrain in which your adventure takes place. You see the world as you do in real life, from your own point of view. Your peripheral vision extends 45 degrees to your left and right, giving you a 90-degree field of view.

Take some time to observe the details of the scenery. Note the location of mountains. Are they nearby or in the distance? Can you see any rivers, streams, or bodies of water from your observation point? We set up your journey to begin at 7 AM. Can you see the sun? Poor weather, fog, rain, or snow can limit your vision and obscure the sun. What are the weather conditions on this May day? (We selected the fifth month for your journey date.) Continue to

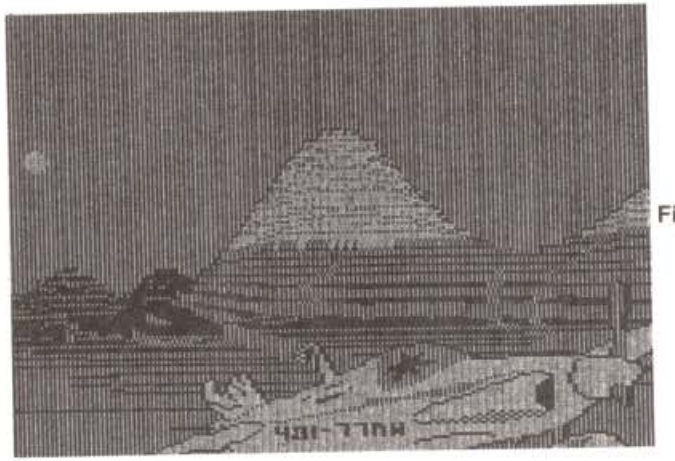


Figure 2: VIEW Screen

inspect the area until you have a feel for your surroundings. When you have completed this "first look", type **TOPO** and then press [**RETURN**].

The TOPO Map Screen

You are presented with a topo map of a 90×67-mile area somewhere in the Sierra Nevada mountain range. The map is one of your most important sources of information; it is one of the things you will need to get you to the safety of the ranger outpost. Remember, you can't read the map in the dark unless you use some kind of artificial light (a flashlight, a match, or your campfire). The information contained in the map includes:

Figure 3: TOPO Map Screen

REGION NAME: **Sierras USA** In future journeys, you can elect to adventure beyond US borders with supplemental Country Disks; one of five other area names can appear here. They are Bolivia, British Columbia, Burma, Chile, and New Guinea. More detailed information about each geographic region appears in Appendix C: Atlas.

LATITUDE **(LAT): +38** (+ or − DEGREES) The distance of a point on the earth's surface north or south of the equator, measured on the meridian of that point. Latitude affects seasons, weather and its severity, and the transit of the sun in the sky.

MAGNETIC DECLINATION **(MAG D): +17** (+ or − DEGREES) The difference between magnetic north, given by a compass, and true north. If the magnetic declination is + (positive), then magnetic north is east of true north. If the magnetic declination is − (negative), then magnetic north is west of true north.

CONTOUR LINES: Altitude or elevation is the height above sea level of a given point. A contour line connects all points of a specific geographic feature with the same elevation. You can use this information to determine the shape, size, and slope of mountains and valleys. The contour lines on your topo map appear in increments of 400 feet. (To increase your journey's challenge, the number of degrees of all slopes have been increased four times what is actually indicated on the topo map.)

RIVERS and LAKES: The position and arrangement of rivers, lakes, and streams can be used as landmarks with which to orient yourself. Water courses also can be vital to your survival; they are sources of food and drinking water, and a means of rapid transport.

SCALE: This topo map, unlike one printed on paper, is dynamic. You can see a magnification of part of the map. The normal scale is 90×67 miles. Press [**S**]. Now you are looking at an area of 50×32 miles. Notice that the elements on the map are larger. In Research Mode, you can get help in finding your present location by pressing [**L**] when looking at the magnified map. It appears as a small white dot. Press [**S**] again. You're back to normal scale.

Increase the magnification again (press [**S**]). You can see geographic details that are not visible on the larger-scale map. You can move around on *Wilderness'* topographic map when the scale is magnified. Press [**K**]. You've moved to the right. Press [**K**] several times. You continue to move to the right across the map until you come to its border. Now press [**J**]. This key moves you to the left. To move up, press [**I**]. To move down, press [**M**]. Take some time to wander around on the map. You'll come across various geographic details such as mountains, rivers, lakes, and woods (stands of trees appear as shaded areas). Do you see a large white dot? That dot represents the ranger outpost. When you are comfortable with moving to different map locations, press [**S**] again.

You're back to normal scale. Experiment with the scale feature; go back and forth between normal scale and magnified scale. Move to a new location on the map and then bring the scale back to normal. The relationship between the two scales will become clear and the value of having magnification available will be apparent. After you have practiced with these topo map features, press [**V**].

You've returned to the **VIEW** screen with its three-dimensional panorama of the Sierra Nevadas. Your location in the mountain range is somewhere on the map you have been investigating. The map is your first navigation aid. To get to the safety of the ranger outpost, you must understand the relationship between where you are in the **VIEW** screen and where that location is on the topo map.

To get your bearings, you must look around you. Type **LOOK RIGHT**. Your field of view changes; you are seeing the landscape that is 90 degrees to the right of your original view. Your peripheral vision still encompasses 45 degrees to the right and left (a 90-degree arc). Type **LOOK RIGHT** again. This view is directly behind (180 degrees from) your original vantage point. Make another quarter turn (type **LOOK RIGHT** again). You are looking at the area 90 degrees to the left (270 degrees) of your original view. Turn right again (type **LOOK RIGHT**) and you have completed a circle; you have looked at the complete 360 degrees around you. What you see now is your original view of the Sierra Nevadas.

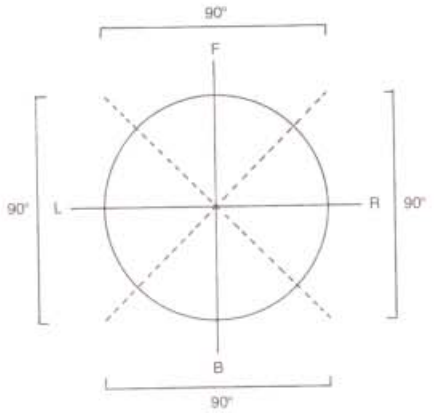


Figure 4: Field of View Diagram

Try typing **LOOK LEFT**. Inspect the landscape and then complete the same 360-degree survey you took by turning to your right.

You can change your view by 45-degree increments (instead of 90-degree units) by typing **LOOK HALF RIGHT** or **LOOK HALF LEFT**. Using these phrases, scan the area.

You can use five other directional words with **LOOK** to view your surroundings. They are:

BACK	180 degrees behind you
UP	45 degrees above horizontal
DOWN	45 degrees below horizontal
FORWARD	straight horizontal; used to reestablish a straight-ahead view, after looking up or down.
SUN	places the sun in the center of your field of view. It must be a clear day in order to use this direction finder.

Experiment with these words; see what happens when you use them in vari-

ous combinations. Once you are adept at looking around, get back to your original view. Now type **PAN RIGHT**.

The screen changes in a way different from its response to **LOOK**. **PAN**, in effect, turns your head slowly in the direction you indicate (in this case, to the right). You can **PAN** a full 360 degrees. To stop turning your head (panning), press any character key on the keyboard. Type **PAN LEFT** and you begin turning your head to the left. Practice panning; you'll discover how useful it is in fine-tuning your view.

All these commands can be used to gather information about your location. When used in combination with the topo map, they become your means of orienting yourself. Use any of the **LOOK** directons to find some significant geographic landmark such as a river, lake, or mountain peak. Then refer to your map (type **TOPO** or press [**T**]). Can you find that landmark on the map? You may have to use the scale ([**S**]) and move around until you can locate your landmark. Shift back and forth between the panorama in the **VIEW** screen ([**V**]) and the **TOPO** map ([**T**]) until you have a good idea of your location.

Weather

Another type of information available to you in the **VIEW** screen concerns weather conditions. As in the real world, the weather in *Wilderness* cycles through day and night. The seasons turn from summer through autumn, winter, and spring. Storms gather, pelting the landscape with rain. Fog rolls in, obscuring the distant mountain peaks. In winter months, snow covers the ground, making navigation difficult and travel slow.

The movement of the sun, in the 24-hour (daily) cycle and in the 12-month (yearly) cycle, has some important effects on your journey. On a clear day you can see as far as 50 miles in every direction, providing that your view isn't obstructed by forests or mountains. During bad weather (fog, rain, and snow) or lack of sunlight (night, dusk, and dawn), your viewing distance can be greatly reduced. Poor visibility also affects your rate of travel and the speed at which you can accomplish tasks. You cannot move quickly over unfamiliar terrain if you cannot see where you are going. Temperature fluctuates with changes in the time of day, weather conditions, and seasons; rainstorms may produce a slight increase in air temperature because of humidity.

Each of these variables affects not only your progress through *Wilderness*, but your physical condition as well. Snow can cause snow blindness; extreme heat, hyperthermia and dehydration; and extreme cold, frostbite and hypothermia. You must consider the weather when you make decisions about clothing, equipment, and shelter.

To get a summary of current weather conditions and other important information about the surrounding terrain and your physical state, type **STATUS**.

The STATUS Screen

This is the third of the six information screens in *Wilderness*. You might think of it as an up-to-the-minute news report about you and the surrounding area. It is always available to you simply by your typing **STATUS**. The details of the state of your environment and your physical condition are given in specific measurements, if you have the proper instruments; or in relative terms, if the measuring devices are not available. The information contained in the **STATUS** screen includes:

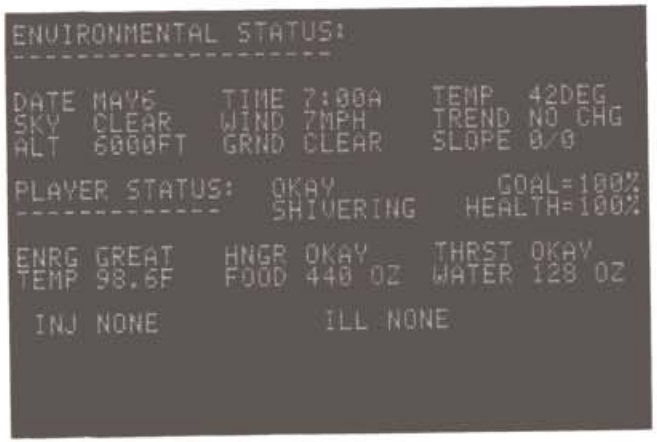


Figure 5: STATUS Screen

Environmental Status

DATE: The month and day. Use this information to keep track of the length of time you have been traveling. If the month is one in which a transition of seasons occurs, you can anticipate, in a general way, future weather conditions.

SKY: This broad category gives you the general condition of the sky. You will see either CLEAR, CLOUDY, RAIN, or SNOW.

ALTITUDE (ALT): Altitude is the height of a given point above sea level. If you have an altimeter (an instrument that measures altitude), altitude is given to within 200 ft. If you didn't bring this piece of equipment along, you'll see HIGH (over 10,000 ft), MEDIUM (3,000 ft to 10,000 ft), or LOW (under 3,000 feet).

Altitude affects air temperature, local vegetation and wildlife, terrain, prevailing wind and weather, and physiology. Altitude sickness is a potential problem above elevations of 10,000 feet, unless you are physically well-conditioned or you have an oxygen tank with you.

TIME: The time of day. If you have a watch, time is given in hours and minutes (0:00A or 0:00 P) to within 10 minutes. If you're not wearing a watch, you'll see DAWN, AM, PM, DUSK, or NIGHT. Time of day influences air temperature, visibility, and your chances of encountering small game or wildlife.

WIND: Wind speed is given in miles per hour (xx MPH). High winds can increase the dangers of travel, especially in rugged terrain. When combined with rain or snow, it can reduce visibility. In extreme cold, the wind magnifies the effect of low temperatures (wind chill factor) and increases the dangers of exposure.

GROUND (GRND): The type of terrain within a 0.2 mile radius of your position. The possible ground types include CLEAR (walkable terrain with no ma-

jor geographic characteristics), WOODS, JUNGLE, LAKESHR (bank of a still body of water), LAKE, RIVSHOR (bank of a moving body of water), RIVER, FRZLAKE (lake frozen to a thickness that will support a person's weight), SCRUB (low-growing vegetation), or ROCKY (rugged terrain broken by ridges, gorges, or cliffs).

TEMPERATURE (TEMP): Air temperature. If you packed a thermometer, temperature is given in degrees Fahrenheit. If you neglected to pack one, you'll see FREEZE, COLD, NICE, WARM, or HOT.

Air temperature has a profound effect on the human body. Hypothermia, a drop in body temperature due to exposure to very cold weather, can cause death. Hyperthermia, a rise in body temperature due to overexertion in very hot climates, also can put an end to your adventure. Food spoils more quickly in high temperatures; natural food sources, like game and edible plants, are less abundant during cold weather. Fluid lost during exertion must be replaced more frequently when sweating is excessive; frostbite is a danger when the body is exposed to extreme cold.

TREND: An indication of the stability of present weather conditions. You will see either BETTER, NO CHG (no change), or WORSE. You can use this information to anticipate weather conditions.

SLOPE: A measure of the angle (in degrees from horizontal) of the terrain. The first number represents the slope of the ground in the direction in which you are looking; the second, the overall slope of the area in which you are standing. Positive slope indicates uphill; negative (–) slope indicates downhill. In both cases, the higher the number, the steeper the angle.

For example, if you were standing on the side of a steep mountain and you were looking uphill at the mountain face, the **STATUS** screen might read 30/30. If you were to look behind you and then call up the **STATUS** screen, slope might read -30/30. The first number depends on the angle of your view. The second number represents the absolute incline of the overall area (this does not change when you alter your angle of the view).

Player Information

If you are using Research Mode in which your physical condition does not change, this portion of the STATUS screen will read RESEARCH MODE. Otherwise, you will see:

PLAYER STATUS: An overall measure of your physical and psychological condition. Measurement terms include FANTASTIC, GOOD, OKAY, POOR, MISERABLE. Below one of these measures, you may be notified of some change in your physical condition. SWEATING indicates rising body temperature; SHIVERING indicates falling body temperature.

GOAL: A measure of your success in reaching your destination is given as a percentage (with 100% as your starting point). The time and the route you take to reach your destination, as well as the number of times you ask for HELP or CLUE, affect your goal percentage.

HEALTH: A measure of your current physical condition (the presence or absence of illness or injury) given as a percentage of your starting condition. This indicator can alert you to an oncoming illness or the impact of a sustained injury. Each illness and injury decreases your health percentage; the effects

are cumulative. For example, if frostbite reduces your health to 90% and a broken arm separately decreases health to 80%, then the total effect of both maladies brings your health to 72%. Death occurs when your health deteriorates below 3%.

ENERGY (ENRG): A relative description of your need for sleep. Measurement terms are GREAT, OKAY, TIRED, and BEAT. Lack of sleep can lead to exhaustion.

TEMPERATURE (TEMP): Body temperature. If you have a thermometer, your temperature is given in degrees Fahrenheit. (Normal is 98.6.) If you didn't bring a thermometer with you, you'll see a relative term: FREEZE, COLD, NICE, WARM, or HOT. This measurement can be useful in detecting the symptoms of frostbite, hypothermia, hyperthermia, and a variety of other ailments. It is also an indicator for action. Do you need treatment for a specific illness? Should you put on or take off some clothing to accommodate climate?

HUNGER (HNGR): Indicates your general nutrition requirements at that particular moment. Relative measurements are FILLED, OKAY, SO-SO, and VERY. Unattended hunger can lead to starvation.

FOOD: Quantity of available food (from all sources in your vicinity) listed in ounces (XX OZ).

THIRST (THRST): Indicates your general fluid requirement at that particular moment. Relative measurements are the same as for HUNGER. Thirst, when it becomes an extreme condition, results in dehydration.

WATER: Quantity of available water (from all sources in your vicinity) listed in ounces (XX OZ).

INJURY (INJ): This information appears when you have sustained a physical trauma, such as a broken arm or leg. An injury is not listed until the full impact of the trauma is felt. However, you may experience symptoms (reduced vision, falling body temperature) as your condition deteriorates. See Chapter 6 for a complete list of injuries, and their causes and treatments.

ILLNESS (ILL): This information appears when you contract a disease or if you are suffering from an illness. See Chapter 6 for a complete list of diseases, and their causes and cures.

As is obvious from the information above, the **STATUS** screen is your link to *Wilderness'* environment. Consult this screen often; use it to keep on top of your physical condition, as well as the conditions around you. You'll notice that the information on the **STATUS** screen changes as your journey becomes more arduous, as time passes, and as you travel across different kinds of terrain.

Being able to anticipate what you might have to do next is an important skill; one that could save your life. Before you can begin your *Wilderness* trek, you must pack some supplies. Type **INVENTORY** (or **INV**).

The INVENTORY Screen

The best time to begin anticipating your survival needs is before you set off into *Wilderness*. You start every adventure with a specific number and type of

supplies available to you. At easier (lower) levels, the supplies are abundant; at more difficult (higher) levels, the available supplies are spartan. A complete list of all the supplies, along with weight, volume, and uses, appears in Appendix A: Full Inventory List.

Figure 6: INVENTORY Screen

Read through the inventory list that appears on your screen. If a flashing cursor appears next to the last item on the list, it means that more items are available. Use **[SPACE BAR]** to see additional items. The list includes the name of the item (**JERSEY, SHORTS, CANDYBARS,** etc.), where it is located at the moment (WEAR—means that you're wearing it; GND—means that it's on the ground; -G 16 OZ means that 16 ounces is on the ground; PACK means it's packed in the backpack; CARRY means that you're carrying it.)

The terms for supply locations used in the Inventory List are:

GND	Item is on the ground
-G	Quantity of item is on the ground
WEAR	Item is on your body
PACK	Item is in the backpack
-P	Quantity of item is packed in the backpack
CARRY	Item is in your hands, arms, or pockets, or on your person
-C	Quantity of item is being carried
-CAN	Quantity of water is in the canteen

Items with limited numbers of uses, such as the **FLASHLIGHT** and the **QUININE,** are listed with the number of uses available. Multiple items, like **MATCHES,** are listed with number of units available. How much you take with you is restricted, as in real life, by your build. Remember that the more weight you carry with you, the slower your rate of progress.

Below the Inventory List is the information about Remaining Available Quantities, the weight and volume of supplies you can add. As you carry, pack, or wear items, these numbers decrease by the weight and volume of the item added or put on. For example, if you **PACK 32 OZ** of **APPLES,** APPLES-G (apples on the ground) decreases by 32 OZ, APPLES-P (apples packed) 32 OZ appears in the list, and the additional weight you still can carry decreases by 32 OZ. Remaining PACK VOL (IN3 means cubic inches) is decreased by the volume of apples you packed. When you carry or wear additional items, CARRY VOL or WEAR VOL, as well as WEIGHT, decreases. You cannot take an item with you that takes the remaining volume or weight below zero.

As you scan the Inventory List, notice the supplies we have packed for you. They are:

DOWN PARKA
RAINCOAT
ROPE
FISHING **GEAR**
UTENSILS
CHEESE—32 OZ
RAISINS—16 OZ
TUNA—16 OZ
APPLES—32 OZ
MATCHES—24
SNAKEBT KIT
REPELLENT—10 USES
AXE
FLASHLIGHT—6 USES
TENT
COMPASS
ALTIMETER
THERMOMETER
EGGS—16 OZ
POTATOES—32 OZ
BOLOGNA—16 OZ
BEANS—32 OZ
WATER—64 OZ
FUEL—8 OZ
SUNGLASSES
FLAGYL—12 USES
KNIFE

You begin your journey wearing:

WOOL PANTS
WOOL SOCKS
SWEATER
BALACLAVA
BOOTS
MITTENS
WATCH
JERSEY

and you are carrying:

TOPO MAP
2 QT. **CANTEEN**
BACKPACK

The items left on the ground that you might want to take with you are:

ENSOL **PAD**
JEANS
COTTON SOCKS
GLOVES
SNOWSHOES
RAFT
CANDYBARS—16 OZ
CARROTS—16 OZ
RAISINS—8 OZ
BEANS—48 OZ
WATER—64 OZ
SUNSCREEN—7 USES
OXYGEN—17 USES
TRINKETS—6 USES
GND **COVER**
SHORTS
HAT
PITONS/CARB
TRAP
BACON—16 OZ
CHEESE—16 OZ
POTATOES—48 OZ
BOLOGNA—32 OZ
APPLES—48 OZ
MAGNF **GLASS**
SALT TAB—12
QUININE—14 USES
ROCK

Before you can begin to assemble your supplies, the cursor (a flashing square) must appear next to the question mark at the bottom of the screen. Press **[RETURN]** to move the cursor from the list to the question mark. Each

time you select an item from the Inventory, the list is updated. You may have to move the cursor so that it appears next to the question mark. Press **[RETURN]** to position the cursor.

To pack an item, type **PACK** and the item's name. You'll be asked to indicate the number of ounces if the item is food or water. Notice that the weight of that item in the inventory list decreases by the amount you packed. To put on a piece of clothing, type **WEAR** and the name of the item. To carry an item, type **CARRY** (or **GET**) and the name of the item. As you choose your supplies, you'll see the weight and volume that you still can add to your provisions. Unless you discard some provisions, you cannot take items with you once you have reached your weight and volume limits.

Don't be impatient to pack up your backpack and take off into the unknown. The decisions you make here will have an enormous impact on your ability to stay alive. You might want to go back to some of the previous information screens and review the basic facts about the environment in which you will be traveling.

To consult the **INVENTORY** screen during your journey, simply type **INVENTORY** (or **INV**). If you have made an item from raw materials (such as a spear or trap) and have **PACK**ed it after use, it will be included in your list of available supplies. As you eat and drink, the quantities of the food and water you brought with you diminish. If, over time, some of your food supplies go bad, their quantities are no longer listed in ounces; the legend says **SPOIL**ed. The **INVENTORY** screen used during your adventure is a dynamic display. It gives you a list of what you have with you at a particular moment.

If your **BACKPACK** is on the ground (GND), it stays there until you **CARRY** it. If you leave the area and forget to repack your gear, it is no longer available to you unless you return to your previous location to retrieve it. It's a good idea to inspect your inventory before leaving your campsite. You don't want to head off into the unknown without your supplies.

Other vocabulary words that come in handy when sorting out your supplies are **DROP** (to discard an object), or **GET** (to retrieve an object).

Think about the following questions before selecting your supplies:

1. What is the time of year? Will it be cold or warm, wet or dry? Are weather conditions severe? Will I need a ready-made shelter or can I count on finding or making a shelter?
2. What kind of terrain will I have to traverse? Do I need special climbing gear? Are there forests and water sources that ensure the presence of game and wild foods?
3. How long do I think I'll be traveling? Do I need food and water for a few days? a month?
4. What kinds of wildlife am I likely to encounter? What are the most dangerous species in the area? What weapons are most effective against these animals?
5. What supplies are necessities; what can I make or improvise along the way?
6. What kinds of illnesses or injuries am I most likely to contract or sustain?

If you are confused about what you should take with you, type **HELP.**

The HELP Screen

At any point in your adventure, you can get advice about what to do next simply by typing **HELP.** You are presented with a list of up to ten of the most important pieces of survival information for your particular situation. The advice is listed from highest to lowest priority. The **HELP** screen can be very useful and the information in it can get you out of a dangerous situation, but don't be too casual about using it. Your goal and final performance are each reduced by about two percentage points every time you call for help.

If you are conducting an archeological expedition (the Lost City scenario), another information screen is available. Type **CLUE.** Unfortunately, you don't get any clues in the plane crash scenario.

The CLUE Screen

If you want some assistance in finding the Lost City, you can get up to seven clues to its location simply by typing **CLUE.** Some of these hints are permanent, and remain on the screen when you ask for additional clues. (A **CLUE** screen can contain up to six permanent clues.) Other pieces of information are temporary. They change depending on your location and its relationship to the Lost City.

Don't ask for a clue unless you really need one. Though valuable pieces of the puzzle may be revealed, fame and fortune are not easily acquired. Your goal and final performance are each reduced by one to two percentage points (depending on the value of the clue) each time you get a clue.

At this point, you have set up your adventure, become familiar with *Wilderness'* six information screens, decided on a course of action to get you to the safety of the ranger outpost, and packed your supplies. Now it is time to head off into the wilds.

3

NAVIGATING AND TRAVELING

Navigation skills play a vital role in wilderness survival. Pick up any reputable outdoor guide and you will find at least one lengthy chapter devoted to the subject.

You learn to navigate in everyday life by using local landmarks, street names, and freeway signs. Nature provides similar direction markers, but you must be trained first to see them and then to interpret them. *Wilderness* uses several different navigation techniques; each should be used in the same general order:

- Use visual clues from your surroundings (mountain peak, lake, forest, etc) or use a navigation technique to estimate your present location on the topo map.
- Chart a course that will take you in the general direction of your destination. Consider the "shortest route vs. safest route" equation. Your goal is to reach the destination alive.
- Travel along the course you have chosen, frequently checking your progress, and verifying your direction with the topo map and other navigation aids.

When wandering over terrain in *Wilderness*, it is important to remember that you travel in the direction you are **LOOK**ing. Therefore, if you are **LOOK**ing **NORTH** and type **WALK,** you walk north. To change your travel direction, you must first change the direction in which you are **LOOK**ing. **PAN**ning is a good way to fine tune the direction. You have already read about various relative directions in Chapter 2. To review, they are:

LEFT	90 degrees to the left of your current view
RIGHT	90 degrees to the right of your current view
HALF LEFT	45 degrees to the left of your current view
HALF RIGHT	45 degrees to the right of your current view
BACK	180 degrees (behind) from your current view
UP	45 degrees above horizontal
DOWN	45 degrees below horizontal
FORWARD	straight, horizontal view
SUN	in the horizontal center of your field of view

In addition to these directions, you can find and use compass point directions (north, south, east, west) and specific azimuth directions. Several methods can be used. (Other navigation techniques can be used in real-life journeys; these appear in shaded blocks.) *Wilderness* navigation techniques include:

COMPASS: You can use the following methods only if you have a compass in your inventory list. The compass is a standard magnetic type with luminous needle and dial. (You don't need a flashlight to read the compass at night.) Because a compass points to magnetic north (not true north), you must adjust your calculations to compensate for magnetic declination. Magnetic declination is given on your topo map. If magnetic declination is + (positive), magnetic north is east of true north. If magnetic declination is – (negative), magnetic north is west of true north.

The most direct method of using your compass is to find the azimuth you are presently facing. Azimuth is an arc of the horizon measured between true north and the center of an object (your position) clockwise from north through 360 degrees. The phrase **LOOK COMPASS** gives you the azimuth with respect to magnetic north. To find true north, you must compensate for magnetic declination. For example, if **LOOK COMPASS** gives you a heading of 63 degrees, and magnetic declination is +17, then you are facing a true azimuth of 80 degrees (63 + 17).

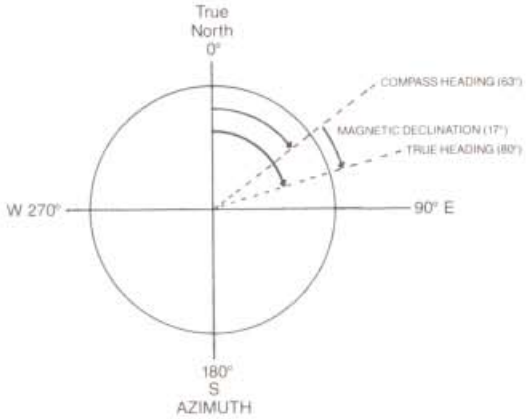


Figure 7: Azimuth Diagram

Another simple compass method orients you to one of the compass points. This method is also affected by magnetic declination, as described in the first compass technique. Use the phrase sequence **USE COMPASS/LOOK** [compass point].

A third compass method orients you to a new azimuth. For example, if the magnetic declination is +15 degrees and you want to travel along a true heading of 210 degrees, the number of degrees you would indicate in the phrase sequence is 195. The complete phrase sequence is **USE COMPASS/LOOK AZIMUTH** (or **AZ**)/195.

VERTICAL STICK SHADOW: This method is most accurate near midday. The shadow from a vertical stick moves from west to east. The sequence of phrases you need in this navigation method are:

USE SHADOW (this sets up the stick in a vertical position on level ground. Then . . .) **LOOK** [compass point] (or **LOOK AZIMUTH**)

Answer the questions that appear at the bottom of the screen. If you answer the first question correctly, you will be facing in the direction you indicated. If your answer is not correct, you will be facing in the opposite direction.

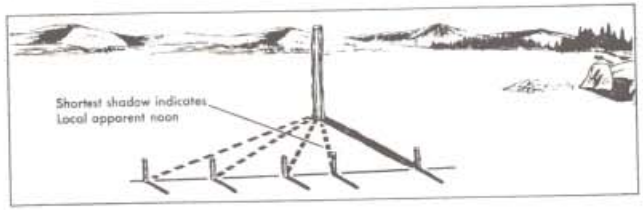


Figure 8: Stick and Shadow Method to Determine Local Noon

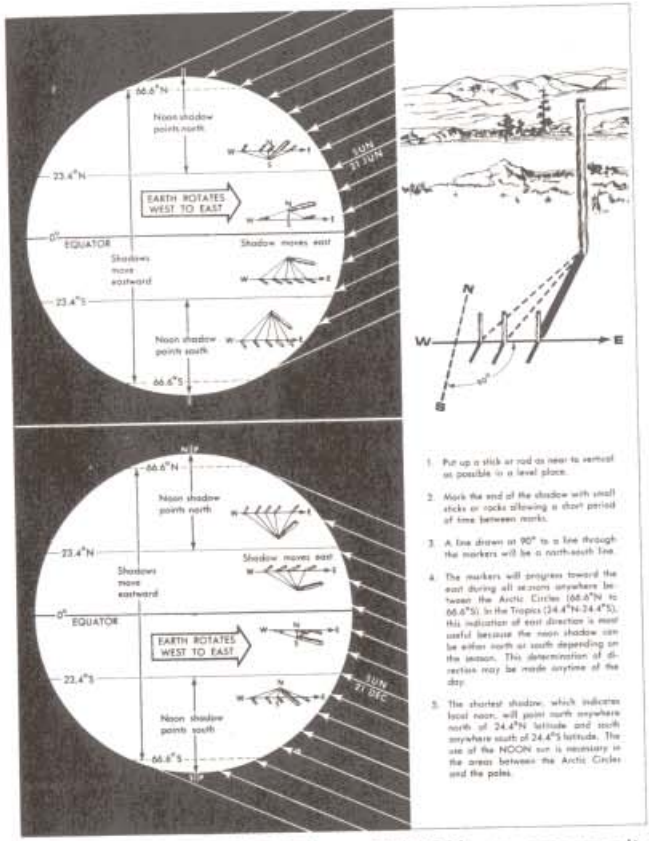


Figure 9: Stick and Shadow Method to Determine Direction

WATCH: If you're **WEAR**ing a **WATCH,** you can use it as a direction-finding instrument. The watch is a standard analog model, accurate to within 10 minutes. The noon, or 12 PM, reading is when the sun is at its maximum elevation on your North-South meridian. You can establish an approximate North-South line by noting the "watch time" difference, from noon, in hours. Since the sun travels at about 15 degrees an hour, multiply the time difference by 15.

DATE		Angle to North from the rising or setting sun (level terrain) LATITUDE												
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	(50°)	55°	60°
JANUARY	1	113	113	113	114	115	116	117	118	121	124	127	133	141
	6	112	113	113	113	114	115	116	118	120	123	127	132	140
	11	112	112	112	113	113	114	115	117	119	122	125	130	138
	16	111	111	111	112	112	113	114	116	118	120	124	129	136
	21	110	110	110	111	111	112	113	115	117	119	122	127	133
	(26)	109	109	109	109	110	111	112	113	115	117	(120)	124	130
FEBRUARY	1	107	107	108	108	108	109	110	111	113	115	117	121	126
	6	106	106	106	106	107	107	108	109	111	113	115	118	123
	11	104	104	105	105	105	106	107	108	109	110	112	116	120
	16	103	103	103	103	103	104	105	106	107	108	110	112	116
	21	101	101	101	101	101	102	102	103	104	105	107	109	112
	26	99	99	99	99	100	100	100	101	102	103	104	106	108
MARCH	1	98	98	98	98	99	99	99	100	100	101	102	104	106
	6	96	96	96	96	96	97	97	97	98	98	99	100	102
	11	94	94	94	94	94	94	95	95	95	96	96	97	98
	16	92	92	92	92	92	92	92	92	93	93	93	93	94
	21	90	90	90	90	90	90	90	90	90	90	90	90	90
	26	88	88	88	88	88	88	88	88	87	87	87	87	86
APRIL	1	86	86	86	86	85	85	85	85	84	84	83	82	81
	6	84	84	84	83	83	83	83	82	82	81	80	79	77
	11	82	82	82	82	81	81	81	80	80	79	77	76	74
	16	80	80	80	80	79	79	78	78	77	76	74	72	70
	21	78	78	78	78	78	77	76	76	75	73	72	69	66
	26	77	77	76	76	76	75	75	74	72	71	69	66	63
MAY	1	75	75	75	74	74	73	73	72	70	69	66	63	59
	6	74	74	73	73	73	72	71	70	68	67	64	61	56
	11	72	72	72	72	71	70	69	68	67	64	62	58	52
	16	71	71	71	70	70	69	68	67	65	63	60	55	49
	21	70	70	70	69	69	68	67	65	63	61	58	53	47
	26	69	69	69	68	68	67	66	64	62	60	56	51	44
JUNE	1	68	68	68	67	66	66	64	63	61	58	54	49	41
	6	67	67	67	67	66	65	64	62	60	57	53	48	40
	11	67	67	67	66	65	64	63	62	59	56	53	47	39
	16	67	67	67	66	65	64	63	62	59	56	53	47	39
	21	67	67	67	66	65	64	63	62	59	56	53	47	39
	26	67	67	67	66	65	64	63	62	59	56	53	47	39
JULY	1	67	67	67	66	65	64	63	62	59	56	53	47	39
	6	67	67	67	66	66	65	64	62	60	57	53	48	40
	11	68	68	68	67	66	65	64	63	61	58	54	49	41
	16	69	68	68	68	67	66	65	64	62	59	55	50	43
	21	69	69	69	69	68	67	66	65	63	60	57	52	45
	26	70	70	70	70	69	68	67	66	64	62	59	54	48
AUGUST	1	72	72	72	71	71	70	69	68	66	64	61	57	51
	6	73	73	73	73	72	71	71	69	68	66	63	60	55
	11	75	75	74	74	74	73	72	71	70	68	66	63	58
	16	76	76	76	76	75	75	74	73	72	70	68	65	61
	21	78	78	77	77	77	76	76	75	74	72	71	68	65
	26	79	79	79	79	79	78	78	77	76	75	73	71	68
SEPTEMBER	1	82	82	82	81	81	81	80	80	79	78	77	75	73
	6	83	83	83	83	83	83	82	82	81	81	80	78	77
	11	85	85	85	85	85	85	85	84	84	83	83	82	81
	16	87	87	87	87	87	87	87	86	86	86	85	85	84
	21	89	89	89	89	89	89	89	89	89	89	88	88	88
	26	91	91	91	91	91	91	91	91	91	91	92	92	92
OCTOBER	1	93	93	93	93	93	93	93	94	94	94	95	95	96
	6	95	95	95	95	95	96	96	96	97	97	98	99	100
	11	97	97	97	97	97	98	98	99	99	100	101	102	104
	16	99	99	99	99	99	100	100	101	101	102	104	105	108
	21	101	101	101	101	101	102	102	103	104	105	107	109	112
	26	102	102	103	103	103	104	104	105	106	108	109	112	115
NOVEMBER	1	104	104	105	105	105	106	107	108	109	110	113	116	120
	6	106	106	106	106	107	107	108	109	110	111	113	115	119	123
	11	107	107	108	108	108	109	110	111	113	115	117	121	126
	16	109	109	109	109	110	111	112	113	115	117	120	124	130
	21	110	110	110	111	111	112	113	114	116	119	122	126	133
	26	111	111	111	112	112	113	114	116	118	120	124	128	135
DECEMBER	1	112	112	112	113	113	114	115	117	119	122	125	130	138
	6	112	112	113	113	114	115	116	118	120	123	126	132	140
	11	113	113	113	114	115	116	117	118	121	124	127	133	141
	16	113	113	113	114	115	116	117	118	121	124	127	133	141
	21	113	113	113	114	115	116	117	118	121	124	127	133	141
	26	113	113	113	114	115	116	117	118	121	124	127	133	141

NOTE: When the sun is rising, the angle is reckoned from East to North.
When the sun is setting, the angle is reckoned from West to North.

Figure 10: Azimuth of Rising and Setting Sun

For example, if the time is 9 AM, the sun would be 3 hours from noon and therefore 45 degrees (3 × 15) from its highest point. Measure the resulting angle along the sun's path, projecting where the sun will be at noon (or where it was, if the hour is past noon). This navigation technique also uses azimuth.

The appropriate phrase sequence is **STATUS** (note the time)/**LOOK SUN.** Now project the position of the sun at noon (either left or right of your present position). **PAN** (**LEFT** or **RIGHT**) until you are facing in the projected position. If you are at a latitude above 23.4 degrees north, you are facing south (an azimuth of 180 degrees). If you are at a latitude below 23.4 degrees south, you are facing north (an azimuth of 0 degrees). For tropical latitudes, consult the chart on page 26.

You can use your watch as a navigation instrument in another way. This method is not reliable during the hours near sunrise or sunset, so use it only between 9 AM and 3 PM. Hold the watch level to the ground and align the hour hand with the sun. If you are at a latitude above 23.4 degrees north, the direction midway between the hour hand and 12 is approximately south (or an azimuth of 180 degrees). If you are at a latitude below 23.4 degrees south, align the 12 with the sun. The direction midway between the hour hand and 12 is approximately north (or an azimuth of 0 degree). The appropriate phrase sequence is **USE WATCH/LOOK AZIMUTH** (or **AZ**) or **LOOK** (compass point)/**[N]** (answer no)/(type in degrees). For tropical latitudes, consult the chart on page 26.

SUN: You can use the sun's direction at sunrise or sunset to establish your position if you know your approximate latitude (displayed on the topo map) and the date (use the table on page 26). This method requires no time calculations and is quite accurate. For example, if you are at a 40-degree North latitude and the month is October, the sun's azimuth at sunrise varies from 94 degrees (at the beginning of the month) to 106 degrees (at the end of the month). These values are correct for a 40-degree south latitude as well, though the time of sunrise will be different.

ALTIMETER: To use the altimeter, you must have it among your supplies. The altimeter measures altitude above sea level and is accurate to within 200 feet. You cannot calibrate this altimeter (as would be necessary in an actual wilderness journey). By itself, an altimeter is not a particularly effective navigation instrument. It can indicate that you are somewhere along one of the constant-altitude contour lines on the topo map, but these lines can run for many miles. Therefore, you must use the altitude reading in conjunction with other directional or visual clues to locate your present position. To employ this navigation technique, type **STATUS** to get the **STATUS** screen and find your altitude. Correlate your position with the contour lines on the topo map.

Navigating by the Stars

Direction From Polaris. In the Northern Hemisphere, one star, Polaris (the Pole Star), is never more than approximately 1 degree from the Celestial North Pole. In other words, the line from any observer in the Northern Hemisphere to the Pole Star is never more than 1 degree away from the true north. Find the Pole Star by locating the Big Dipper or Cassiopeia (Little Dipper), two groups of stars that are close to the Celestial North Pole. The two stars on the outer edge of the Big Dipper bowl are called pointers, since they point almost directly to Polaris, the bright star at the handle tip of the Little Dipper. Polaris is five times the distance between these pointer stars, measured on a straight line connecting the pointers and extended toward the Little Dipper. If the pointers are obscured by clouds, Polaris also can be identified by its relationship to the constellation Cassiopeia. Figure 11 indicates the relation between the Big Dipper, Polaris, and Cassiopeia.

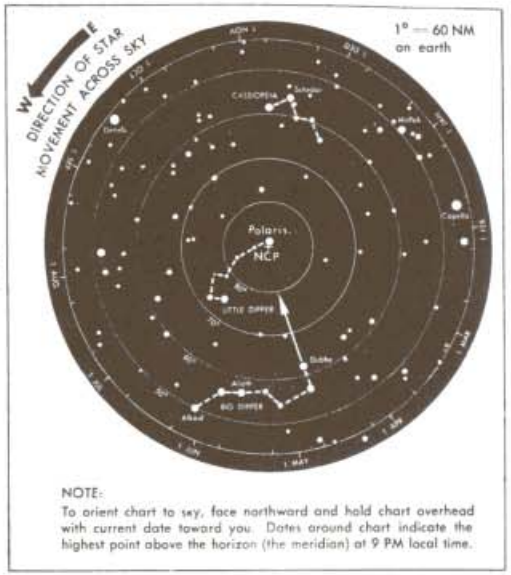
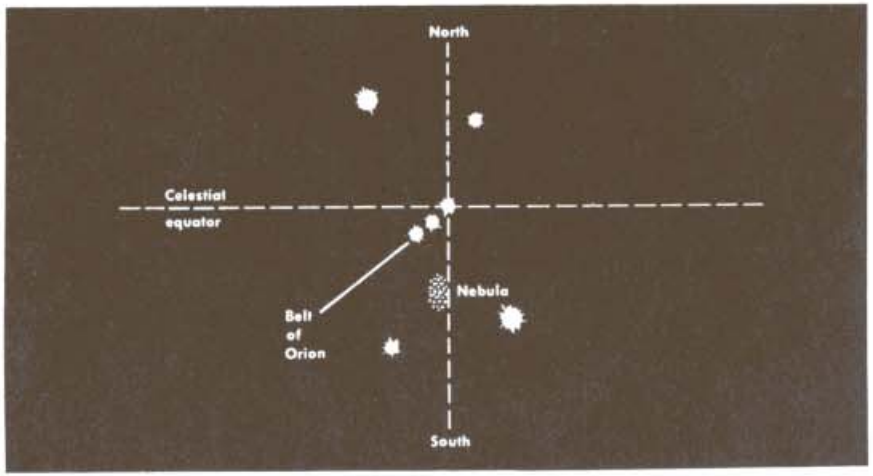


Figure 11: Relationship of Polaris to the Big Dipper and Cassiopeia

Figure 12: Seven Stars in Orion



Direction From Orion. The constellation of Orion consists of seven stars. The three close together are called the Belt of Orion. The star through which the north-south line on the diagram in figure 12 passes is exactly on the Celestial Equator. No matter where on earth you are, this star rises due east of you and sets due west.

Direction from the Southern Cross. In the Southern Hemisphere, Polaris is not visible. There the Southern Cross is the most distinctive constellation. An imaginary line through the long axis of the Southern Cross, or True Cross, points toward the South Pole. The True Cross should not be confused with a larger

cross nearby known as the False Cross, which is less bright and more widely spaced. Two of the stars in the True Cross are among the brightest stars in the heavens; they are the stars on the southern and eastern arms. The stars on the northern and western arms are not as conspicuous, but they are bright.

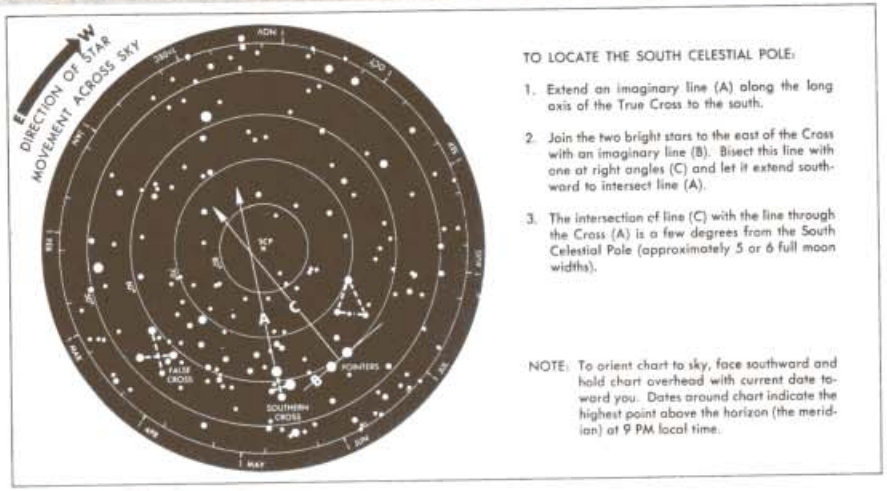


Figure 13: Southern Cross

There is no conspicuous star above the South Pole to correspond to Polaris above the North Pole. In fact, the point where such a star would be, if one existed, lies in a region devoid of stars. This point is so dark in comparison with the rest of the sky that it is known as the Coal Sack.

Figure 13 shows the True Cross and, to the west of it, the False Cross. For realism, hold the page above your head and note two very bright stars just to the east of the True Cross. With them and the True Cross as guides, you can locate, within the Coal Sack, the spot that is above the South Pole.

First, extend an imaginary line along the long axis of the True Cross to the south. Join the two bright stars to the east of the Cross with an imaginary line. Bisect this line with a line at right angles. The intersection of this line with the line through the Cross is near the point above the South Pole.

Armed with this information on finding direction, you are ready to begin your travels. Before heading off into the wilds, check your campsite. Make sure that you have packed all your supplies. Don't forget to **CARRY BACKPACK,** or the backpack and everything in it will be left behind. Remember that you travel in the direction in which you are facing and that your rate of travel is affected by many things, including the weight you are carrying, the slope of the ground, your health and energy, and terrain.

This last factor influences the equipment you need and the vocabulary you use when traversing the *Wilderness* environment. You must contend with five varieties of terrain; each can be identified from information on the **VIEW** screen, the topo map, and the **STATUS** screen.

Moderate Terrain: Fairly level ground requiring no special equipment for average progress. The following vocabulary words are appropriate to use in these conditions. (Indicate your travel time in hours or parts of an hour when the prompt appears at the bottom of the screen.)

WALK: travel at about 2 to 3 mph. **WALK** also can be used on frozen lakes.

RUN: travel at about 6 to 10 mph. Speed depends on your physical condition, the weight you are carrying, the slope and type of terrain, and weather conditions.

CRAWL: travel at less than 1 mph. If you have a broken leg and no splint, crawl is the only way you can move.

WAIT: causes (the indicated) time to pass. The movement of the sun, changing weather conditions, hunger, thirst, and all other things affected by time take place. **WAIT**ing is useful in situations such as estimating time from the passage of the sun, sitting out severe storms, and avoiding encounters with dangerous wildlife.

Snow: During heavy snowstorms or in high-altitude alpine locations, making progress over soft, deep snow can be difficult. Snowshoes can improve your rate of travel. To make use of this special equipment, type **USE SNOWSHOES/WALK.**

Rocky or Icy Slopes: To speed your progress up or down dangerous mountain faces and to lessen the dangers of hazardous conditions, **CLIMB** with the aid of several kinds of climbing gear. Using a **FLASHLIGHT** at night lets you travel more quickly.

AXE: standard ice axe used for winter mountain climbing. Use the phrase sequence **USE AXE/CLIMB.**

CRAMPONS: metal claws that attach to boots or shoes for more secure footing in packed snow or ice. Use the phrase sequence **USE CRAMPONS/CLIMB.**

ROPE: a 50-foot length of nylon climbing rope. If a rope was not available in the original inventory list, or if you neglected to pack one, you can make a rope out of available materials with the phrase **MAKE ROPE.** Once you have the rope, you can use it by typing **USE ROPE/CLIMB.**

PITONS (and carabiners): metal spikes with eyes through which oblong rings (carabiners) are fitted to carry a rope. You must have a **ROPE** in order to use these climbing aids. Use the phrase sequence **USE PITONS/USE ROPE/CLIMB.**

Shorelines: Unlike other *Wilderness* terrains, shore travel follows the course of the lake or river, not a straight line. If you find yourself at the edge of a body of water (you can hear running water if you are within 0.6 mile of a river), orient your field of view so that you are **LOOK**ing along the banks, parallel to the water course. You can use any of the vocabulary words appropriate for travel over moderate terrain.

Lakes and Rivers: If you want to cross a lake or river, you can **SWIM** or **ROW** across in a **RAFT** instead of traveling along its banks. You can have brought the raft with you, or you can build it from raw materials. Since you always move in the direction in which you are facing, orient your field of view so that you are **LOOK**ing across the river to its opposite bank. To accomplish the crossing you can:

SWIM: travel through water at about 1 mph. You can swim downriver at the speed of the current by replying **YES** ([**Y**]) to the appropriate prompt.

ROW: travel over water at about 1 to 1.5 mph. Before you can row, you need a **RAFT**. If you have a commercial one, an inflatable rubber raft that can support 350 lbs, type **USE RAFT/ROW.** If you didn't take a raft with you build one from heavy logs and rope by typing **(USE AXE)/MAKE RAFT.** If you don't have an axe, you might take up to 8 hours to build a raft. Now you can type **USE RAFT/ROW.** Your makeshift raft is too heavy to carry; you cannot take it with you on your journey.

Constructing a means of traveling across water may seem like unnecessary work, but it does afford some protection from dangerous water creatures (crocodiles and poisonous snakes) and treacherous conditions. Some locations are unnavigable and should be avoided when looking for a place to ford a river. Drowning is a real danger.

Following every travel command, you are asked to indicate the number of hours to be traveled. Travel time can be expressed in tenths or hundredths of an hour (eg, 2, 1.4, 5.25). Your journey continues for the amount of time you indicate unless something occurs to stop you. You can be interrupted by several different categories of events in *Wilderness*. They include:

Fire: You cannot leave your campsite until you have extinguished your campfire. Type **DOUSE FIRE.**

Wild Food Sources: During your journey, you are notified of the presence of possible sources of nourishment. These can be **NUTS, LEAFY PLANTS, CACTI, SMALL GAME, FISH, INSECTS, MUSHROOMS,** or **FRUIT.** All are useful in supplementing the food you packed from the inventory list. You should be cautious when considering any of these foods. Check for signs of possible toxins and spoilage by **TASTE**ing.

If you do not want to be stopped for investigating these sources of nutrition, type **IGNORE FOOD** before you set out. To again be alterted to the presence of food sources, type **FIND FOOD.**

Changes in Weather Conditions: Your journey is stopped at the onset of rain, snowstorms, or fog. Use the information to consider the situation and take the appropriate action. You might want to take shelter from a heavy downpour, or break out the snowshoes during a snowstorm. If weather conditions make travel hazardous, your best bet may be to **WAIT** it out in a nearby shelter. By typing **NATURE,** you can change the frequency of storms during a journey.

Changes in Terrain: You are notified whenever you move into new terrain. Each kind of landscape holds advantages and disadvantages for the solo traveler. You should be prepared for:

WOODS or **JUNGLE:** these appear as shaded areas on the topo map with scale magnification. Though surrounding trees limit your viewing distance, woods and jungles are excellent places for finding small game, wild plants, and insects for food; water for washing, cooking, and drinking;

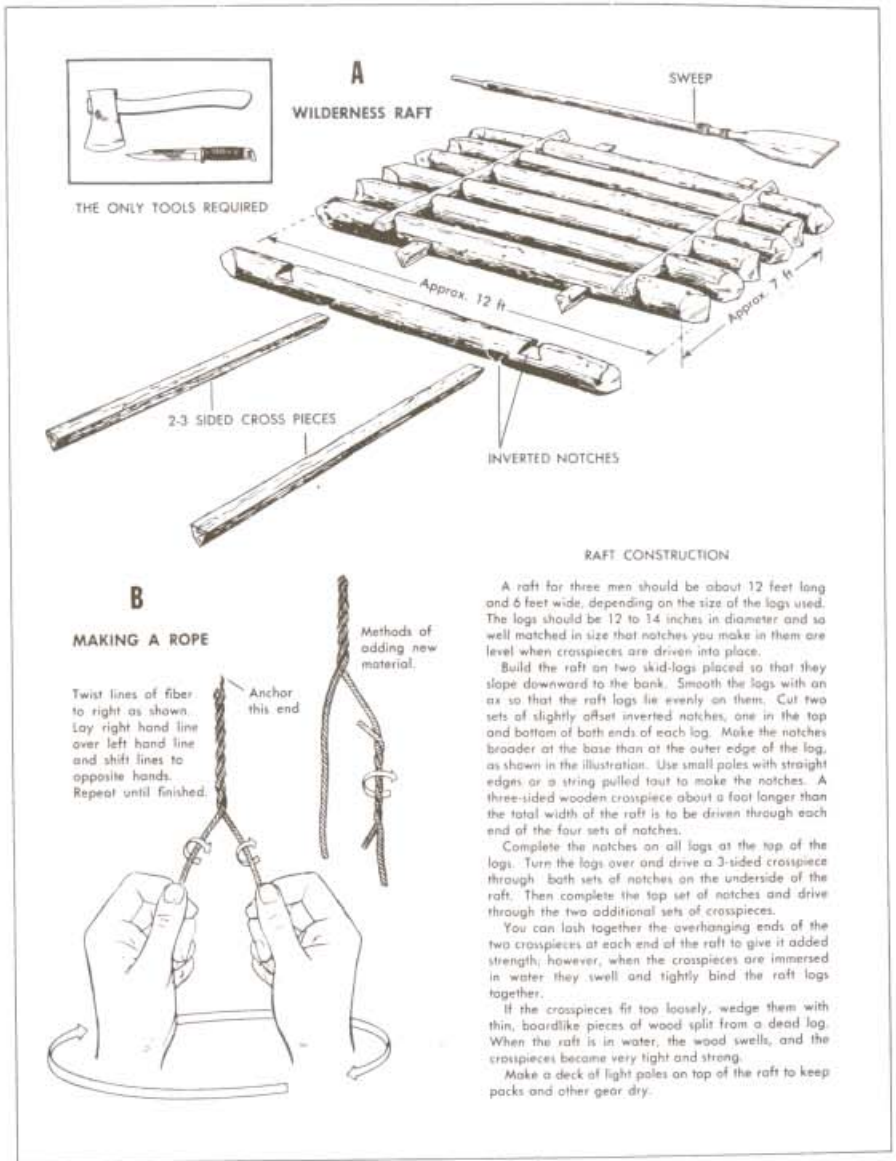
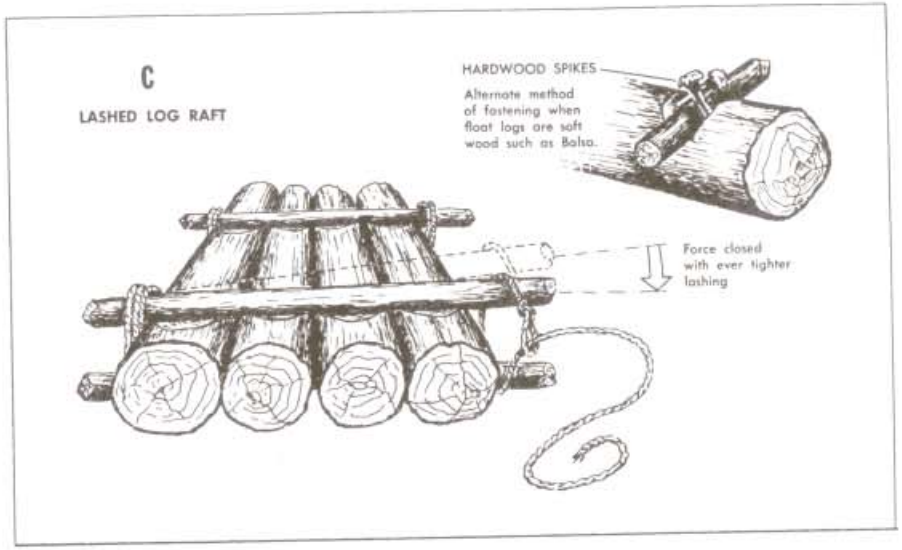


Figure 14 and 15 (next page): Constructing a Raft

wood for making fires; natural shelters; and raw materials for improvising needed implements. Unfortunately, they are also hospitable locations for potentially dangerous wildlife, and breeding grounds for disease-carrying insects.



RIVERS and **LAKES:** these require some ingenuity if you are to travel by water or are to cross with your supplies and your life. Some shore locations are unnavigable; attempting a crossing could result in being drowned. Bodies of water contain dangerous wildlife (crocodiles, water pythons, and anacondas). Notwithstanding the dangers, water courses are a swift means of travel if you make use of the current, and they obviously provide water for washing, cooking, and drinking. Fish, a superior protein-rich food, abound; and small game and vegetation often provide food sources.

SCRUB: these are areas covered with low-growing trees or shrubs, typical of temperate regions at altitudes above 11,000 ft and of tropical regions at altitudes above 5,000 ft. This inhospitable terrain may be the home of potentially dangerous animals including grizzly bears, cougars, timber wolves, and pumas. However, the high elevation affords a good vantage point from which to view the surrounding area for long distances.

ROCKY: this is difficult, hazardous mountain terrain. Unless you are an expert mountaineer, it's best to avoid travel on this type of ground.

Changes in Health: As you travel through *Wilderness*, you may be notified of some alteration or deterioration in your physical condition. Your journey is not automatically stopped, but you can press [ESC] to stop traveling in order to diagnose the problem. Use this information to take the appropriate actions, which could include putting on or taking off clothes, attending to the symptoms of an injury or illness, taking medication for a disease, resting to regain energy, or eating or drinking to regain lost nutrients and fluid.

Discarded Items: During your journey, you may leave some of your supplies at a campsite, discard some equipment or clothing, or forget to pack a tool or weapon. These objects remain where you leave them. If you return to a pre-

vious location (whether intentionally or accidentally), you are notified that **THERE IS A PREVIOUSLY DROPPED ITEM HERE.** Use your **INVENTORY** screen to identify the object you have stumbled on.

Wildlife Encounters: Depending on the geographic area in which you are traveling, you might come across several different species of wildlife. These can be dangerous if you do not use the proper tactics in dealing with them. Some animals can be seen only when you are looking down. When you encounter one of these, your view automatically shifts to 45 degrees below horizontal. Wildlife habitats, feeding patterns, size and weight statistics, and other helpful information appear in detail in Chapter 7, and in Appendix B: Vocabulary. By typing **NATURE,** you can change the frequency of encounters with wildlife during a journey.

Available Shelters: Five varieties of ready-made shelters are available in *Wilderness.* You are alerted to their presence when you are within 0.2 mile of their location. These shelters include the plane wreckage, the Lost City, the ranger outpost, and two natural shelters. For a description and building instructions regarding manmade shelters, see Chapter 4.

Artifacts (Archeological Expedition): As you search for the Lost City of Gold, you may stumble upon the artifacts of an ancient civilization. These archeological finds include a skeleton, a few shards of pottery, and a burial ground.

Nearing a Structure: You are alerted when you are within 0.6 mile of the ranger outpost, the Lost City, or the airplane. When notified that one of these structures is in your vicinity, **PAN** until the structure is in the center of your field of view before heading towards it.

Reaching Your Destination: When you reach your destination (having traveled from the crash site to the ranger outpost, or have returned to the outpost with the statue found in the Lost City of Gold), you receive a final performance evaluation.

Your final score of _____ points makes you a _____.

The evaluation is made up of a point score and a rating. Scores range from zero to a perfect 1,000; ratings include MERE TENDERFOOT, WEEKEND HIKER, GOOD SCOUT, SUPERB RANGER, and EXPERT EXPLORER. You do not receive an evaluation in Research Mode.

Edge of Map: Though a real wilderness area has only civilization as its boundaries, the area in which you can travel in *Wilderness* is restricted to a 90×67 mile rectangle. You are notified when you have come to one of the area edges.

Time Restrictions: *Wilderness* travel is in 0.4-mile increments. If you cannot travel 0.2 mile (halfway through the next segment) in the travel time you specified, your travel time is cut short. For example, if your original travel time was 1 hour and you have been traveling for 55 minutes, you are stopped if another 0.2 mile cannot be traveled in the next 5 minutes.

4

SETTING UP CAMP

To avoid exhaustion and maintain maximum fitness, you should make camp at appropriate intervals in your journey. The kind of shelter you make depends on whether you need protection from rain, cold, heat, sun, or insects; whether you plan on staying in one location for a single day or for an extended period; and whether manmade or natural materials are available in your area. Practical shelters for all conditions are shown in figures 16 and 17.

Select your campsite location carefully. Avoid the base of steep slopes or areas in which you run the risk of avalanches, floods, rockfalls, or punishing winds. In mountain areas during the summer, you'll need protection from rain and insects. Choose a site near water and timber but on high, dry ground. A good location is a ridge top or lake shore.

If you find yourself in the tropics, select a knoll or high ground away from swamps for your campsite. You'll be bothered less by mosquitoes, the ground will be drier, and there will be more chance of a breeze.

Once you've chosen a location for your camp, you must make a shelter for protection against the elements. Don't forget to **DROP BACKPACK** before you begin working. The weight of the backpack and its contents will make activities more difficult. Six kinds of shelters can be constructed or that occur naturally, supplied in the inventory list, five that can be constructed or that occur naturally, and three that serve other purposes in the adventure. They are:

Tent: A commercial waterproof nylon tent protects against rain, snow, high winds, and cold. To use the tent, simply type **MAKE CAMP.** This phrase sets up your tent, arranges your supplies (this takes 30 minutes of the indicated time) and lets you sleep for the rest of the time period indicated. For example, if you typed **MAKE CAMP** and then indicated 3 as the number of hours, you would benefit from 2½ hours of rest. If you don't have a tent, **MAKE CAMP** puts you in any empty shelter within 0.2 of a mile from your location.

Trench: This is the simplest of outdoor shelters, warm and relatively waterproof. Construction requires that you dig a "trench grave" and then cover it with branches or waterproof gear such as the ground **COVER** or **RAINCOAT** (both available in the starting inventory). You can make a trench in less time if you use an axe in daylight or a flashlight at night. Use the phrase sequence (**USE AXE**)/(**USE FLASHLIGHT**)/**MAKE TRENCH**/**DROP RAINCOAT** (or **COVER** or **PAD**)/**ENTER** (or **USE**) **TRENCH.**

Hut: This crude wooden shelter provides protection from wet and cold weather. For construction of a hut, trees, branches, and grasses must be avail-

able in the immediate area. You can make a hut more quickly if you use an axe during daylight or a flashlight at night. Use the phrase sequence (**USE AXE**)/(**USE FLASHLIGHT**)/**MAKE HUT**/**ENTER** (or **USE**) **HUT.**

Igloo: This shelter takes time to construct, although use of an axe during daylight or a flashlight at night hastens the task. The igloo provides excellent protection from cold, wind, and snow and is probably the best shelter in alpine or arctic conditions. The temperature inside an igloo can be several degrees above freezing, regardless of the outside temperature. To construct an igloo, use the phrase sequence (**USE AXE**)/(**USE FLASHLIGHT**)/**MAKE IGLOO**/**ENTER** (or **USE**)**IGLOO.**

Rock Shelter: This is a natural shelter found in rocky terrain, affording protection from the elements. You are alerted to the presence of a rock shelter when you are within 0.2 of a mile from one. To make use of this shelter, type **ENTER** (or **USE**) **SHELTER.**

Wood Shelter: This is a natural shelter found in forests or jungles providing some protection from weather and sun. You are notified that you are near a wood shelter when you are within 0.2 of a mile from one. To make use of this shelter, type **ENTER** (or **USE**) **SHELTER.**

Airplane: the wreckage at the crash site can be used as shelter. Make your fire outside and at a safe distance from the airplane to prevent carbon monoxide poisoning. To use the plane as shelter, type **ENTER** (or **USE**) **AIRPLANE.**

Ranger Outpost: If you are within 0.2 mile from the outpost, you can use the structure as shelter from the elements. Type **ENTER** (or **USE**) **OUTPOST.**

City: If circumstances require that you seek shelter when you are near (within 0.2 mile) the Lost City of Gold, you can use it by typing **ENTER** (or **USE**) **CITY.**

A tepee made from your parachute is a fine shelter for drizzly weather and protection against insects. In it, you can cook, eat, sleep, dress, and make signals—all without going outdoors. Use six panels of parachute for a two-man shelter; twelve to fourteen panels for a three-man shelter. The method of construction is shown in figure 16. This shelter is worth building if you decide to stay in one place for some time.

In timbered country, a lean-to is a good winter shelter. A three-man type is shown in figure 16. Lay the covering boughs shingle fashion, starting from the bottom. If you have a canvas, use it for the roof. Close the ends with fabric or boughs. Note the arrangement of the fire.

Keep the front openings of all shelters crosswind. A windbreak of snow or ice blocks set close to the shelter is helpful. In making shelters, remember that snow is a good insulator. In timberless country, make a simple snow cave or burrow by digging into the side of a snowdrift and lining the hole with grass, brush, or a tarpaulin. Snow caves must be ventilated. If the snow isn't deep enough to support a roof, dig a trench in a drift and roof it with snow blocks, a tarpaulin, or other materials.

Don't build a shelter under large trees or under trees with dead limbs. They can fall and wreck your camp or hurt you. Don't sleep or build a shelter under a coconut tree.

You can make a good rain shelter by covering an A-framework with a good thickness of palm or other broad leaves, pieces of bark, or mats of grass. Lay

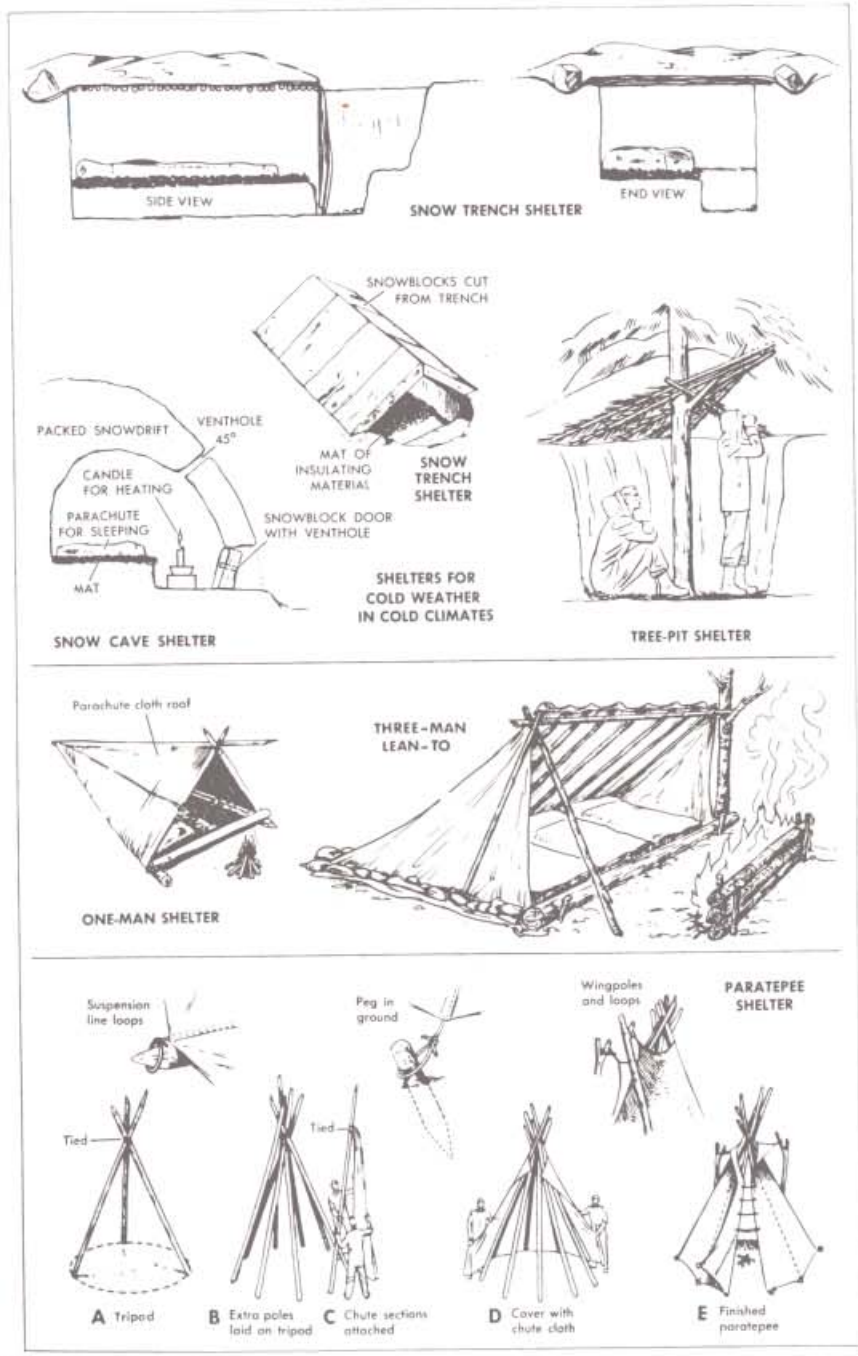


Figure 16: Arctic Shelters

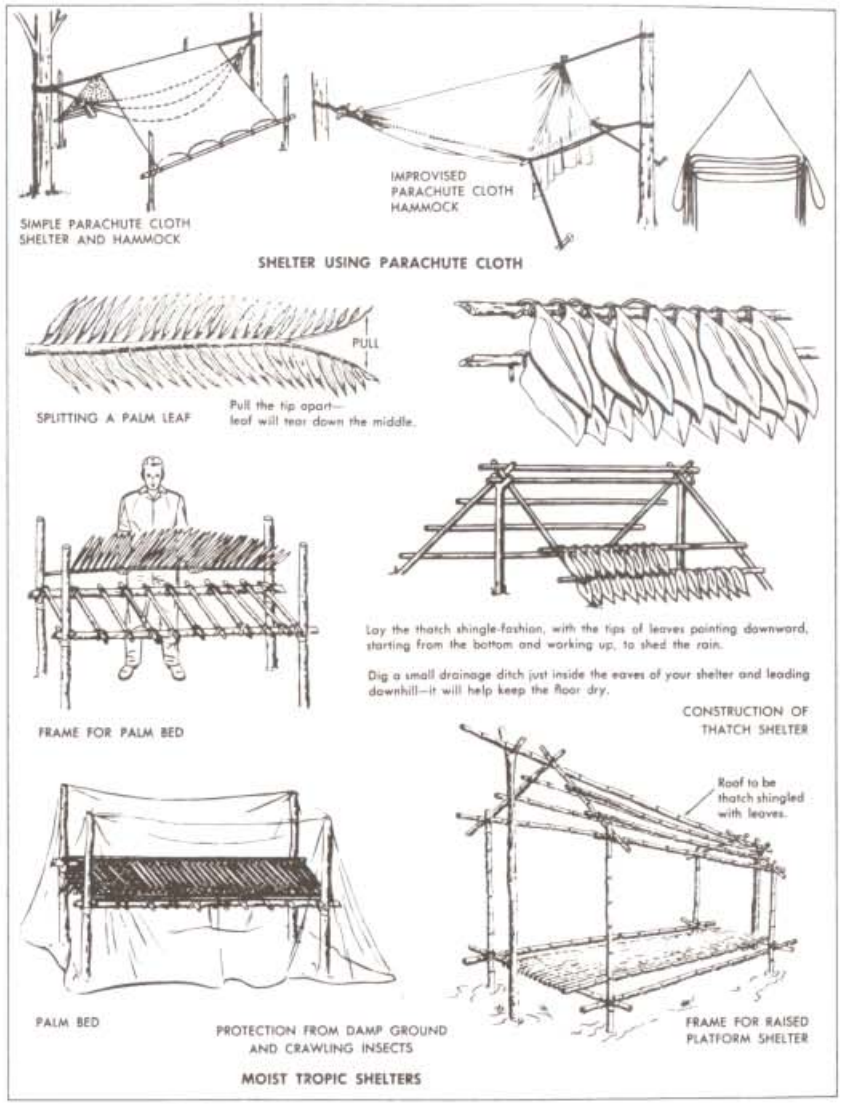


Figure 17: Tropic Shelters

the thatch shingle-fashion, with the tips of the leaves pointing downward, starting from the bottom and working up, so it will shed rain.

Once you have found or constructed a shelter, you can set up your campsite for warmth, cooking, and sleeping. If you have a sleeping **BAG** with you, unroll it by typing **DROP BAG.** Avoid sleeping directly on the bare ground, especially in wet or snow-covered areas. To provide some insulation, place your plastic

ground **COVER**, the **RAINCOAT**, or ensol **PAD** between the ground and your sleeping **BAG** by using the phrase sequence **DROP COVER** (or **RAINCOAT** or **PAD**) / **DROP BAG.** When you're ready for sleep, type **ENTER** (or **USE**) **BAG.**

Keep your sleeping bag clean, dry, and fluffed up to give maximum warmth. To dry the bag, turn it inside out, beat out frost, and warm it in front of the fire. Be careful not to burn it. Wear only dry clothes to bed. Keep them loose. Turn over, rather than in, the sleeping bag.

The human body requires 6 to 8 hours of sleep in a 24-hour period to maintain fitness and an acceptable energy level. You should check the **STATUS** screen at regular intervals to keep track of your physical condition. Guard against exhaustion by **SLEEP**ing or **REST**ing when you need it.

Your equipment and supplies can be your lifeline in many situations. Take care of them. If you are in a wooded area, it's a good idea to **HANG FOOD** to keep it out of the reach of small game and wildlife.

Figure 18: Using an Axe

Your cutting tools are important aids to survival in any environment. For best results, use them and care for them properly. When you use an axe, don't try to cut through a tree with one blow. Rhythm and aim are more important than force. Too much power behind a swing interferes with your aim. When the axe is swung properly, its weight will provide all the power you need. Before chopping, clear away all obstructions. A branch, vine, or bush can deflect an axe onto your foot or leg. Remember—an axe can be a wicked weapon. Figure 18 shows you how to use it safely.

A typical phrase sequence that encompasses all the activities that are part of setting up a campsite is:

DROP BACKPACK
HANG FOOD
USE FLASHLIGHT
USE AXE
MAKE HUT (or other shelter)
ENTER HUT (or other shelter)
DROP PAD (or **RAINCOAT** or **COVER**)
DROP BAG
ENTER BAG
SLEEP

Once you have made yourself at home inside a shelter of any sort, you cannot **LOOK** or **PAN.** Don't forget to **LEAVE** sleeping **BAG,** then your shelter, before trying to break camp.

When you're alone in the wilderness, you can forget about basic daily personal maintenance. Be sure to establish a routine that will help prevent infection and physical deterioration, and protect you from all forms of exposure to the weather.

General Survival Tips

Keeping well is especially important when you are stranded on your own. Your physical condition will have a lot to do with your coming out safely. Protecting yourself against heat and cold, and knowing how to find water and food are important to your health. But you should follow some basic rules:

1. Drink enough water to avoid dehydration. If water is scarce or hard to get, avoid excessive dehydration from sweating.
2. Save your strength. Avoid fatigue. Get enough sleep.
3. Take care of your feet. Your feet are important, especially if you are going to walk to safety. Examine your feet when you first stop to see if there are any red spots or blisters. Apply adhesive tape smoothly on your skin where shoes rub.
4. Guard against skin infection. Your skin is the first line of defense against infection. Use an antiseptic on even the smallest scratch, cut, or insect bite; these are apt to get seriously infected, especially in the tropics.
5. Guard against intestinal sickness, which can be caused by change of water and food, contaminated water or spoiled food, excess fatigue, overeating in hot weather, or using dirty dishes. Purify all water used for drinking, either by iodine tablets or by boiling. Cook the plants you eat, or wash them carefully with purified water. Make a habit of personal cleanness; wash your hands with soap and water, if possible, before eating.
6. In mountain areas, the chief danger is freezing. Snowblindness and carbon monoxide poisoning are secondary dangers. Keep your face, ears, nose, wrists, hands, and feet warm and dry. Good circulation is important; don't restrict it by tight clothing. Avoid sweating, it can lead to freezing. Keep out of the wind. Don't touch cold metal with your bare skin; you'll freeze to the metal and tear away the skin. Tape tool handles, gun triggers, and metal parts of eyeglasses.
   Wear clothing properly to keep warm and dry. Insulation combined with body heat is the secret of warmth. Insulation is largely determined by the combined thickness of all the garments worn. Your outer clothing should be windproof.
   When exerting yourself, reduce sweating by opening your clothes at the neck and wrists, and by loosening it at the waist. If you're still warm, slow down or take off a layer or two of outer clothing. When you stop work, put your clothes on again to prevent chilling.

Think twice before you discard any clothing. Clothing used properly can keep you cool as well as warm. It protects you against sunburn, insects, pests, and scratches. Try to keep your clothing clean and in repair. Clean clothes insulate better than dirty clothes and they last longer. Try to keep your clothing and shoes dry; use a drying rack in front of a fire. If trees are in your area, you can HANG your wet clothing up to dry. Don't put your wet shoes too close to the fire or they will stiffen and crack.

7. In the arctic, you can get badly sunburned, even on foggy or overcast days. Cover up in bright sunlight. Use sunscreen.
8. In the tropics, keep your body covered to prevent malaria-carrying mosquitoes and other pests from biting you; protect your skin against infections caused by scratches from thorns or sharp grasses; prevent sunburn in open country. Wear long pants, and shirts with sleeves rolled down. Bind pant legs snugly around boot tops, or tuck your pants in the tops of your socks and tie them securely.
   Wear a mosquito headnet or tie an undershirt or tee shirt around your head, especially at dawn and dusk. In open country or in high-grass country, wear a neckcloth or an improvised head covering for protection from sunburn and dust (figure 19). Move carefully through high grass; some sharp-edged grasses can cut your clothing to shreds.

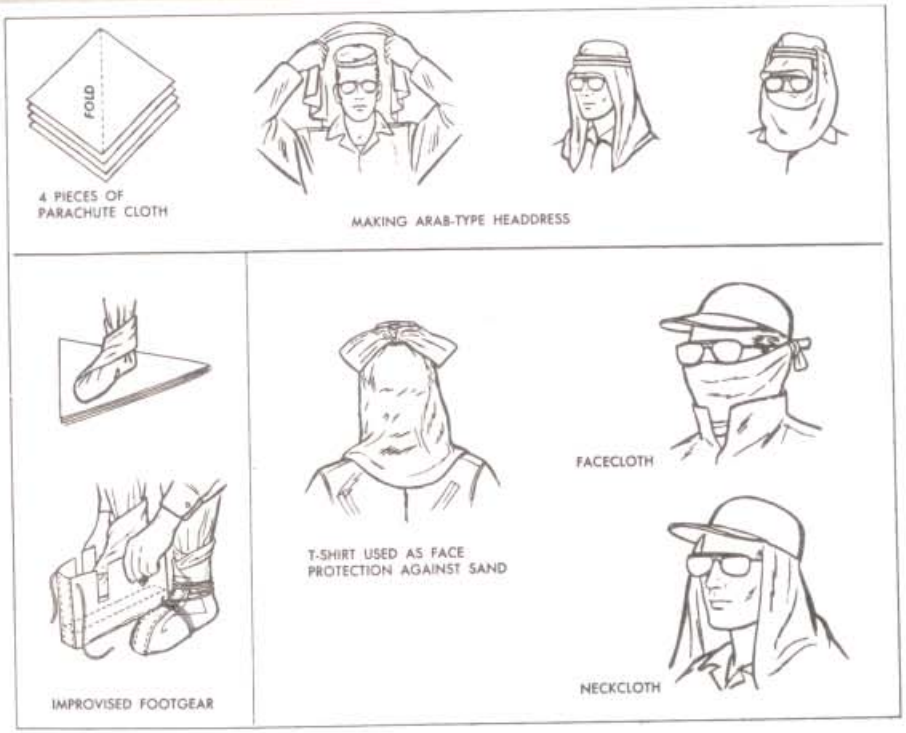


Figure 19: Making an Arab-style Headdress

Building a Fire

Building a fire is a survival technique that must be practiced with care and attention to detail. You need a fire for warmth, for keeping dry, for cooking, and for purifying water and detoxifying potentially poisonous wild plants.

To build a fire in *Wilderness*, you can use either **MATCHES** or a camp **STOVE** and **FUEL.** Use the phrase sequence **USE MATCHES/MAKE FIRE** or **USE FUEL/USE MATCHES/USE STOVE.** In dry, fair weather, you usually need only one match to start a fire. In wet or windy weather, you might need more than one match. To conserve this precious commodity, you may want to **USE FUEL** before trying to **USE MATCHES** to ensure a flame.

If you neglected to pack matches from the original inventory, you can start a fire by **MAKE**ing fire **STICKS** and rubbing them together (friction) to create a spark. Since this is very difficult to master, you should practice doing it before you need it. Use the phrase sequence (**USE KNIFE**)/**MAKE STICKS**/**USE STICKS**/**MAKE FIRE.** You can also **USE** a magnifying **GLASS** to start a fire when the sky is clear and the sun is above a 30-degree angle of elevation. Use the phrase sequence **USE GLASS**/**MAKE FIRE.** Type **USE FIRE** to warm yourself. Once your fire is going, you can use it for warmth, for cooking, and for boiling water until you **DOUSE FIRE.** You don't have to type **USE FIRE** for each activity.

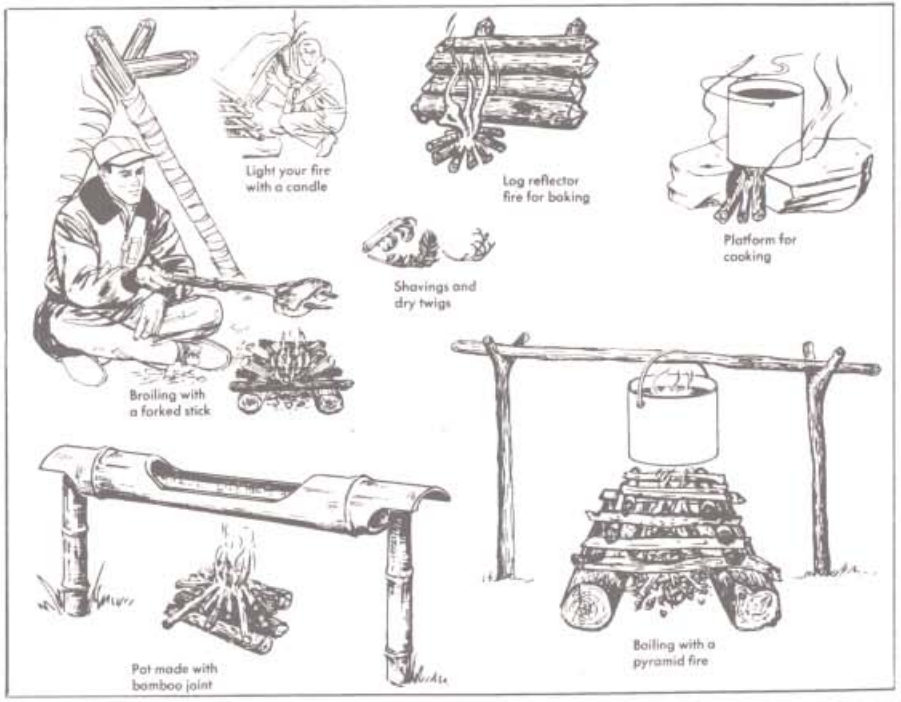


Figure 20: Types of Fires

Fire-Building Tips

1. Don't waste matches trying to start a poorly prepared fire. Don't use matches for lighting cigarettes; get a light from your fire or use a magnifying glass. Don't build unnecessary fires; save your fuel. Before all your matches are gone, practice primitive methods of making fires.
2. Carry dry tinder with you in a waterproof container. Expose it to the sun on dry days. Add a little powdered charcoal to improve it. Collect good tinder wherever you find it.
3. Collect kindling along the trail before you make camp. Keep firewood dry under a shelter. Dry damp wood near your fire so that you can use it later. Save some of your best kindling and fuel for quick fire-making in the morning.
4. To split logs, whittle hardwood wedges and drive them into cracks in the logs with a rock or club; split wood burns more easily.
5. To make a fire last overnight, place large logs over it so that the fire will burn into the heart of the logs. When a good bed of coals has been formed, cover it lightly with ashes and then dry earth. In the morning, the fire will still be smoldering.
6. Don't waste fire-making materials. Use only what is necessary to start a fire and keep it going for the purpose at hand. Put out the fire when you leave your campsite.
7. In mountain areas, don't build a fire under a snow-covered tree; snow can fall and put out the fire. Low, dead, needle-bearing branches of standing spruce trees are good fuel. On the tundra, wood is scarce; look for woody bushes or shrubs and burn the roots as well as the stems. Look for dry grasses or for dry twigs in willow thickets. On coastlines, look for driftwood.
8. To discourage mosquitoes, throw green leaves on a fire to make a smudge.
9. Keep spare wood dry by stowing it in your shelter. Dry out wet kindling and fuel near your fire for future use.

5

FOOD AND WATER

If you are stranded in a remote area, you must maintain health and stamina; it can make the difference between coping with arduous circumstances and succumbing to the perils of the wilds. Therefore, nutrition and the food sources that supply basic nutritional requirements are particularly important.

Wilderness assumes that peak performance requires at least 2,000 calories a day. If you consume much less than this amount, you eventually feel the effects of starvation. Though lack of food will not lead to death within a month, your physical condition will deteriorate and your stamina will diminish. Both result in slowed reflexes, weakness, and slower travel time.

Several food sources are available during your journey. They fall into three general categories: foods available from the original inventory list; wild plants; and game (including insects, fish, and wildlife). Below is a complete list of all possible commercial foods contained in the initial inventory. Each is listed with its maximum weight, maximum volume, calorie count, water content, and spoilage rate. To ensure a balanced diet, consult the Food Requirements information in this chapter, page 58.

FOOD	WT (OZ)	VOLUME (in 3)	CAL/OZ	WATER CONTENT	SPOILAGE AT 65°
APPLES	80	160	13	HIGH	7 DAYS
BACON*	16	16	125	NONE	NONE
BEANS	80	160	35	MED	36 HOURS
BOLOGNA	48	48	80	MED	24 HOURS
BREAD	32	96	70	LOW	3 DAYS
CANDY BARS	16	16	141	LOW	21 DAYS
CARROTS*	16	16	100	NONE	NONE
CHEESE	48	96	110	LOW	3 DAYS
EGGS*	16	16	168	NONE	NONE
NUTS**	48	48	160	NONE	NONE
PEAS*	32	32	93	NONE	NONE
POTATOES	80	160	100	LOW	10 DAYS
RAISINS	24	24	81	LOW	NONE
RICE	48	96	110	NONE	NONE
TUNA (canned)	16	32	47	HIGH	12 HOURS (exposed)

*freeze dried
**wild or commercial

If you have been in the wilderness for a long time or if you failed to pack an adequate supply of food, you can supplement your diet by living off the land.

It's a good idea to take advantage of wild food sources and conserve your supplies for emergencies.

Learn to overcome your prejudices; foods that may not look appetizing to you are often part of the natives' regular diet. Wild foods are most often high in vitamin and mineral content. Fleshy-leafed plants make good salad greens; fresh fruits provide fluid when water supplies are low.

You should be able to find something to eat wherever you are. One of the best hunting grounds for survival food is along the seacoast, between the high and low water marks. Other likely spots are the area between the beach and a coral reef; marshes, mud flats, or mangrove swamps where rivers flow into the ocean or into a larger river; river banks, meadows, and protected mountain slopes. The poorest of nature's pantries are high mountain tops and dry ridges.

Wild plant foods available in *Wilderness* include:

FOOD	CAL/ OZ	WATER CONTENT	SPOILAGE AT 65°	COMMENTS
CACTI	25	HIGH	4 days	Generally safe, but check for bitter taste
FRUIT	30	HIGH	3 days	Includes berries; could be toxic
MUSHROOMS	25	HIGH	2 days	Risky and difficult to distinguish toxic from non-toxic
NUTS	160	NONE	NONE	Generally safe, but check for bitter taste
PLANTS	10	HIGH	5 days	Beware of milky sap, silky windborne seeds, unpleasant taste

Whenever you are in the vicinity of wild plants or game, you are told that they are nearby (unless you have eliminated the notification by typing **IGNORE FOOD**). It's a good idea to **TASTE** local flora before consuming large quantities. A bitter taste, like that of bitter almonds, is a good indicator of toxicity. Mushrooms can be deadly. Therefore, unless no other food is available and the symptoms of starvation are extreme, you're better off avoiding them.

Some plant toxins (identified by a bitter taste) can be made harmless by cooking; others (which produce a sharp stinging sensation) cannot. You can accomplish detoxification by typing **COOK PLANTS**. Cooking is also useful in delaying spoilage of wild foods. See page 42 for instructions on fire building, and on food preparation.

Plant Foods

At least 300,000 different kinds of wild plants are available throughout the world. A large number of them are potentially edible, although some are more tasty and palatable than others. Under survival conditions, your diet will be changed or controlled by the kinds of wild plants and animals available for food. Since plants are more plentiful than animals, use them all you can.

You should have some practical knowledge of where wild plants, edible and poisonous, grow, and how you can use them. Very few are deadly when eaten in small quantities (see edibility rules below). Complete descriptions of all the wild food plants are beyond the scope of this manual; therefore, the information here is limited to a general discussion of classes of food plants, with illustrations of several representative types.

Edibility Rules

1. Never eat large quantities of a strange plant food without first testing it. A disagreeable taste in an item that is otherwise safe to eat, can sometimes be removed by pouring cold or hot water through the chopped, crushed, or ground material, or by cooking it.
2. In general, it is safe to try foods that you see being eaten by birds and mammals, but there are some exceptions. Foods eaten by rodents, monkeys, baboons, bears, raccoons, and various other omnivorous animals usually are safe.
3. Cook all plant foods when in doubt about their edibility. Some poisons can be removed by cooking. Most kinds of wild taro root, for instance, are poisonous when raw, but are perfectly safe after they are cooked.
4. Avoid eating untested plants with milky juice or letting the milk get on your skin. (Exceptions are the numerous kinds of wild figs, breadfruit, and papaya, which are safe despite the milky juice.) Avoid eating plants that taste disagreeable (bitterness is a guide).

Although some plants are completely edible, most have only certain edible parts. These include the root, the fruit, the leaves, or pods. Perhaps only the nuts will be edible.

In many plants, large quantities of edible starch are stored in underground parts. Tubers of the wild potato (mostly tropical American), with foliage similar to the cultivated varieties, are edible. Tubers of other plants, such as the tropical yam (figure 23) and water lily (figure 21), are abundant in the tropics.

Thousands of plants have rootstalks, but only two examples of widely distributed types are illustrated; the fern (figure 24) and the cattail (figure 22). Also, in the tropics, many of the most common vegetables, such as the taro, manioc, and canna, come from rootstalks.

Bulbs are produced most commonly by members of the lily family, such as the true lily, onion, tulip, and daffodil. Many kinds of bulbs are edible. Tubers, rootstalks, and bulbs are a fine source of food because, in most regions, they are usually available throughout the year. In cold climates, these underground storage organs can be found by digging where the dried plant stalks remain.

Fruits of the green banana (table), the plantain (cooking banana), and the breadfruit, all tropical, contain plenty of starch.

Poisonous fungi cannot be detected by unpleasant taste or disagreeable odor. Some mushrooms and other fungi are edible, but, since they contribute little food value and are easily confused with poisonous types, they should be disregarded as food sources.

Edible nuts (figure 25), are the most sustaining of all raw forest foods and are found throughout the world. Many American nut trees, such as oaks, hickories, hazelnuts, and beechnuts, are widely distributed throughout the North Temperate Zone. Others, such as the coconut and cashew, occur widely in the tropics.

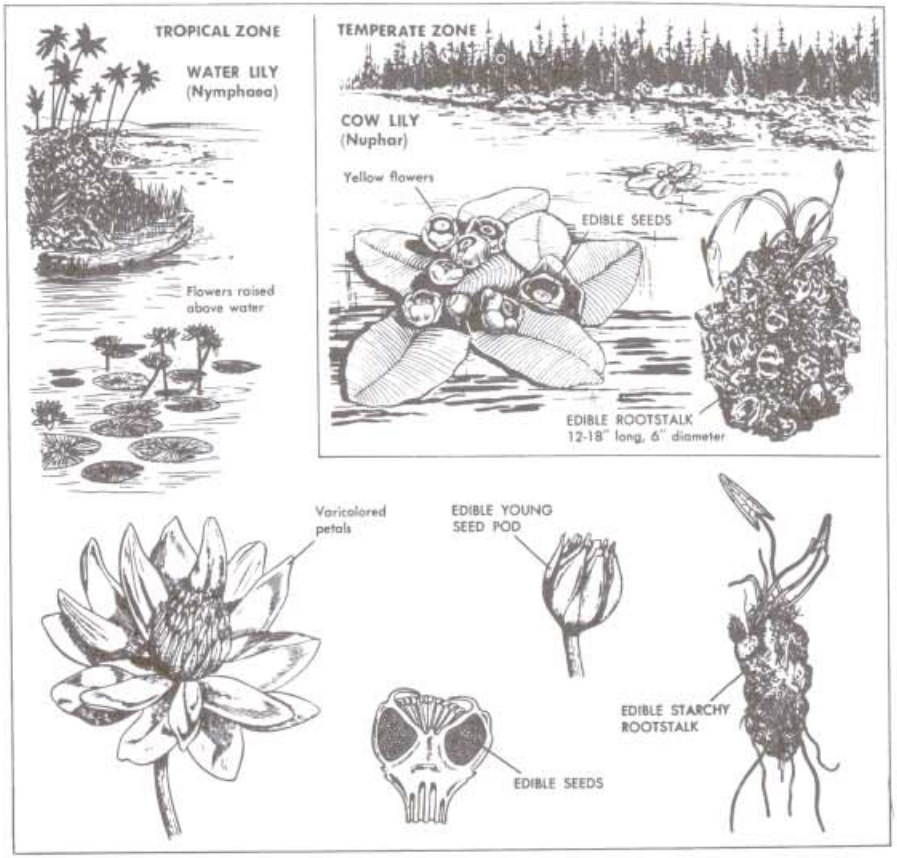
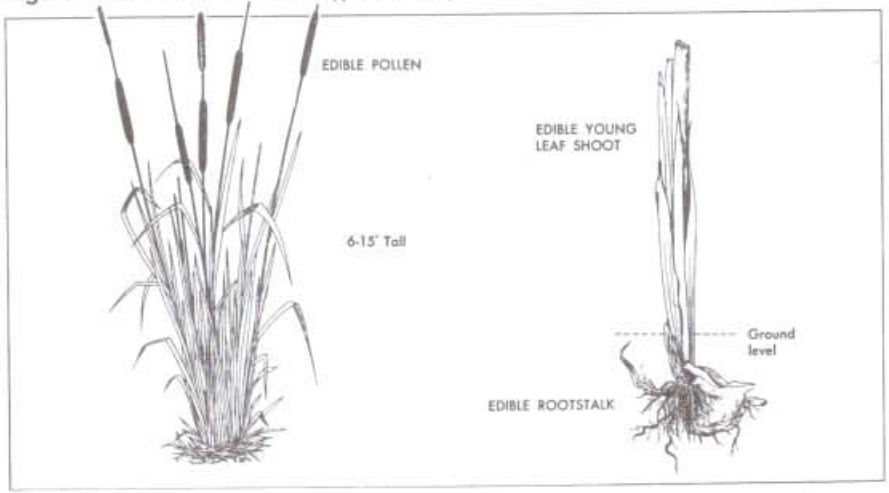


Figure 21 and 22: Water Lilies ↑, Cattails ↓



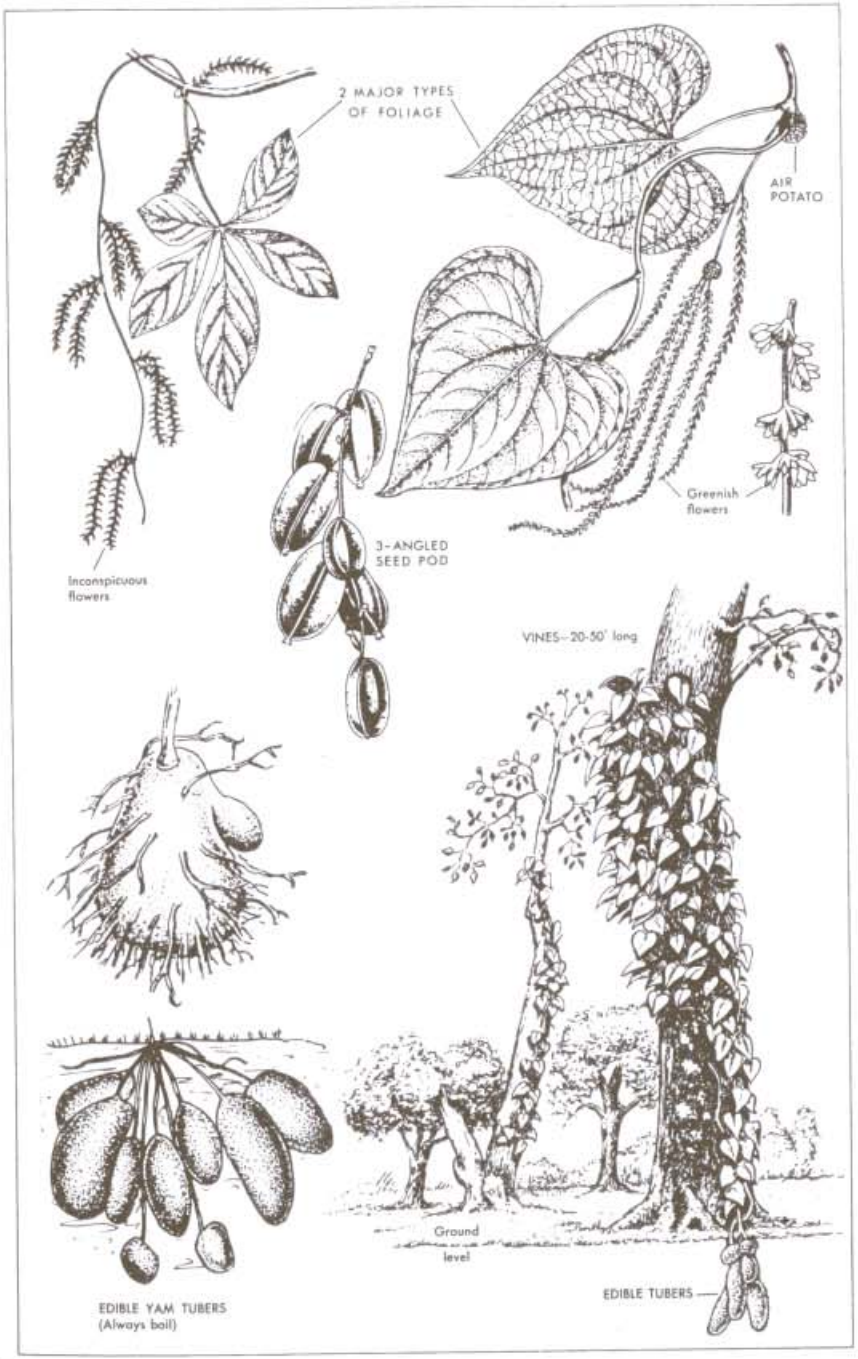


Figure 23: Yams

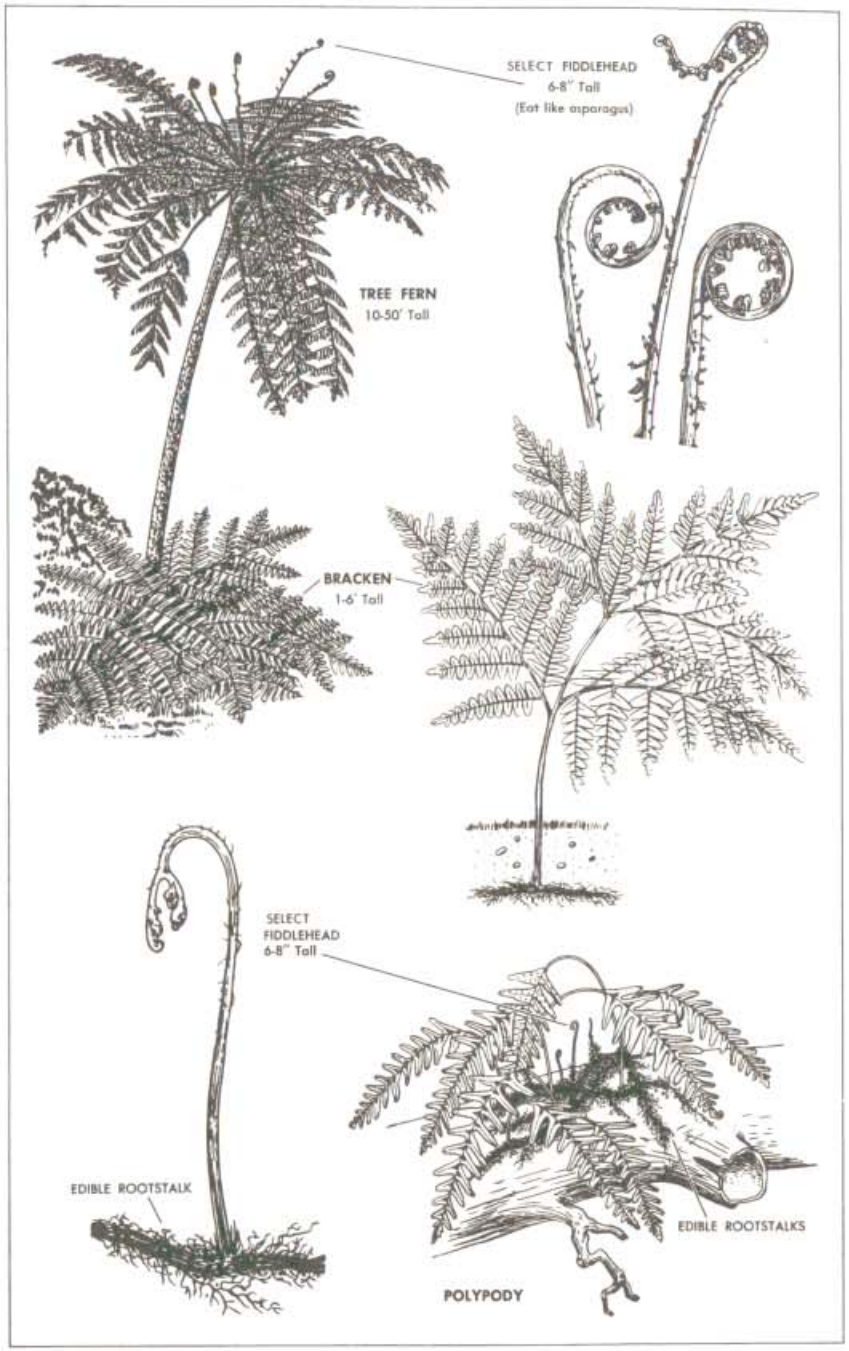


Figure 24: Edible Ferns

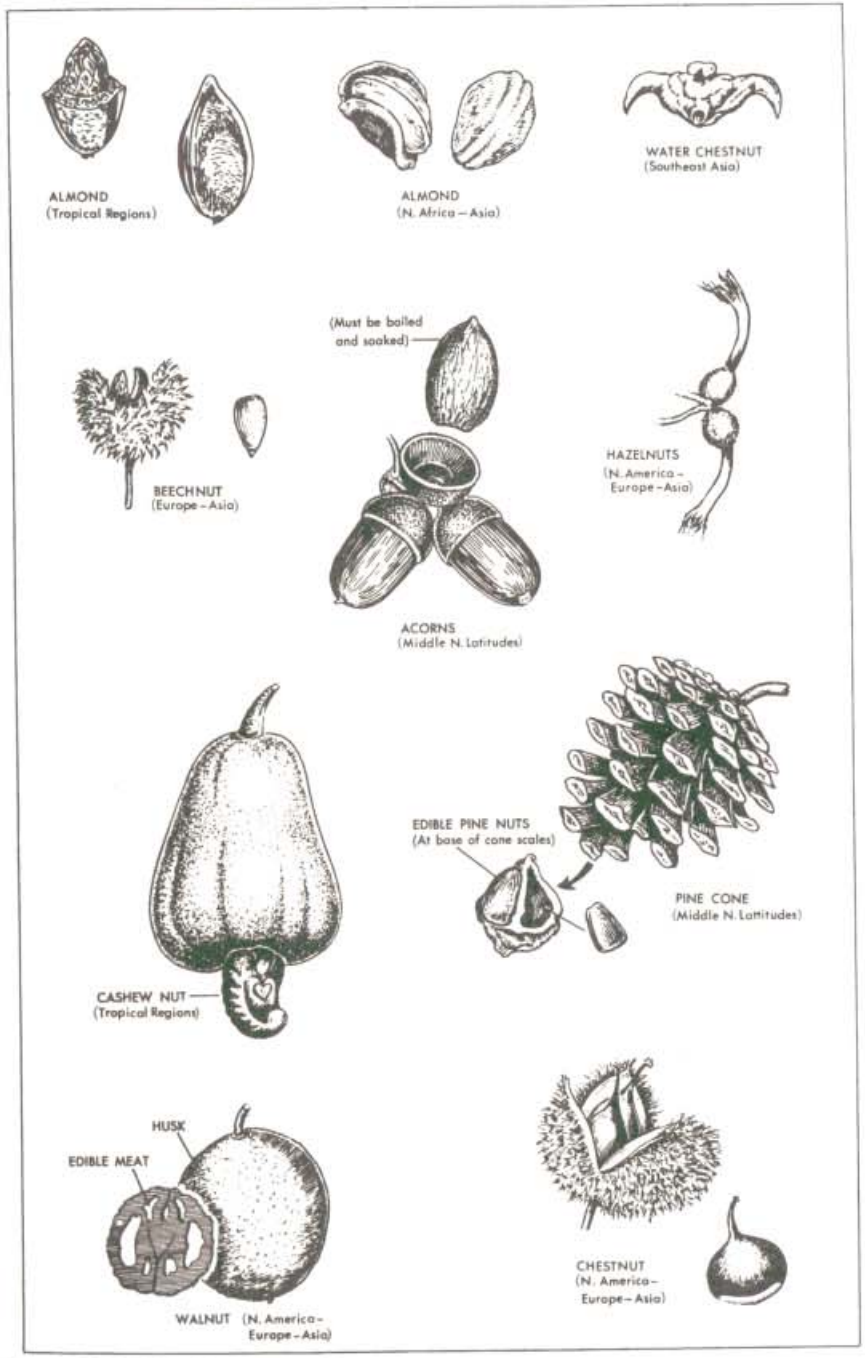


Figure 25: Edible Nuts

Animal Foods

Wilderness also contains protein sources in the form of animal life. You'll be made aware of their presence as you travel. If you don't want to be notified of either plant or animal life for food, simply type **IGNORE FOOD**. To reactivate the notification, type **FIND FOOD**. The kinds of edible animal life in your area can include:

FOOD	CAL/ OZ	WATER CONTENT	SPOILAGE AT 65° F	COMMENTS
FISH	40	HIGH	6 hours	Beware of odd-looking fish with sunken eyes, no scales, and easily dented flesh.
GAME	75	MED	18 hours	
INSECTS	40	MED	6 hours	
WILDLIFE	75	MED	24 hours	Includes mammals and reptiles

To use animals as food, you must trap or catch them, then kill them. If you have a commercial trap with you from the original inventory, type **USE BAIT/ USE TRAP/CATCH GAME** when you are notified of game in your area. If you did not pack a trap, you can make one from raw materials; type **MAKE TRAP**. Remember that construction time is shortened if you use a knife or axe.

Trapping Tips

If you have no firearms, snaring small game is useful during periods of food shortages. Set your snares in game trails or in frequently used runways, which you can recognize by fresh tracks and droppings.

All snares and traps should be simply constructed, and built after camp is completed but before darkness. Any spot used as a butchering place attracts other animals; it is a good place to watch for game during the 24 hours following a butchering. Use entrails for bait.

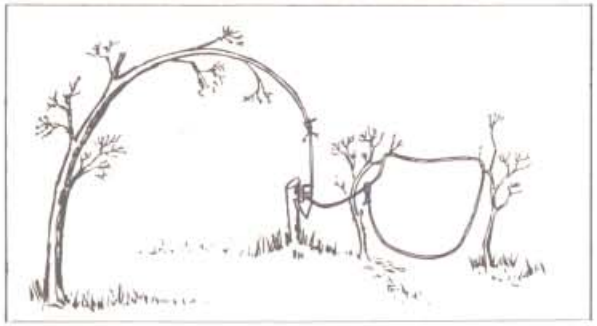


Figure 26: Hanging Snare

Place your traps where the trail is narrow. Arrange pickets, brush, or obstacles in such a manner as to force the animal to pass through the snare. Be sure that the loop is large enough for the head to pass through but not so large that the body will go through. Disturb natural surroundings as little as possible.

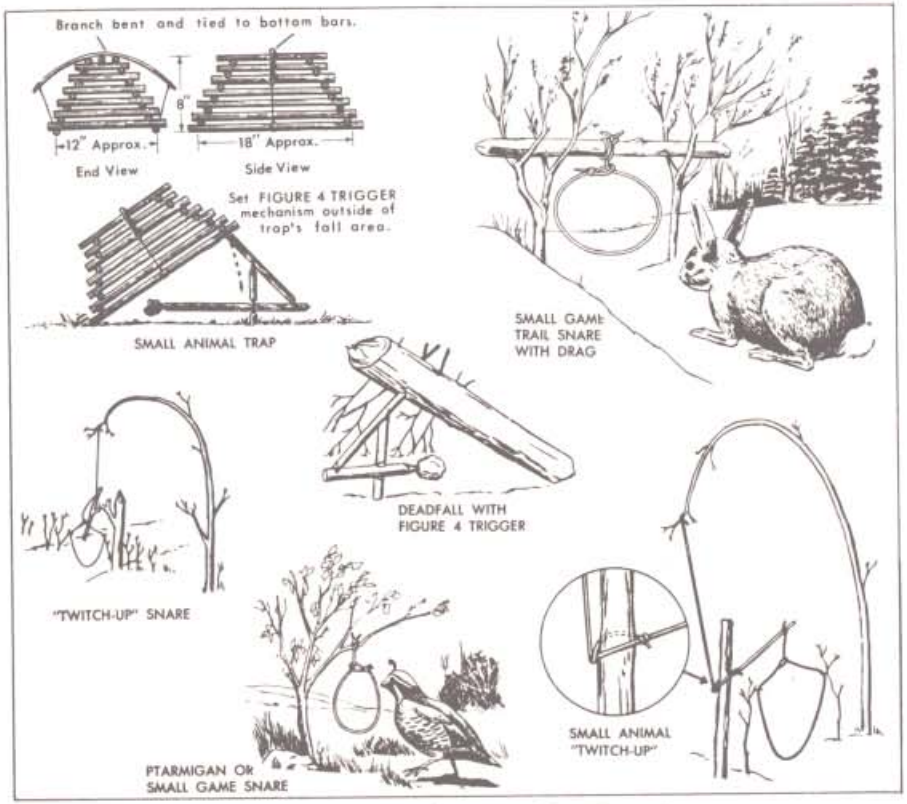
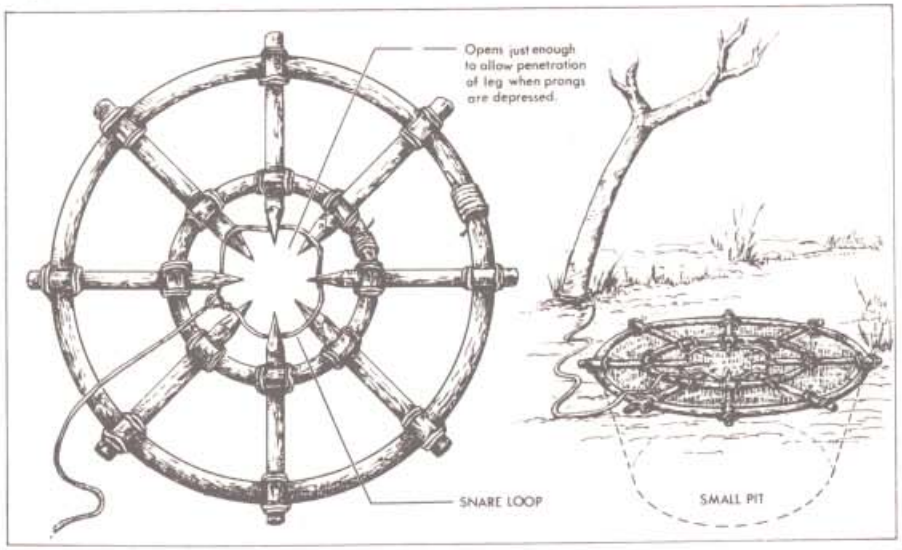


Figure 27 and 28: Small Game Snares ↑, Apache Foot Snare ↓



The twitch-up-snare—a noose attached to a sapling—jerks the animal up into the air, kills him promptly, and keeps his carcass out of reach of other animals. This type of snare is not recommended for very cold climates, since the bent sapling may freeze in position and will not spring up when it is released.

Medium-to-large animals can be captured in deadfalls, but this type of trap is recommended only where big game exists in such quantities as to justify the time and effort spent in construction. Build your deadfall close to a game trail, beside a stream, or on a ridge. Make sure that the fall log slides smoothly between the upright guideposts and that the bait is placed far enough from the bottom log to ensure that the fall log can fall before the animal can withdraw its head. In a trip-string deadfall, no bait is used; the animal trips it by touching a trip string set across the trail.

An unattended noose or deadfall is preferred, since it leaves you free for other duties. Check traps early in the morning and late afternoon.

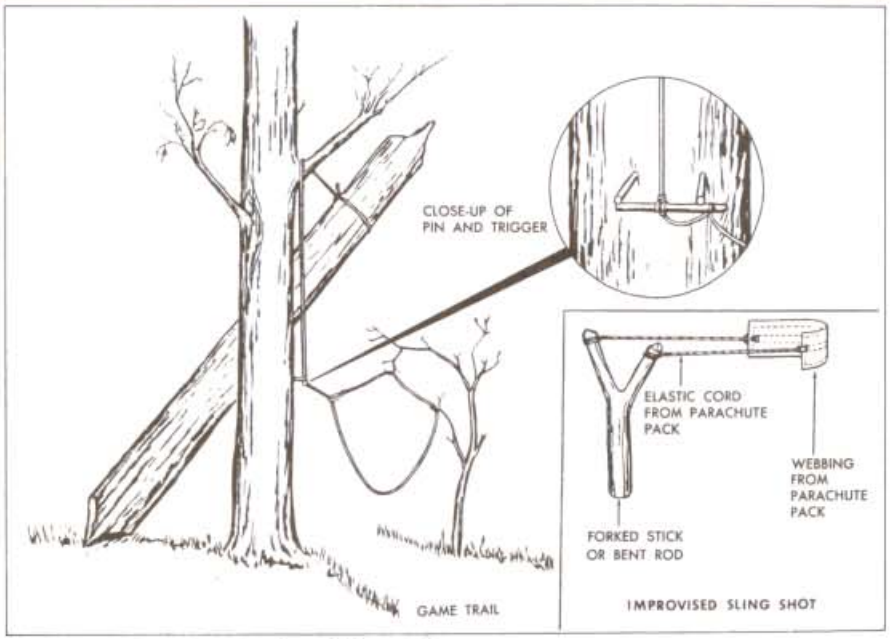


Figure 29: Combination Deadfall and Dragsnare

Fishing Tips

You can fish for your dinner if you brought fishing gear with you, or if you **MAKE** fishing **GEAR** from the branch of a tree, some kind of line, and anything that will serve as a hook. Both are available from the sewing kit or as natural materials in the surrounding area. To fish in *Wilderness*' rivers or lakes, type **USE BAIT/USE GEAR/CATCH FISH**, then indicate in hours how long you want to fish.

Use insects, shellfish, worms, or meat for bait. Try to see what the fish are eating. Artificial lures can be made from pieces of brightly colored cloth, feathers, or bits of bright metal. A length of wire between the line and the hook will prevent a fish from biting the line in two. If you have no hooks, improvise them from wire or insignia pins, or carve them out of bone or hard wood. Make a line by unraveling a parachute suspension line or by twisting threads from cloth or plant fibers. If the fish won't take bait, try to hook them in the stomach as they swim by.

In rivers, fishing is best in the deepest parts. In shallow streams, it is best in pools below falls, at the foot of rapids, or behind rocks. The best times are usually early morning or late evening, or sometimes at night, if you have a light to attract the fish. You can occasionally kill them with the back of a machete; or spear them with a sharpened stick. Before you give up, try fishing in all kinds and depths of water, at all times of day, and with all types of bait.

Other equipment that can help in getting a meal include **SPEAR**, **ROCK**, **BOW** (and arrows), **CLUB**, **GUN**, **KNIFE**, and **AXE**. The first four can be made from materials found in the area; the last three come from the initial inventory available at the beginning of your journey. For a more detailed description of dealing with wildlife encounters, see Chapter 7.

With a few exceptions, such as toads, all animals are edible when they are freshly killed. Never risk your life with questionable seafood—fish with slimy gills, sunken eyes, flabby flesh or skin, or an unpleasant odor. If the flesh remains dented when you press your thumb against it, the fish is probably stale. For poisonous and venomous fish, see figures 30 and 31.

Animals give the most food value per pound. Anything that creeps, crawls, swims, or flies is a possible source of food. People eat grasshoppers, hairless caterpillars, wood-boring beetle larvae and pupae, ant eggs, and termites. Such insects are high in fat. You have probably eaten insects in contaminated flour, cornmeal, rice, beans, fruits, and greens in the course of your everyday life.

Food Preparation

COOKing can delay spoilage of commercial and natural food by 48 hours and nullify the toxic effects of potentially poisonous wild plants. Use the phrase sequence **USE FIRE/COOK** (food). **BOIL**ing, which requires the use of utensils and water, can nullify the toxic effects of microbes such as Giardia, and can purify water gathered from questionable sources. Use the phrase sequence **USE FIRE** (or **STOVE**)/**USE UTENSILS**/**USE WATER**/**BOIL WATER.** If you brought iodine tablets with you, type **USE IODINE TABLETS** to purify your water.

Skin large game; bleed and gut all animals. Use care in removing gall and urine bladders, and musk glands. If these are broken, the meat will be tainted. Washing helps clean the meat. Skinning small rodents removes most of their objectionable odor.

Carrion-eating birds, such as vultures, have unpleasant-tasting flesh. Fish-eating birds have a strong, fish-oil flavor. The best meat on a lizard is the hind

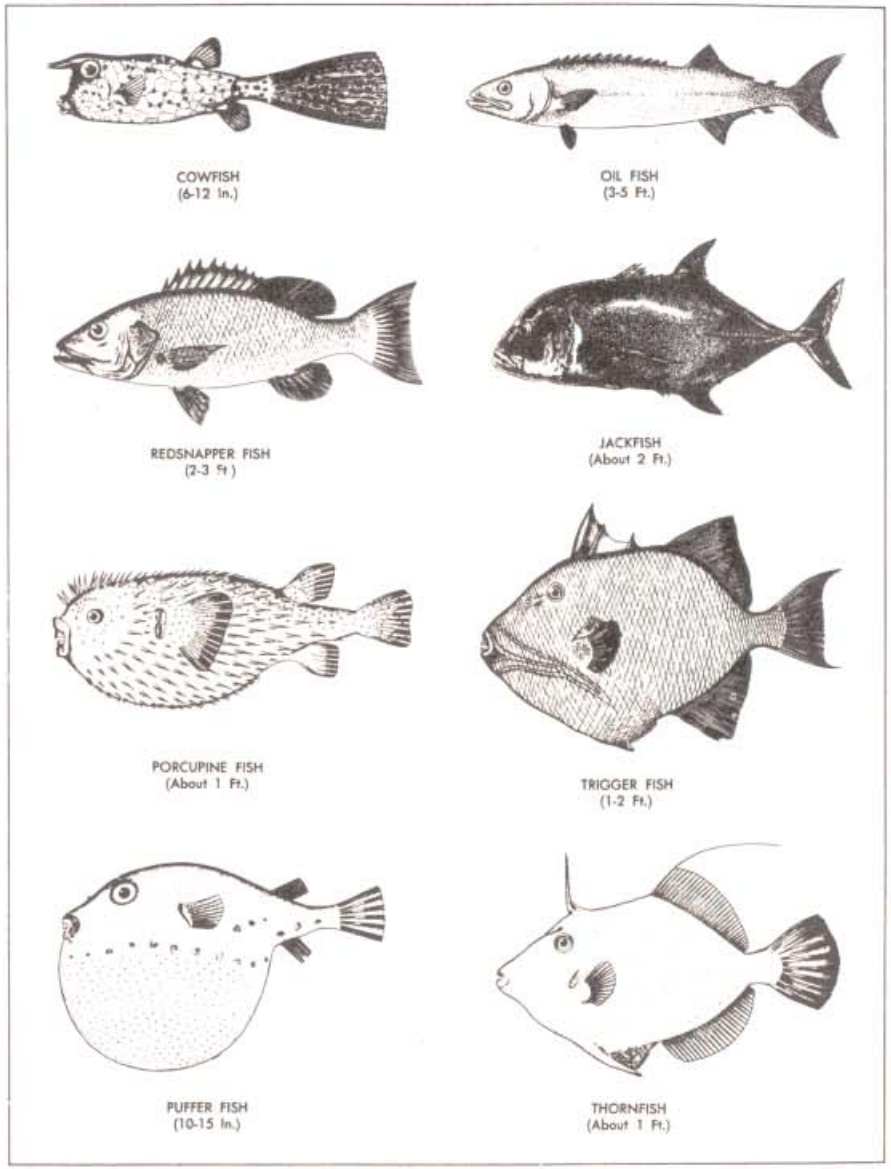


Figure 30: Dangerous Fish

quarters and tail; on a frog, the legs. Turtles have edible flesh on legs, neck, tail, and other parts of the body. Avoid tropical frogs—many have highly poisonous secretions in the skin.

Immediately after you land a fish, bleed it by cutting out the gills and large

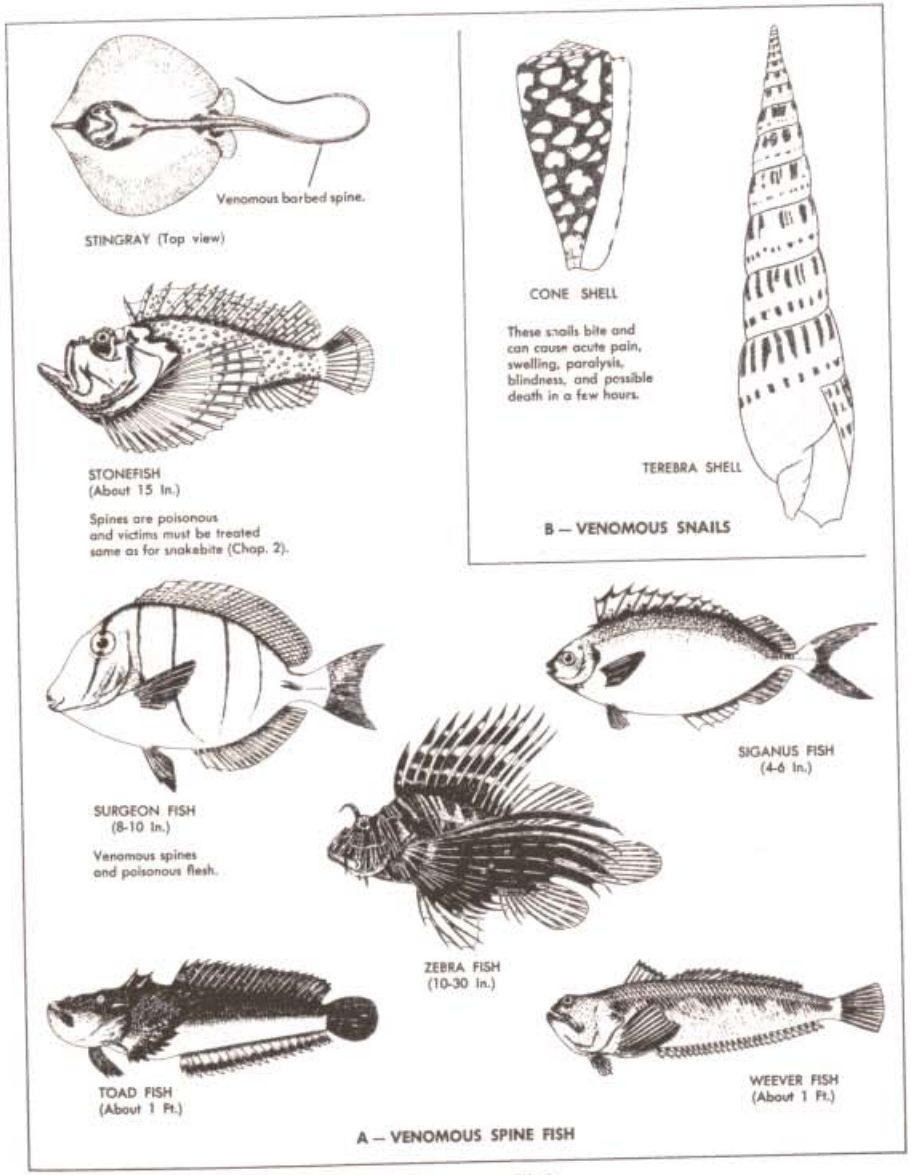


Figure 31: Venomous Shells and Poisonous Fish

blood vessels that lie next to the backbone. Scale it and wash it in clean water. You can eat small fish of the herring family without much cleaning. Their scales are loose and can be washed off; the stomach and intestines can be flipped out with the thumb. These fish are oily, highly nutritious, and good even eaten raw.

Boiling, roasting, baking, and frying—in that order of preference—are efficient ways of preparing foods. Pit cooking or clambake style (oven) is slower but requires less attention, protects food from flies and other pests, and reveals no flame at night.

Boil succulent fruits. Bake or roast large, tough, or heavy-skinned fruits. Boil green leaves, stems, and buds until tender. Change water frequently and rinse thoroughly to help eliminate bitter juices or undesirable tastes. Bake or roast roots and tubers, although you can boil them. You can eat most nuts raw, but some, such as acorns, are better cooked. Break up acorns, boil them with ashes from the fire to eliminate tannin, mould them into cakes, and bake them.

Cooking Without Utensils

Roasting (in the coals of a fire): You can coat fish, potatoes, fresh water mussels, and many large foods with a layer of mud or clay and roast them directly in the flames or coals of a fire. The coating reduces the chances of the food's being burned. You need not scale fish prepared in this way; after the fish is cooked, peel off the skin with the baked clay.

Steaming Under the Fire: Small foods, such as small bird eggs, fresh water snails, or any other shellfish, can be cooked in quantity in a pit beneath your fire. Line a small, shallow pit and fill it with food, or wrap the food in plant leaves, or cloth. Cover the pit with a ¼-to-½-inch layer of sand or soil, and build your fire directly over it. After the food is cooked, rake the fire away and remove the food.

Steaming with Heated Stones (clambake style): Heat a number of stones in a fire, then allow the fire to burn down to coals. Place such foods as fresh water mussels (in their shells) directly on and between the stones, and cover the whole with plant leaves, grass, or seaweed, and a layer of sand or soil. When they are thoroughly steamed in their own juices, clams, oysters, and mussels have opened shells when uncovered. You can eat the food without further preparation.

Stone Boiling: Fill a big container with water and food. Add clean, hot stones until the water boils. Cover for about an hour with big leaves, or until the food is well done.

Nutritional Requirements

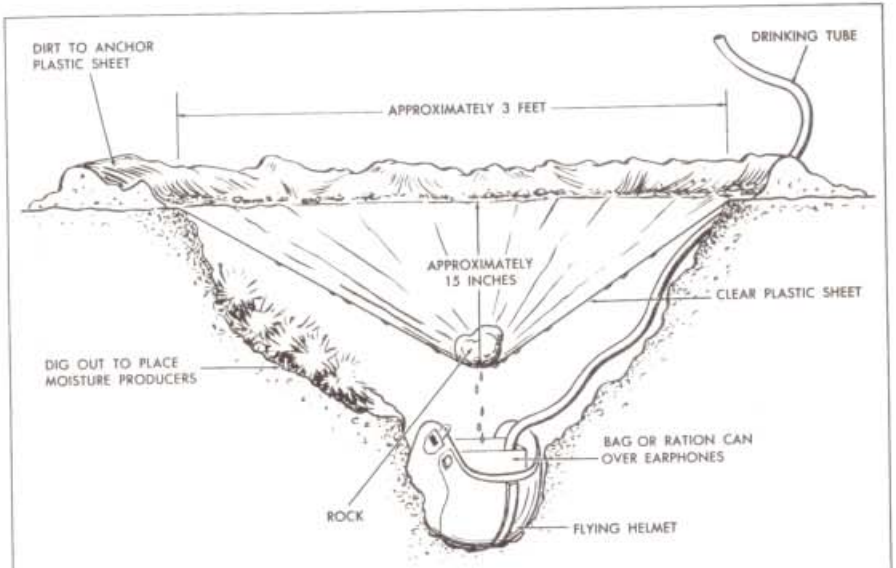
Carbohydrates: These are mostly plant in origin—sugar, starches, cereals, and fruits. If your water supply is severely restricted, stick to these foods.

Proteins: These are mostly animal in origin—meat, fish, eggs, milk, and cheese. Proteins are valuable fuels, but are important mostly in maintaining and repairing body tissues. Your average daily need is 3 ounces, but you can subsist for a long time with none. If your water supply is limited, do not eat large amounts of protein.

Fats: These are partly plant, partly animal—olive and cottonseed oils; butter and lard. Except in very small amounts, fats are not essential for human nutrition. Although inefficient in comparison, fats provide more than twice as many calories per unit weight as do proteins or carbohydrates. Diets very high in fats cause digestive disturbances and often produce an acid condition (ketosis) that requires added water intake for elimination.

Water

Though nutrition is important when you're coping with solo survival tasks, you can live for many days without food if you have water. When water is plentiful, drink more than your normal requirement to keep fit. If you have less than 1 to 2 quarts (32 to 64 oz) of water per day, avoid dry, starchy, and highly flavored foods and meat. Remember that eating increases thirst. The best foods to eat in short-water circumstances are high in carbohydrates, such as candy and fruit bars. Every bit of work you do requires additional food and water; the less energy you expend, the less food and water you need.



Dig a bowl-shaped hole in the soil about 40 inches in diameter and 20 inches deep. Add a smaller, deeper sump in the center bottom of the hole to accommodate the container. If polluted waters, such as body waste, are to be purified, a small trough can be dug around the side of the hole about half way down from the top. The trough insures that the soil wetted by the polluted water will be exposed to the sunlight and at the same time that the polluted water is prevented from running down around or into the container. If plant material is to be used, line the sides of the hole with pieces of the plant or its fleshy stems and leaves. Place the plastic film over the hole and put a little soil on its edges to hold it in place. Place a rock no larger than your fist in the center of the plastic and lower the plastic until it is about 15 inches below ground level. The plastic will now have the shape of a cone.

CAUTION
Make sure the plastic cone does not touch the earth anywhere causing loss of water.

Put more soil on the plastic around the rim of the hole to hold the cone securely in place and to prevent water vapor losses. Straighten the plastic to form a neat cone with an angle of about 30 degrees so that the water drops will run down and fall into the container in the bottom of the hole. It takes about one hour for the air to become saturated and start condensing on the underside of the plastic cone.

Figure 32: Cross Section of a Solar Still

Even in cold areas, your body requires two quarts of water a day to maintain efficiency. If you delay drinking, you will have to make up for it later on. Dehydration can be just as serious a problem in cold areas as it can in a desert.

Purify all water before drinking it, either by **BOIL**ing it for at least one minute plus an additional minute for each thousand feet of altitude; or by **USE**ing **IODINE TABLETS.** Use one tablet for each canteenful and let the water stand for 10 minutes before drinking it. You can safely drink rainwater collected in clean containers or in plants without purifying it. Replenish the water supply in your canteen by typing **GET WATER** and then specifying the amount in ounces.

If you have a raincoat or ground cloth, you can make a solar condensation still to provide drinkable water. Try the phrase sequence **USE RAINCOAT** (or **COVER**)/**MAKE·WATER.**

Cacti are natural "canteens"; you can get water from them by typing **GET WATER.** If your water supply is low, you can use green plants, fruits, and foods with high water content to ward off dehydration. (See List of Foods, on page 84, for water contents.) However, they do not noticeably alter THIRST on your **STATUS** screen. You also can collect rainwater or melt snow for drinking and cooking; when appropriate, type **DRINK RAIN** or **DRINK SNOW.**

The presence of vegetation does not always mean that surface water is available, but the actions of birds and animals give good clues for locating water. The sound of birds chirping in a semi-arid brush country often means that water is near. Flocks of birds will circle over a water hole in very dry deserts. Animal trails often lead to water. Follow them, but take care not to get lost.

When no surface water is available, you can tap the underground water supply. Access to this water depends on your terrain—rocky or consisting of loose material such as clay, gravel, or sand.

In rocky ground, look for springs and seepages. Limestone and lavas have more and larger springs than other rocks. Springs or cold water are safest; warm water has been recently at the surface and is more likely to be polluted. Limestones are soluble, and ground water etches out waterways and caverns in them.

Look for seepage where a dry canyon cuts through a layer of porous sandstone. Most common rocks, like granite, contain water only in irregular cracks. Look over the hillsides to see where the grass is lush and green. Then dig your ditch just at the base of the green zone and wait for water to seep into it.

Water is more abundant and easier to find in loose sediments than in rocks. Look for springs along valley floors or down along their sloping sides. The flat benches or terraces of land above river valleys usually yield springs or seepages along their bases even when the stream is dry.

If the sun is shining, you can melt snow on a dark tarpaulin, drop cloth, signal panel, flat rock, or any surface that absorbs the sun's heat. Arrange the surface so that the melt-water drains into a hollow or container.

It's best to fill up on water at mealtime. Try to drink at least two quarts of hot water or other hot liquid, instead of cold water or snow.

6

HEALTH AND FIRST AID

The best way to deal with injury and illness is to prevent them. Take special care to maintain health, and special precautions to prevent injury. Stamina, resilience, and strength depend on proper diet and rest.

This is excellent advice but not always achievable when you're alone in the wilds. You must be prepared to treat your own injuries and whatever illnesses you contract. These physical traumas may be simple or, in some cases, so severe that death could result unless you react with the appropriate treatment.

To get a general report of your physical condition, look at the **STATUS** screen. It lists your energy level, body temperature, need for food and water, and types of injuries and illnesses you have sustained. You will be made aware of changes in your health during your travels; heed these warnings and carry out the proper action.

Several hours might pass after you contract an illness before the diagnosis appears on the **STATUS** screen. When you get a health alert message or notice a change in your physical condition, check for symptoms such as sweating, shivering, or changes in body temperature. Use the information in this chapter and in Appendix C to identify your problem; start the necessary treatment as soon as possible. Although you begin treatment, your health may continue to deteriorate as the impact of the injury or illness peaks before the treatment takes effect.

When the sum of all illnesses and injuries brings your overall health (on the **STATUS** screen) to below 3 percent, death occurs. You can "bring yourself back from the dead" by pressing [**R**] when asked if you want to be resurrected. Your optimum physical condition (determined at the beginning of the adventure), which affects the pace of your journey and the swiftness with which you can accomplish tasks, is cut in half everytime you are resurrected. The resurrection process cures all illnesses and repairs all injuries; HEALTH (a measure of illness and injury) on the **STATUS** screen returns to 100 percent.

Below is a list of illnesses and injuries you might suffer in traversing the Wilderness terrain, along with their causes, preventive measures, treatments, and recovery times. Each trauma requires a specific kind of treatment. This information appears, in chart form, in Appendix C: Medical Information.

INJURIES

BROKEN ARM

Cause: plane crash, severe fall, conflict with wildlife

Treatment: MAKE SPLINT/USE SPLINT. Treatment requires materials such as small tree limbs or branches and some kind of cloth or lashing (rope, fishing line, clothing) to immobilize the arm

Recovery time: 4 to 6 weeks, depending on treatment

Handle fractures and dislocations with care to avoid causing further injury. Don't remove clothing from a fractured limb. If you have a wound, cut away clothing and treat the wound before splinting it. Cut clothing at the seams.

When you are alone, treating fractures or dislocations is complicated but not impossible. Apply traction by using gravity. Tie the wrist or ankle end of the extremity to a fork of a tree or a similar point (or wedge it in) so that it is firmly fixed. The weight of the body is thus allowed to exert the necessary countertraction, with the joint being manipulated until the dislocation (or fracture) is treated. Before beginning the procedure, you must collect and have available the necessary splinting materials.

POISON BITE

Cause: bite of a venomous snake. You feel the full effect within 3 hours of sustaining the bite. The severity of the symptoms depends on the amount and toxicity of the venom.

Treatment: USE SNAKEBITE KIT or **USE KNIFE/CUT BODY/SUCK VENOM/USE PRESSURE**

Recovery time: 1 to 7 days, depending on treatment

If you are bitten by a snake, immediately apply a constriction band, just tight enough to shut off the venous (return) flow of the blood between the snakebite and the heart. Then make a single cut parallel to the long axis of the limb, about one-fourth inch deep through each fang mark. Immediately suck the venom if there are no open sores in the mouth, and spit out the poison. In the moist tropics, instead of making the cuts, use deep massage with the teeth combined with strong oral suction. Immobilize and splint the injured limbs. Apply cool compresses to reduce pain, and remain quiet as much as possible. Don't drink alcohol!

SNOW BLINDness

Cause: exposure of unprotected eyes to the glare of the sun reflected from ice or snow. Can occur even on cloudy days. Sight is reduced (in the VIEW screen). The full impact is felt within 3 hours of exposure.

Treatment: WEAR SUNGLASSES or **SHIELD EYES.** (Substitutes for sunglasses can be made from available raw materials.)

Recovery time: 8 to 24 hours, depending on treatment

Symptoms of snowblindness are redness, burning, watering, or sandy-feeling eyes; a halo when looking at lights; and headache and poor vision. Remember that snowblindness might not appear until several hours after exposure. For this reason, it is often not suspected because the symptoms do not appear until after sunset.

Prevention is the best cure. Don't wait until your eyes hurt to wear your glasses. For sunglasses you can substitute a piece of wood, leather, or other material, with narrow eye slits cut in it.

Treat snowblindness by protecting the eyes from light and relieving the pain.

Stay in a dark shelter or wear a lightproof bandage. Relieve the pain by putting cold compresses on the eyes, if there is no danger of freezing, and by taking aspirin. Use no eyedrops or ointment. Most cases recover within 18 hours without medical treatment. The first attack of snowblindness makes you susceptible to future attacks.

Figure 33: Improvised Eye Shields

SEVERE CUTS and bruises

Cause: plane crash, severe fall, conflict with wildlife

Treatment: STOP BLEEDING or **USE PRESSURE**

Recovery time: 3 to 10 days, depending on treatment

In severe bleeding, place a sterile pad directly on the wound and apply pressure by hand or by bandaging firmly. Elevate an arm or leg if bleeding does not

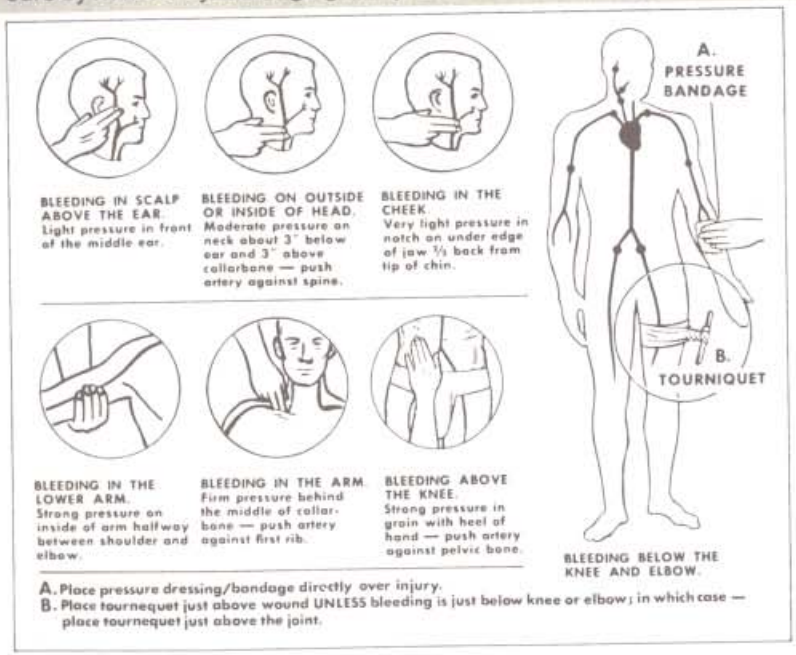


Figure 34: Pressure Points for Control of Bleeding

stop, provided that you think no bones are broken. Keep the treatment area as warm as possible. You must control serious bleeding at once. In only a few minutes, your life can ebb; and if you can't replace the blood, the life is lost. Use direct pressure compresses to stop most bleeding.

FROSTBITE

Cause: extended exposure of the extremities to severe cold. The full effect is felt within 6 hours.

Prevention: **WEAR** appropriate clothing (**MITTENS, BALACLAVA, WOOL SOCKS**) and stay active to maintain body heat and circulation.

Treatment: **USE FIRE** to warm hands and feet, or cover your extremities

Recovery time: 2 to 14 days, depending on treatment

In mountain areas, frostbite, the freezing of some part of the body, is a real danger. It is a constant hazard in subzero conditions, especially when the wind is strong. As a rule, the first sensation of frostbite is numbness rather than pain. You can see the effects of frostbite, a grayish or yellow-white spot on the skin, before you can feel it.

When only the surface skin is frozen (frost-nip or superficial frostbite), it becomes spongy to the touch. It can be rewarmed by body heat. If deeper tissues are involved (deep frozen), the thawing process must take place quickly. Ideally, thawing is accomplished in warm water. Because refreezing of a thawed part means certain loss of tissue, it is better, in some cases, to continue with a frozen part as it is rather than to thaw it when there is a chance of its being refrozen. It must be thawed, however, as soon as possible.

BROKEN LEG

Cause: plane crash, severe fall, conflict with wildlife

Treatment: **MAKE SPLINT/USE SPLINT.** Treatment requires materials such as small tree limbs or branches and some kind of cloth or lashing (clothing, fishing line, rope) to immobilize the leg

Recovery time: 4 to 8 weeks, depending on treatment

SHOCK

Cause: plane crash, severe fall, conflict with wildlife

Treatment: **LOWER HEAD/DRINK WATER**/and keep body warm

Recovery time: 3 to 14 days, depending on treatment

You might suffer shock after a crash landing. Symptoms of shock include pale, cold skin; sweating; rapid breathing; and weak pulse. Lie down flat, with your feet raised. Keep warm, but not overheated. Inhale oxygen if it is available.*

SUNBURN

Cause: overexposure of unprotected skin to the sun's ultraviolet rays

Prevention: **USE SUNSCREEN** daily, or wear long pants and long-sleeved shirt. Avoid the sun by remaining in a shelter or under a natural canopy of forest or jungle.

Treatment: **WET BODY/DRINK WATER**

Recovery time: 2 to 4 days, depending on treatment

ILLNESSES

SALT DEFICIENCY

Cause: excessive loss of salt without its replacement; accelerated by overexertion and sweating

Prevention: **USE SALT TABLETS**, or eat foods with moderate salt content

Treatment: same as prevention

Recovery time: 1 day or more

DEHYDRATION

Cause: insufficient fluid intake; accelerated by overexertion in hot climates. Complete lack of water can lead to death within 2 days (overexertion in hot climates) to 2 weeks (resting in cold climates)

Prevention: **DRINK WATER** regularly, at least 2 quarts (64 oz) per day

Treatment: same as prevention

Recovery time: rapid to indefinite, depending on treatment

EXHAUSTION

Cause: overexertion coupled with insufficient sleep or rest. Involuntary sleep occurs after 60 hours without rest.

Prevention: 6 to 8 hours sleep during each 24-hour period.

Treatment: **REST**, **SLEEP**, or **MAKE CAMP**

GIARDIA (Giardia Intestinalis; a debilitating intestinal microbe)

Cause: ingesting the monkey-face Giardia flagellate protozoa occasionally found in streams containing animal or human feces. There is little risk of contracting Giardia at high altitudes.

Prevention: **BOIL WATER** or **USE IODINE TABLETS**

Treatment: **USE FLAGYL** daily

Recovery time: 2 to 14 days, depending on treatment

HYPERTHERMIA

Cause: overexertion in very hot climates. Death can occur when body temperature rises 9° Fahrenheit above normal (107.6° F).

Prevention: **REST** regularly, **DRINK WATER** frequently, cool body in available shade, or **WET BODY** with available water

Treatment: same as prevention

HYPOTHERMIA

Cause: exposure to severe cold, with a resulting decrease in core body temperature. Death can occur when body temperature falls 6° Fahrenheit below normal (92.6°F)

Prevention: **WEAR** appropriate clothing (**GLOVES**, **DOWN PARKA**, **WOOL PANTS**, **WOOL SOCKS**, etc), **USE** sleeping **BAG** or **SHELTER**, and **USE FIRE** to keep warm. A large proportion of body heat escapes through the scalp; keep your head covered (**WEAR BALACLAVA**)

Treatment: same as prevention

INFECTION

Cause: bacteria introduced through breaks in the skin. This is a real problem in the tropics because the warm, moist conditions are a perfect growth environment for microorganisms

Prevention: **USE SOAP** or **USE FIRSTAID KIT** when you sustain a cut.

Treatment: your first aid kit contains antibiotic preparations. **USE FIRSTAID KIT** administers the proper dose.

Recovery time: 2 to 14 days, depending on treatment.

MALARIA

Cause: the bite of an infected Anopheles mosquito (present in tropical zones)

Prevention: **USE REPELLENT**; insect repellent must be reapplied daily. Also **USE QUININE** daily

Treatment: **USE QUININE** daily

Recovery time: 4 weeks to indefinitely. After the symptoms disappear, malaria can recur even years later

FOOD POISONING

Cause: ingesting spoiled or poisonous food. The full impact is felt within 8 hours of ingestion.

Prevention: eat only fresh or cooked foods

Treatment: **DRINK WATER** frequently

Recovery time: 2 to 5 days, depending on treatment

ALTITUDE SICKness

Cause: insufficient oxygen; can occur at altitudes above 10,000 ft. Some climbers can adapt to altitudes as high as 20,000 ft. Death occurs at approximately 26,000 ft without the use of an oxygen tank

Prevention: **USE OXYGEN**, or descend to altitudes of 10,000 ft or less if your STATUS indicates the onset of symptoms

Treatment: same as prevention

STARVATION

Cause: insufficient caloric and nutrient intake. Starvation will not lead to death in less than a month, but it does result in deterioration of overall physical condition, which slows your rate of progress. Death will occur in *Wilderness* after approximately 3 consecutive weeks without food.

Prevention: **EAT** (food) regularly—2,000 calories per day

Treatment: same as prevention

7

WILDLIFE

All six geographic locations in *Wilderness* are home to a variety of animal life. Though most of the animals prefer to ignore a man when one is encountered, the potential dangers have been slightly increased for the sake of adventure and variety of experience. There are two categories of wildlife: generic creatures that are present mainly as food sources, and specific animals that occur in particular regions of the world.

Generic creatures are: **FISH**, which can be caught for food by typing **USE BAIT/USE GEAR/CATCH FISH**; small **GAME**, snared for dinner by typing **USE BAIT/USE TRAP/CATCH GAME**; and **INSECTS**, which do not have to be killed before being eaten. Just type **EAT INSECTS.**

The specific wildlife is listed by geographic region; the descriptions include size, habits, and habitat. For an alphabetic listing and more detailed information, see Appendix B: Vocabulary on page 94.

Bolivia

ANACONDA: The name is probably a modification of the Sinhalese henakandaya. A large, arboreal snake of the boa family of tropical South America. It grows to an average length of between 20 and 30 ft, and crushes victims in its coils. It can be encountered at any time of day and year, in and around lakes and rivers. It prefers elevations between 1,000 and 3,000 ft.

FER-DE-LANCE: An extremely venomous pit viper of Central and South America. This snake can reach a length of 8 ft and can be seen between 6 AM and 8 PM at any time of year. It makes its home in clear or jungle terrain at altitudes of 1,000 to 6,000 ft.

JAGUAR: A large cat of tropical America that is larger and stockier than the leopard, and is brownish yellow or buff with black spots. This fierce cat can be 7 ft long and weigh 250 lbs. Though usually reluctant to tangle with human beings, El Tigre has been known to attack unarmed adventurers traveling alone. You can find jaguars at any time of year, usually between 5 PM and 7 AM, in clear or jungle terrain. They are most likely to be seen around rivers at elevations of 1,000 ft to 4,000 ft.

PUMA: Also called catamount, mountain lion, panther, or cougar. A large, powerful cat, formerly widespread in the Americas but now extinct in many areas. The puma usually hunts at night between 5 PM and 7 AM, but rarely seeks a human victim. It roams clear, rocky, and jungle terrain throughout the year at altitudes between 5,000 and 10,000 ft.

British Columbia

Grizzly BEAR: A very large, powerful, typically brownish-yellow bear of the uplands of Western North America. The adult male can be 9 ft long and weigh 1,000 lbs. Mature bears do not climb trees and have more difficulty in running downhill than they do on flat or uphill ground. This surly and dangerous creature can be encountered during the months of March through October, usually between 4 PM and 8 AM. Grizzlies frequent clear or wooded terrain, and river banks at elevations below 5,000 ft.

MOOSE: A large, ruminant mammal of the deer family, inhabiting parts of Canada and the northern United States. Moose are animals of northern mixed forests. During the winter, they congregate in herds. A full-grown moose can stand over 7 ft at the shoulder and weigh as much as 1,800 lbs. Moose can be encountered at any time of year and at any hour of the day in wooded terrain or along the banks of rivers and lakes. They are found at altitudes below 4,000 ft.

Timber WOLF: A large mammal related to the domesticated dog; it is crafty, rapacious, and very destructive to game, sheep, and cattle. When traveling in a pack, wolves may attack a man. Males can weigh up to 100 lbs and travel for hours at 20 mph. They roam clear, wooded, or rocky terrain throughout the year and at any time of day. They are most likely to be seen at elevations below 5,000 ft.

Burma

Bengal TIGER: A large, Asiatic, carnivorous mammal of the cat family with a tawny coat transversely striped with black. The adult male can reach 10 ft from nose to tail and weigh 500 lbs. These tigers roam the jungles and the banks of rivers throughout the year and are most likely to be seen between 4 PM and 8 AM, at elevations from sea level to approximately 2,500 ft.

Indian ELEPHANT: A very large, thickset, nearly hairless, four-legged mammal, with a snout prolonged into a muscular trunk. Two incisors in the upper jaw, developed in the male into long tusks, are prized as ivory. Though generally peaceable, elephants can be dangerous because they are unpredictable. They are most often found in jungle terrain or along the banks of rivers and lakes, throughout the year and at all times of day, at elevations below 1,000 ft.

Indian PYTHON: A large snake of the boa family. These pythons are at home in the water and in trees. They crush their prey. They can be encountered at any time of year, usually between 6 PM and 6 AM, in all but clear terrain and at altitudes below 3,000 ft.

King COBRA: The largest of the hooded, venomous snakes of Asia and Africa. When excited, the cobra expands the skin of its neck into a hood by moving its anterior ribs. This extremely poisonous snake can reach a length of 18 ft. Though they rarely attack human beings, they can be very dangerous when surprised while guarding their eggs. They can be encountered throughout the year between 4 PM and 8 AM in clear or jungle terrains. They are rarely seen above altitudes of 2,000 ft.

Chile

Mountain CAT: One of the smallest members of the wild cat family, the mountain cat measures only 3 ft from nose to tail. It stalks in clear or rocky terrain throughout the year between 6 PM and 6 AM, most frequently at altitudes between 5,000 and 14,000 ft.

PUMA: Also called catamount, mountain lion, cougar, panther. A large, powerful cat formerly widespread in the Americas, but now extinct in many areas. The puma usually hunts at night between 5 PM and 7 AM, but rarely seeks a human victim. It roams clear, rocky, and wooded terrain throughout the year at altitudes between 4,000 and 12,000 ft.

New Guinea

Death ADDER: A common, terrestrial, venomous viper that frequents clear, rocky, or jungle terrain. It can be encountered at any time of year between 6 PM and 6 AM at altitudes below 2,000 ft.

CANNIBAL: Dani Warrior. Though the Dani's only weapons are spears, or bows and arrows, they can be fierce combatants, hurling a spear 50 ft with deadly accuracy. The phrase **USE TRINKETS** may come in handy in an encounter with a member of this tribe. They are a mobile people and make their homes in all types of terrain. They hunt both during daylight hours and at night; they are usually in locations between 1,000 and 9,000 ft.

Salt-water CROCODILE: Large voracious, thick-skinned, long-bodied aquatic reptiles of tropical and subtropical waters. These huge creatures can swim long distances up rivers from their ocean habitat. They can be seen throughout the year between 6 PM and 8 AM, in and around lakes and rivers, below 800 ft.

Sierras

Black BEAR: A relatively large, heavy mammal with shaggy hair, a rudimentary tail, and plantigrade feet. These bears feed mainly on fruits and insects, as well as flesh. Though considered rather peaceable animals, the female black bear can be dangerous if her cubs are threatened. They are fast runners and skillful climbers, and can weigh between 200 and 400 lbs. They roam clear or wooded terrain during the months of March through October. These bears are most frequently seen between 3 PM and 7 AM at altitudes of 2,500 to 8,500 ft.

COUGAR: Also known as mountain lion, panther, puma, jaguar, catamount. A large, powerful cat formerly widespread in the Americas but now extinct in some areas. The cougar usually hunts at night between 5 PM and 7 AM, but rarely seeks a human victim. It roams clear, rocky, and forest terrain throughout the year at altitudes between 1,000 and 9,000 ft.

RATTLESNAKE: Thick-bodied, venomous American snake with horny interlocking joints at the end of the tail that make a sharp rattling sound as a warning to intruders. The venom, when injected, can be mildly irritating to near fatal,

depending on the size of the rattlesnake and the amount of time that elapses after its last strike. Rattlers can be found in various terrains from May through September, most frequently between 6 AM and 6 PM. They are rarely seen above altitudes of 8,000 ft.

As well as providing sustenance, the animal population provides hides from which you can make a wide variety of clothing. After a kill, use the phrase sequence **USE KNIFE/SKIN** (animal) to obtain the pelt. Compare the volume of the article of clothing you want to make (listed in Appendix A) with the volume of hide (listed in **STATUS** screen) taken from the animal.

You will probably have to become adept at using some sort of weapon to secure food in the *Wilderness* and to protect yourself in unpredictable encounters with dangerous wildlife. Three common commercial weapons might be available in your initial inventory. They are:

AXE: a standard-model ice axe used primarily for winter mountain climbing. It is also an effective weapon and an efficient cutting tool.

GUN: Ruger security-six .357 magnum handgun. It has a maximum supply of 3 dozen, 125-grain, soft-nosed bullets.

KNIFE: common hunting knife with a 5-inch Solingen steel blade. This all-purpose knife is useful as a weapon, as well as a tool for constructing items from raw materials.

If you neglected to pack a weapon when you began your journey, you do not have to stay unarmed. Four types of weapons can be made from raw materials in your area. They include:

BOW (includes unlimited supply of arrows): construction requires thin tree limbs or branches and some material that can be used as a bow string (fishing line, rope, vine, etc). To make a bow, type (**USE KNIFE**)/**MAKE BOW.**

CLUB: look for a tree limb with one heavy end, and enough length to provide an ample handle. To make a club, simply type **MAKE CLUB**.

ROCK: the most common, naturally occurring weapon. Look for one that will fit into your hand and can be hurled. Use the phrase **USE ROCK**.

SPEAR: many native populations have refined to a deadly art the making and throwing of spears. In an area where tree limbs and branches are available, make a spear by typing (**USE KNIFE**)/**MAKE SPEAR**.

Using a weapon takes skill that is developed through practice. To use a weapon, type in one of the following phrase sequences. (The phrase you use depends on the activity you want to accomplish.)

USE (weapon)/**KILL** (animal)
USE KNIFE/**CUT** (animal)

USE KNIFE/**SKIN** (animal)/**USE HIDE**/(**USE SEWING KIT**)/**MAKE** (clothing)

Perhaps the wisest course of action in dealing with animals is to avoid potentially dangerous conflicts. You can try **SCARE**ing (animal) though this can agitate the animal to the point of attacking. **WAIT, CLIMB TREE,** or **RUN,** are other alternatives in dealing with the *Wilderness*' animal population.

Hunting Tips

1. Most big game is killed at ranges under 60 yards. Unless a clean kill is impossible by closer stalking, don't attempt to kill by shooting over 100 yds. Make sure of your first shot, for it may be your last one at the particular animal.
2. Don't shoot rapid fire. If you aim properly, one shot will do the job.
3. Fire from as steady a position as possible. You can shoot best from a prone position but you might have to sit or kneel. Whenever you can, rest on a log or stone. Never fire offhand unless time prevents your taking another position.
4. Aim at a vital spot, such as the shoulder or chest for medium and large game. Do not shoot unless a vital spot is open.
5. Do not trust your first shot even if the animal appears to have fallen dead. Reload immediately but keep your eye on the game.

In winter, hunting is best in the early morning. In summer, with almost continuous light, animals have very irregular moving habits. On the open tundra, select a high hill and scan the horizon for game. Summer heat haze will distort distant objects, and low ridges or brush can look like animals. In the mountains, hunting is best in and near mountain passes. Maintain a watch from a high place. When traveling in areas where the noise will not jeopardize your security, be ready to shoot any animal that you may accidentally flush. Camouflage yourself to match the terrain.

Paths and roads are the normal passageways along which animals travel through tropical forests. Look on the ground for hedgehogs, porcupines, anteaters, mice, wild pigs, deer, and wild cattle; in the trees, look for bats, squirrels, rats, and monkeys. You will seldom see dangerous beasts such as tigers, rhinoceroses, and elephants. If you do, leave them alone.

You will find that game is most plentiful near water, in forest clearings, or along the edge of thickets. Many animals live in holes in the ground or in hollow trees. Poke a flexible stick into the hole to determine if it is inhabited. Use a stick to tease the animal into running out, but first close off other exits. You can smoke animals out of hollow trees by building a fire at the base of the tree; be ready to club the animal as it comes out.

Night hunting is always good, since most animals move at night. If you have no gun, try to kill the animals with a club or a sharpened stick used as a spear. Remember that large animals, when wounded or with their young, can be dangerous. Be sure that the animal is dead before you get too close.

Dealing with Natives

Encounters with native populations require different, more subtle skills. It is important, when approaching natives, to show friendliness, courtesy and patience. Don't act scared; don't threaten them or display a weapon. Don't make sudden moves. Fear makes people hostile; smile frequently to display friendship. You can offer a Dani warrior material proof of your good intentions by **USE**ing **TRINKETS.**

Primitive people may be shy and unapproachable at first. They might run away when you enter a village or meet them. Approach a village slowly. Call or clap your hands to attract a native's attention. Let him make the first approach. It is best to wait until only one native is near, rather than a group. A native will be glad to help a survivor who appears to be in need.

Once the ice is broken, go ahead and ask for what you need. Someone may understand a few words of English. If not, use sign language; natives are accustomed to it because they often communicate by signs themselves. State your business simply and frankly.

If you make a promise, keep it. Respect the local customs and manners even if they seem peculiar to you. Remember that to the native you are the odd one. You are the stranger in their home. Respect personal property. Always make some kind of payment for what you receive or take, but don't overpay. Paper money is worthless in most places. Hard coin is good—in many places, it has exchange value; in most places, it has value as jewelry or trinkets. In isolated places, matches, tobacco, salt, razor blades, empty containers, or cloth may be worth more to the native than any form of money.

Learn all you can from the natives about woodcraft and getting food and drink. The knowledge will help you if you have to travel out on your own. Take the natives' advice on local hazards; they know their country. Find out from friendly natives where hostile tribes might be.

8

FUTURE JOURNEYS

A lone trek through the wilds can be dangerous, exhausting, and time consuming. A *Wilderness* experience can take several hours and, very likely, will not be completed in one session. So that you can take up your journey exactly where you left off, you are allowed to save an ongoing adventure.

Saving a Journey

To save a current incomplete journey, type **SAVE** at any point during the session. You will see **PRESS [RETURN] TO SAVE THIS JOURNEY** and **PRESS [ESC] TO CANCEL** at the bottom of your screen. If you change your mind about saving the current journey, press [**ESC**] to continue with the current adventure.

If you press [**RETURN**] in response to the prompt, you are asked to **INSERT SAVED JOURNEY DISK AND PRESS [RETURN]**. Remove the current Journey Disk from the disk drive, insert a DOS 3.3 disk, and press [**RETURN**]. Do not use a disk that contains information you want to keep. All previously stored information will be destroyed in the process of your saving your *Wilderness* adventure.

After inserting a DOS 3.3 disk on which journeys have not previously been saved, you will see the confirmation statement **THIS IS A DOS 3.3 DISK.** You are asked whether the incomplete journey should be saved on this disk. To save the journey on this disk, press [**Y**] in response to this prompt. Now you will see the Catalog of Saved Journeys. If no journeys have yet been saved on this disk, the catalog will be empty; it will read **5 UNUSED SAVED JOURNEYS.** If you are using a disk on which you have saved journeys before, you will see a list of the incomplete journeys on the disk. They are listed with their "titles", geographic region, level of difficulty, and scenario number. If any of these adventures have been taken in Research Mode, this information will also be listed.

The menu at the bottom of the screen has three options: **[1] SAVE OR REPLACE A JOURNEY, [2] CHECK ANOTHER SAVED JOURNEY DISK, and [3] CANCEL.**

[1] SAVE OR REPLACE A JOURNEY: Select this option to save an incomplete journey on this disk. You can save five journeys on one disk. If the catalog is full, you can replace a previously saved journey with a current incomplete journey.

After pressing [**1**], you are asked to **ENTER NAME FOR SAVED JOURNEY**. It's a good idea to choose a name that describes some unique and mem-

orable quality about the terrain, the topo map, or the adventure itself. Remember, an infinite number of topo maps can be created for each geographic region. Type in the journey name and press [**RETURN**]. If the disk is not full, this name appears in the catalog along with the geographic region, level, and scenario number.

If you want to save a journey with a name that is already listed in the Saved Journey Catalog, you are asked **REPLACE SAVED JOURNEY NUMBER #** [**Y/N**]? after entering the journey name. Press [**N**] and [**RETURN**] to go back to the previous menu. Press [**Y**] and [**RETURN**], and the present journey replaces the previous journey with that name.

If five journeys have already been saved on this disk, you are asked **REPLACE A SAVED JOURNEY** [**Y/N**]? If you press [**N**] (no) and then press [**RETURN**], you go back to the previous menu. If you press [**Y**] (yes) you are asked **REPLACE WHICH SAVED JOURNEY NUMBER**? Type the number of the adventure you want to replace with the current incomplete journey, and press [**RETURN**]. The current journey with its name will replace that number journey in the catalog.

[**2**] **CHECK ANOTHER SAVED JOURNEY DISK:** If one Saved Journey Disk is full, you can save the current adventure on another disk. Replace the disk in the disk drive with another Saved Journey Disk. The rest of the procedure is the same as described above.

[**3**] **CANCEL:** Select this option if you change your mind about saving the current incomplete journey and want to return to it. After pressing [**3**], you are asked to **INSERT JOURNEY DISK.** Replace the Saved Journey Disk with the current Journey Disk; press [**RETURN**]. You go back to the exact spot at which you interrupted your adventure.

You might want to label each Saved Journey Disk with a code number and keep a written record of your saved journeys on the Log Sheets in the back of this manual.

Resuming a Saved Journey

When you are ready to resume an incomplete adventure, select [**4**] **RESUME A PREVIOUSLY SAVED JOURNEY** from the Main Menu that appears after the *Wilderness* title page; press [**RETURN**]. Now remove the Country Disk from the disk drive. Replace it with your Saved Journey Disk and press [**RETURN**]. You are presented with a catalog of the journeys saved on that disk, and you are asked **RESUME ONE OF THESE JOURNEYS** [**Y/N**]? If you do not want to continue with one of the adventures listed, press [**N**] and [**RETURN**]. The prompt **TRY ANOTHER SAVED JOURNEY DISK** [**Y/N**]? appears at the bottom of the screen. To look at the catalog of another Saved Journey Disk, press [**Y**] and [**RETURN**]; then insert another Saved Journey Disk and press [**RETURN**]. If you press [**N**] and [**RETURN**] in response to this prompt, you are asked to **INSERT THE** (COUNTRY) **DISK** and **THEN PRESS** [**RETURN**]. You go back to the Main Menu.

To continue with one of the adventures listed in the catalog, press [**Y**] and [**RETURN**] in response to **RESUME ONE OF THESE JOURNEYS**. Now type in the catalog number for the journey you want to resume. You cannot resume an adventure in a country that does not match the Country Disk with which you booted the system. Replace the Saved Journey Disk with the Country Disk named in the prompt at the bottom of the screen. After pressing [**RETURN**], you are asked to **INSERT JOURNEY DISK**. Replace the Country Disk with the Journey Disk; press [**RETURN**]. You are returned to the location at which you terminated this particular adventure.

Restore

By typing **RESTORE** and pressing [**RETURN**], you can resume an incomplete adventure during the course of another journey. The prompt **INSERT SAVED JOURNEY DISK AND PRESS** [**RETURN**] appears at the bottom of the screen. When you replace the Journey Disk with a Saved Journey Disk, you will see the catalog of adventures contained on that particular disk. A menu at the bottom of the screen lets you restore one of the journeys listed in the catalog, check another Saved Journey Disk, or cancel the procedure. The rest of the process is the same as described in Resuming a Saved Journey, page 74.

Opportunities for Experienced Adventurers

Wilderness' Main Menu contains seven options; the first one was discussed in the beginning of this manual. The following information will be useful after you experience your first adventure and become familiar with the hazards, situations, and vocabulary in *Wilderness*.

[**1**] **A FIRST JOURNEY SUPPLIED ON THE MAP:** this sets up a journey on the topo map supplied on the Country Disk. Your physical statistics are pre-entered to create the most advantageous conditions. The necessary supplies have been packed for you.

[**2**] **A NEW JOURNEY ON THE SUPPLIED MAP:** select this option from the Main Menu if you want to set up the conditions, and pack your supplies for an adventure in the Sierras, for which you will use the supplied topo map. After pressing [**2**] on the Main Menu and pressing [**RETURN**], replace the Country Disk with the Journey Disk and press [**RETURN**]. Now you see the Journey Preparation Screen.

To prepare for your journey, you must answer a series of eleven questions. Remember to press [**RETURN**] after you type in each answer. These eleven questions appear sequentially. That is, question 2 appears when you press [**RETURN**] after answering question 1, and so on. Your response to these journey preparation questions define the boundaries of your adventure: The impact of your answers is explained below:

1. Select the [1] Plane Crash or the [2] Lost City scenario? Determine whether you are the survivor of a plane crash or an archeologist. In Scenario 1, you know the location of your destination (the ranger outpost) but you do not know your present location. In Scenario 2, you know your present location (the ranger outpost) but you do not know the site of your destination (the Lost City).
2. Do you want to choose the starting date and time? The month (1-12) and the time of day (0-24) affect weather conditions and wildlife encounters, and whether you begin in daylight or at night. Remember, conditions are more hazardous in extreme temperatures, and travel and construction take longer in after dark.
3. Select [P] Play Mode or [R] Research Mode: You can experience a Wilderness adventure either in Play Mode (P) or Research Mode (R). Play Mode exposes you to all the conditions and consequences of a real survival journey. You must attend to your physical state and to environmental circumstances such as weather and wildlife encounters. In Research Mode, you are transformed into a super being, untouched by the ill effects of hunger, thirst, exhaustion, disease, or injury. This can provide an opportunity for you to investigate natural systems at work. Observe the path of the sun. Use various methods to practice navigating through the unknown. Polish your map-reading skills. Research Mode also provides a clue to your location. When it is in magnified view on the topo map, press [**L**]. Your position appears as a small white dot.
4. Are you [M] male or [F] female? The answer to this question (as well as the answers to questions 5, 6, 7, 8, and 9) establishes the parameters of your physical condition. Women have more stamina and a slightly higher tolerance for cold. However, they also have less muscle mass, resulting in less strength; their usually smaller builds decrease the amount of weight they can carry. Sex is not an isolated factor and must be looked at in relation to height, build, age, weight, and heart rate.
5. What is your weight in pounds? Weight affects strength, stamina, speed, tolerance of cold, and overall physical condition. Weight is not an isolated factor and must be looked at in relation to height, build, age, sex, and heart rate.
6. Do you have a [S] small, [M] medium, or [L] large body frame? Body frame has an impact on the amount of weight that can be carried, as well as strength and speed. Build is not an isolated factor and must be looked at in relation to height, weight, age, sex, and heart rate.
7. How tall are you in inches? Height is one physical parameter that influences many other parameters. For example, a weight of 160 lbs. can mean one thing if height is 60 inches; it means something quite different if height is 72 inches. Height is not an isolated factor and must be looked at in relation to weight, age, sex, build, and heart rate.
8. What is your age in years? Age influences stamina, strength, speed, and resistance to disease. Age is not an isolated factor and must be looked at in relation to height, weight, build, sex, and heart rate.

9. Check your pulse and enter your resting heart rate in beats/minute: Resting heart rate is a measure of how hard your heart has to work to send blood through the body. The more physically fit you are, the easier it is for your heart to do its job. Resting heart rate is influenced by weight, the ratio of muscle to body fat, and overall physical condition.
   To find your resting heart rate, turn your left hand palm up and place the first three fingers of your right hand on your left wrist. Do not use your thumb; it has a pulse of its own and will distort the reading. Use a watch with a "second indicator" (either a sweep second hand or a digital readout). Count the number of pulses (throbs) you feel during a 60-second period. This number is your resting heart rate measured in beats per minute.
10. Select wildlife encounter frequency (1 is normal): The frequency with which you encounter wildlife can be controlled in Wilderness. You can increase your chances of coming across a creature in your travels by answering this question with a high number (range is 0.01 to 99). You can alter the frequency of wildlife encounter during a journey by typing NATURE and then responding to the prompts that appear at the bottom of the screen.
11. Select storm frequency (1 is normal): The frequency with which you encounter storms can be controlled in Wilderness. You can increase your chances of confronting bad weather by answering this question with a high number (range is 0.01 to 99). You can alter the frequency of storms during a journey by typing NATURE and then responding to the prompts that appear at the bottom of the screen.

[3] **A NEW JOURNEY ON ONE OF YOUR MAPS:** select this option from the Main Menu if you want to begin a new adventure on a topo map you created. After selecting [3] on the Main Menu and pressing [**RETURN**], replace the Country Disk with one of your own Topo Map Disks. After pressing [**RETURN**], you see the topo map on that disk. Use the scale magnification to inspect the geographic features. When you are finished inspecting the map, press [**E**]. To begin a journey on a British Columbia location, you must boot the System with a British Columbia Country disk; to use a New Guinea map, you must boot with a New Guinea Country Disk, and so on. The Global Explorer Countries Disk lets you use maps from all six geographic areas.

[4] **RESUME A PREVIOUSLY SAVED JOURNEY:** select this option from the Main Menu if you want to continue an incomplete adventure. After pressing [**4**] on the Main Menu, remove the Country Disk from the disk drive and replace it with the disk containing the saved journey you want to continue; press [**RETURN**]. Now you see the Resume A Previously Saved Journey screen.

[5] **CREATE A NEW TOPO MAP:** select this option from the Main Menu to create new topographic configurations in any one of six geographic areas. After selecting [**5**] on the Main Menu and pressing [**RETURN**], you see the Topographic Map Creator screen for the Sierra Nevadas (or for the geographic region named on the Country Disk).

If you are using the Global Explorer Disk, you are asked to select the country for which you want to create a new map (enter the appropriate number from 1 to 6). You may want to consult Appendix D: Atlas, for information about each of the six geographic areas.

After choosing your country, select the level of difficulty for the adventure. If you are using a single Country Disk, you begin the map creation process by selecting the level of difficulty. Levels range from 1 to 10. Remember, the higher the level of difficulty, the more difficult the terrain, the scarcer the supplies, the harsher the weather, and the more frequent the encounters with dangerous wildlife.

A difficulty level of 1 is considered easy; generating a topo map at this level takes about an hour. A level 10 adventure is rated as backbreaking; the topo map can take up to three hours to be completed. Once the map generation process has begun, you can leave your computer unattended, even overnight. After selecting the level of difficulty (enter the appropriate number from 1 to 10), you see a confirmation of your instructions for creating a map.

Generating a new topo map is a multi-step process. The sequence occurs in the following order:

1. Making Wooded/Jungle Areas: during this phase, the forests or jungles are drawn in high-resolution graphics.
2. Making Mountain Peaks: phases 2 through 6 are in low-resolution graphics; the wooded or jungle areas appear as green patches. The high and low points of the terrain are determined; these points are shown as white blocks.
3. Calculating Topography: the high and low points established in Phase 2 are used to create the shape of the terrain.
4. Starting New Water Unit: rivers are plotted as blue blocks. They are drawn originating at high-terrain points and descending to low terrain points. When a river fills a depression in the terrain, a lake is created.
5. Creating Contour Database: the map is filled in with colored blocks that represent relative altitude levels (listed from lowest to highest): orange, red, dark green, light green, pink, light blue, dark blue, purple.
6. Determining Special Locations: the final details are put into the map.

When the topo map is complete, the menu below appears at the bottom of the map:

Topo Map Finished
[H]i Resolution View [S]ave to Disk
[M]ake Another Map [R]eturn to Menu
[B]egin a Journey on this Map

Select one of the options by pressing the appropriate letter key:

[**H**] presents the just-completed topo map in high resolution, as it appears in the Adventure. Press [**E**] to return to the Topo Map Finished Menu.

[**S**] allows you to save the topo map you just created. (You can save up to five topo maps on each disk.) You see the message **INSERT A TOPO MAP DISK THEN PRESS [RETURN]**. Remove the Country Disk from the disk drive and insert either a DOS 3.3 disk or a disk on which you have previously saved other topo maps. If you are using a DOS 3.3 disk, you see the messages **THIS IS A DOS 3.3 DISK/DO YOU WANT TO USE IT AS A TOPO MAP DISK**?

If you answer yes, (press [**Y**]); the disk becomes a Topo Map Disk; all information previously stored on the disk is destroyed. Now you have created a Topo Map Disk and you are shown a catalog of the maps on that disk. Catalogs contain the name of the geographic area and the level of difficulty for that map. A newly created Topo Map Disk will have an EMPTY catalog. You are asked, **SAVE TOPO MAP TO THIS DISK**? Answer yes, (press [**Y**]), and you are asked to enter a map name of up to 20 characters. Now you can:

[1] Save to another Topo Map Disk
[2] Make another Topo Map
[3] Start a new game on this Map
[4] Return to Main Menu

[**M**] lets you save the map you just created and then start a new one.

[**R**] lets you save the map you just created and returns you to the *Wilderness* Main Menu.

[**B**] displays the Scenario Set-Up Menu (described on pages 76-77). The map you just created will be preserved only if you use the SAVE option at some point during your journey. (See page 73 for a complete description of saving journeys.)

[6] **PREVIEW GLOBAL EXPLORATIONS:** select this option from the Main Menu to find out what adventures await you in the five other countries available for *Wilderness*.

[7] **END FOR NOW:** select this option from the Main Menu to clear the screen and exit the program.

Appendixes

FULL INVENTORY LIST

Clothing (use **PACK**, **CARRY**, or **WEAR**)

Item	*Weight (oz)*	*Volume (in^3)*
Balaclava	5	52
Boots	80	104
Cotton Socks	5	52
Gaiters	5	52
Gloves	10	40
Hat	2	35
Jeans	24	121
Jersey	5	52
Mittens	10	35
Pants	32	173
Parka	24	180
Raincoat	16	60
Shoes	26	40
Shorts	4	40
Sweater	16	121
Wool Socks	8	86

Supplies (use **PACK**, or **CARRY**)

Item	*Weight (oz)*	*Volume (in^3)*	*Maximum Number of Uses*
Altimeter	2	7	—
Axe	32	52	—
Backpack (must use CARRY)	64	60	—
(sleeping) BAG	64	518	—
Canteen (must use CARRY)	16	16	holds 2 qts
Compass	1	1	—
(ground) Cover	45	200	—
Crampons	21	52	—
First Aid Kit	4	35	12
Flagyl	1	2	24
Flashlight	11	43	12
Fuel	16	138	16
(magnifying) Glass	1	2	—
(fishing) Gear	55	110	—
Gun (and bullets)	50	100	36
Iodine tablets	1	2	24

Knife	8	10	—
Map	0	1	—
Matches	1	2	48
Oxygen tank	320	900	35
(ensol) Pad	24	432	—
Pitons (and carabiners)	48	103	—
Quinine	2	3	28
Raft	96	400	—
(insect) Repellent	3	7	21
Rope	32	340	—
Salt tablets	1	2	24
Sewing kit	2	5	—
Snakebite kit	1	5	—
Snowshoes (can use WEAR)	64	600	—
Soap	4	8	63
(camping) Stove	32	120	—
Sunscreen	4	12	14
Sunglasses (can use WEAR)	2	3	—
Tent	64	518	—
Thermometer	1	1	—
Trap	48	100	—
Trinkets	12	12	6
Utensils	16	120	—
Watch (can use WEAR)	2	1	—

Food (use **PACK**)

item	*Wt (oz)*	*Vol (in^3)*	*Cal (oz)*	*Water cnt.*	*Spoil***
Apples	80	160	13	high	7 days
Bacon*	16	16	125	none	none
Beans	80	160	35	medium	36 hours
Bologna	48	48	80	medium	24 hours
Bread	32	96	70	low	3 days
Candybars	16	16	141	low	21 days
Carrots*	16	16	100	none	none
Cheese	48	96	110	low	3 days
Eggs*	16	16	168	none	none
Nuts	48	48	160	none	none
Peas*	32	32	93	none	none
Potatoes	80	160	100	medium	10 days
Raisins	24	24	81	low	none
Rice	48	96	110	none	none
Tuna (canned)	16	32	47	high	12 hours (exp)
Water	128	256	—	—	—

*freeze-dried
**at 65° F

B

VOCABULARY

In *Wilderness*, most actions are accomplished with one- two-, or three-word phrases. For example, **RUN, SWIM,** and **SLEEP** are appropriate one-word commands. Objects such as **JEANS, WATER,** and **PARKA,** however, must be preceded by a verb before they are understandable: **WEAR JEANS; GET WATER.** In certain instances, however, the action requires an adjective: **WEAR *WOOL* SOCKS** distinguishes your intention from **WEAR *COTTON* SOCKS.**

Certain objects, once put into use, do not remain in use indefinitely. You cannot build a fire and then expect it to be available at your next campsite. Three variations of this rule occur: you must reenter **USE** (object) after any passage of time; you must reenter **USE** (object) at the start of each day; or you must reenter **USE** (object) after moving to a new location.

The vocabulary words, listed by category and in alphabetical order, appear in uppercase bold type.

Information Screens

CLUE provides information about the general location of the Lost City of Gold. Your goal percentage is decreased by 1 to 2 points every time you use CLUE.

HELP presents up to ten of the most important pieces of survival advice concerning a particular situation. These tips are listed from highest to lowest in priority. Your goal percentage is decreased by 2 points every time you use HELP.

INVENTORY, INV lists all the gear, food, and supplies available to you on the ground, in your backpack, on your body, or in your arms. The full list for a particular adventure appears at the beginning of your journey. Once you have selected your supplies, INV lists the items you have with you. It's a good idea to check your supplies everyday before leaving your campsite. For a complete listing, see Appendix A: Full Inventory List.

STATUS, STAT displays essential information about the external environment and your physical condition. Measurements are given as relative values if the proper measuring devices are not available; they appear as exact measurements if you have the appropriate equipment. Your goal and health also are listed. (See page 14 for a detailed description.)

TOPO, T topographic map of a 90×67-mile area. Other information includes contour lines, rivers, lakes, forests, jungles, latitude, area name, and location of Ranger Station. (See page 11 for a detailed description.) When in Research

Mode, press [L] to see your location on the map. Some source of light (sunlight, flashlight, fire, or matches) must be available so that you can read the topo map.

VIEW, V three-dimensional panorama of your location based on the direction you are facing and a 90-degree-horizontal field-of-view. **LOOK** and **PAN** change viewing direction.

Travel & Navigation

ALTIMETER device that measures altitude relative to sea level (accurate to plus or minus 200 feet). No provisions for calibrating altimeter. Refer to STATUS screen for altitude.

AZIMUTH, AZ used with **LOOK** to obtain a specific viewing direction. You must specify the desired azimuth in degrees measured clockwise from true north (eg, AZ = 112 degrees is 22 degrees south of due east; AZ = 270 degrees is due west). You must use a specific navigation method in order to determine direction (eg, **USE COMPASS/LOOK AZIMUTH/112**).

BACKWARD, B, BACK used with **LOOK** to establish horizontal view to rear of or opposite present view.

CLIMB traverse difficult or mountainous terrain; refers to climb up and climb down. Some climbing situations require special equipment: **WEAR CRAMPONS, USE ROPE, USE PITONS, USE AXE.** Use **CLIMB TREE** to avoid encounters with certain species of wildlife.

COMPASS magnetic compass with luminous needle and face. It points to magnetic north, not true North, so you must adjust for magnetic declination (shown on topo map) at your location. If magnetic declination is +(positive), magnetic north is east of true north. If magnetic declination is −(negative), magnetic north is west of true north.

CRAWL move at less than 1 mph. If you have a broken leg and no splint, this is the only way you can move.

DOWN, D used with **LOOK** to produce a view 45 degrees below horizontal. This is a relative direction and does not require the use of a navigation device.

EAST, E used with **LOOK;** requires that you use a navigation technique to determine direction.

ENTER go into any type of shelter (eg, **ENTER TENT** or **ENTER IGLOO**). Also used with sleeping **BAG.**

FORWARD, F, AHEAD used with **LOOK** to establish a horizontal view. This is a relative direction and does not require the use of a navigation device.

HALF LEFT, HL used with **LOOK** to obtain a view 45 degrees left of present view. This is a relative direction and does not require the use of a navigation technique.

HALF RIGHT, HR used with **LOOK** to obtain a view 45 degrees right of present view. This is a relative direction and does not require the use of a navigation technique.

LEFT, L used with **LOOK** to obtain a view 90 degrees left of present view. Also used with **PAN** to initiate a slow pan to left of present direction.

LOOK used with a specific or relative direction to control or change your view (when you are using the **VIEW** screen). The directional words are:

UP	45 degrees above horizontal
DOWN	45 degrees below horizontal
RIGHT	90 degrees right of present direction
HALF RIGHT	45 degrees right of present direction
LEFT	90 degrees left of present direction
HALF LEFT	45 degrees left of present direction
FORWARD	straight ahead and horizontal
BACKWARD	behind
SUN	look in the direction of the sun
COMPASS	look at needle reading
***NORTH**	look North
***EAST**	look East
***SOUTH**	look South
***WEST**	look West
***AZIMUTH**	a specific azimuth direction measured clockwisefrom north in degrees

*Compass directions require that you first use an appropriate direction-finding device. Even then, the view presented to you depends on your own knowledge and the accuracy of your calculations. For example, if you type **USE COMPASS/LOOK NORTH,** you are looking toward magnetic north and not true north. You must allow for magnetic declination (shown on your topo map). If you type **LOOK COMPASS,** you get your magnetic heading (the direction you are facing).

NORTH, N used with **LOOK.** You must use a navigation technique to establish a compass bearing (eg, **USE COMPASS/LOOK NORTH** or **USE SHADOW/LOOK NORTH**).

PAN, SCAN used with the directional words **LEFT** and **RIGHT** only. You pan slowly in the direction indicated, as if you were slowly turning your head. You can stop panning by pressing any character key.

RIGHT, R used with **LOOK** to obtain a view 90 degrees right of present view. Also used with **PAN** to initiate a slow pan to the right of the present direction.

ROW, PADDLE **USE** with **RAFT;** allows you to cross a river or lake at about 1 to 1.5 mph. Can provide protection from dangerous water creatures.

RUN proceed on your journey at about 6 to 10 mph. The actual rate depends on your physical condition, total weight carried, terrain slope, weather conditions, and other environmental factors. If you are traveling in a cold climate, **RUN**ning will keep you warmer than **WALK**ing.

SOUTH, S used with **LOOK.** You must first use a navigation technique to establish compass bearings (eg, **USE COMPASS/LOOK SOUTH**).

SWIM move at about 1 mph across a river or lake in the direction you are facing, or travel downriver at the speed of the current (about 3 to 10 mph, depending on river slope) by indicating that you want to follow the river.

SUN used with **LOOK** to obtain a view with the sun at the horizontal center of your field of vision.

topo MAP a dynamic topo map of a 90×67 mile area; essential for navigating a wilderness journey. If you did not bring the map with you or if sufficient light is not available, you cannot use the map. Information available on the map includes area name, latitude, magnetic declination.

UP, U used with **LOOK** to obtain a view 45 degrees above horizontal. This is a relative direction and does not require the use of a navigation device.

WALK, GO proceed at about 2 to 3 mph on land (or frozen lake) in the direction you are facing. Press [ESC] to stop walking before your travel time has elapsed.

WEST, W used with **LOOK.** You must first use a navigation technique to establish compass bearings (eg, **USE COMPASS/LOOK WEST**).

Making Camp

CAMP sets up camp and provides rest for all but 30 minutes of the specified time. To **REST** in a **SHELTER**, you must have a **TENT** with you or an empty **SHELTER** must be nearby.

FIRE can be used to warm you, to cook food, or to boil water. It cannot be transported and you must **DOUSE FIRE** before you leave your campsite. The raw materials must be available for building a fire. You can light a fire with **MATCHES**, fire **STICKS**, or a magnifying **GLASS**. In wet or windy conditions, **USE FUEL** increases your chances of getting a fire going.

HANG hang out clothing to dry, or hang food to protect it from being stolen by animals (eg, **HANG SWEATER** or **HANG FOOD**). Hanging your food supply hangs your backpack and its contents.

HUT warm, waterproof shelter that can be made from available raw materials (nearby trees, branches, grasses, etc). To use the shelter, type **ENTER** (or **USE**) **HUT**.

IGLOO warm, waterproof shelter made of snow blocks; interior temperature is above freezing, regardless of outside temperature. It takes longer to build an igloo than to construct a hut or trench. To use this shelter, type **ENTER** (or **USE**) **IGLOO**.

LEAVE, EXIT exit a shelter (eg, **LEAVE TENT**); also used with sleeping **BAG.**

MAKE, BUILD construct the named object. This is accomplished only if suitable materials are available. For example, **MAKE RAFT** or **MAKE HUT** will work if trees or limbs are nearby. **MAKE GEAR** creates fishing gear if branches, string, and something to be used as a hook are available. **MAKE CANTEEN** initiates a further dialog about the materials to be used. You can reduce the time required to make an object by using the proper tools and working during daylight hours, or by using a flashlight at night. Thus, **USE KNIFE/MAKE HUT** will get the job done faster than **MAKE HUT**.

REST, SLEEP indicate the period of time in hours. The human body requires 6 to 8 hours of rest in each 24-hour period. To prevent exhaustion, **REST** or **SLEEP** at regular intervals.

SKIN remove the pelt from any wild creature (if it is already dead). Depending on the size of the skin, you can make various items of clothing from the animal skin.

fire STICKS an alternative method for lighting a fire; if appropriate materials are available, use the phrase sequence **MAKE STICKS/ USE STICKS/ MAKE FIRE.**

TRENCH warm, relatively waterproof shelter. This is the simplest shelter to make and requires few raw materials. After digging a trench grave, cover it with branches and/or waterproof supplies such as a ground **COVER** or **RAINCOAT**. An appropriate phrase sequence is **USE AXE/MAKE TRENCH/DROP COVER/ENTER TRENCH.**

Clothing

(use **WEAR** or **REMOVE** to put on or take off clothing.)

BALACLAVA wool hat that covers the head and neck. Warm, but not waterproof

BOOTS heavy leather hiking boots

COTTON SOCKS good protection from blisters, foot sores, and microbial and fungus infections

GAITERS nylon leggings to prevent snow and water from entering over the tops of boots

GLOVES leather gloves. Warm, but not waterproof

HANG used with an item of clothing to dry a garment on a nearby tree branch

HAT cotton baseball cap

JEANS long, denim pants

JERSEY long-sleeved, cotton jersey

MITTENS wool mittens

PANTS long, wool pants

PARKA down parka. Warm, but not waterproof

RAINCOAT waterproof plastic raincoat. May be **WORN** as a raincoat, **DROP**-ped as a ground cover, or **USE**d as a solar still to condense water.

SHOES canvas tennis shoes

SHORTS cotton shorts

SWEATER wool sweater. Warm, but not waterproof

WOOL SOCKS useful in cold climates to keep feet warm and prevent frostbite

Equipment

AXE standard ice axe used in winter mountain climbing. Can be used as a climbing aid, as a weapon, or as a cutting tool for constructing items. Standard

useful phrases include **USE AXE/CLIMB; USE AXE/KILL RATTLESNAKE; USE AXE/MAKE RAFT**

BACKPACK nylon backpack for carrying supplies

BAIT any food can be used as bait to lure game into a trap. Try the phrase sequence **USE BAIT/USE TRAP/CATCH GAME**, or, when fishing **USE BAIT/USE GEAR/CATCH FISH**

CANTEEN water canteen with total capacity of 2 qts (64 oz). You must have a canteen to **CARRY WATER**. If it was unavailable in your starting inventory, you can make a canteen from available raw materials

CRAMPONS metal claws that attach to shoes or boots to make footing more secure in ice or packed-snow climbing

FLASHLIGHT ordinary flashlight with two new size-D alkaline powercell batteries with an expected life of about 3 hours of continuous use. Can be used at night for reading the topo map or other navigation aids. A flashlight at night speeds construction, as well as rate of travel. Each time you use the flashlight, 15 minutes of the 3-hour life is expended. A flashlight can be used 12 times before the batteries go dead

FUEL fuel for backpacking stove. Also useful for starting a fire in windy or wet conditions. A complete phrase sequence might be **USE FUEL/USE MATCHES/MAKE FIRE**

fishing GEAR includes rod, line, and hooks; requires the use of **BAIT**. To catch fish, you must be near a body of water containing them. If fishing gear was unavailable in starting your inventory, you can make fishing gear from available raw materials. When fishing, you must indicate the fishing time in hours. Use the phrase sequence **USE BAIT/USE GEAR/CATCH FISH**

magnifying GLASS can be **USE**d to **MAKE** a **FIRE** when the sky is clear and the sun is above 30 degrees high

ground COVER waterproof plastic ground cover. You can **WEAR** it as a raincoat, **DROP** it as a ground cover, or **USE** it as a solar still for condensing water

KNIFE all-purpose hunting knife with a 5-inch blade of Solingen steel; useful in making items and as a weapon. Typical phrases include **USE KNIFE/MAKE RAFT; USE KNIFE/KILL BEAR; USE KNIFE/SKIN WOLF**

MATCHES (in a small waterproof container). Each **USE MATCHES** lights and expends one match to **MAKE FIRE** or to provide light with which to read the topo map. In severe rain or wind, try **USE FUEL** before striking a match

ensol PAD insulating pad that reduces heat loss. Place between sleeping bag and ground by typing **DROP PAD/DROP BAG**

PITONS (and carabiners) require a **ROPE**. A full set of these mountain climbing aids are available in some supply inventories. Use the phrase sequence **USE PITONS/USE ROPE/CLIMB**

RAFT, BOAT inflatable rubber raft that can support a load of 350 lbs. If it was unavailable in your starting inventory, you can make a raft by lashing logs together with rope, but this wooden version is too heavy to carry. **MAKE RAFT** creates a wooden raft, if you have rope or twine and trees are nearby. To use the raft, type **USE RAFT/ROW**.

ROPE fifty-foot length of nylon climbing rope used for traversing steep terrain and as material for construction items. If it was unavailable in your starting inventory, you can **MAKE** a **ROPE** from available raw materials.

SEWING KIT contains implements for making items of clothing from hide; also, for a line and hooks to make fishing gear. Try the phrase sequence **USE SEWING KIT/USE HIDE/MAKE JERSEY**

SNOWSHOES light, oval, wooden frames, strung with thongs and attached to shoes or boots. They improve travel time on soft or deep snow.

STOVE small portable backpacking stove; requires **FUEL** for operation.

SUNGLASSES prevent snow blindness or protect eyes if snow blindness has occurred. If sunglasses are unavailable, you can make them from raw materials. You must precede **SUNGLASSES with USE** or **WEAR**.

TENT waterproof nylon tent. You can **WEAR** it as a raincoat or **USE** it as a shelter.

THERMOMETER standard mercury thermometer. Measures air temperature and body temperature in degrees Fahrenheit (displayed on STATUS screen). If you do not have a thermometer with you, the STATUS screen indicates relative temperature only.

TRAP snare for small game, sometimes available in your opening inventory. TRAP requires the use of **BAIT**. They can be used only if game is in your area. You must indicate for how long the trap is to be set. The odds for a successful catch are calculated and you are told the outcome. You can **MAKE** a **TRAP** from available raw materials. Try the phrase sequence **USE BAIT/USE TRAP/CATCH GAME**

TRINKETS six trinkets, such as cowrie shells and bracelets, can gain the friendship of a Dani warrior. You can **MAKE** your own **TRINKETS** from available materials

UTENSILS standard cooking utensils necessary for **BOIL**ing drinking **WATER**. If you do not have utensils with you, you can make them from almost any reasonable raw materials.

WATCH standard analog wristwatch, accurate to within plus or minus 10 minutes. (See Chapter 3 for information on how to use your watch as a navigation device.)

Food & Cooking

(spoilage is given at 65° F)

APPLES raw apples. Value 13 cal/oz; high water content; spoil in one week

BACON freeze-dried. Value 125 cal/oz; no water; does not spoil

BEANS baked beans. Value 35 cal/oz; medium water content; spoil in 36 hours

BOIL WATER must **USE** the proper **UTENSILS** and a **FIRE** to **BOIL WATER**. Boiling can purify water gathered from questionable sources or water contaminated with the Giardia organism

BOLOGNA cooked bologna. Value 80 cal/oz; medium water content; spoils in 24 hours

BREAD without preservatives. Value 70 cal/oz; low water content; spoils in 3 days

CANDYBARS, BARS value 141 cal/oz; low water content; spoil in 3 weeks

CARROTS freeze-dried. Value 100 cal/oz; no water; do not spoil

CHEESE cheddar cheese. Value 110 cal/oz; low water content; spoils in 3 days

COOK, FRY must **USE** a **STOVE** or a **FIRE**. Cooking can delay food spoilage by 48 hours and can neutralize certain types of plant toxins. Enter cooking time in hours when the prompt appears. Typical phrase sequence includes **USE FUEL/USE STOVE/COOK BEAR**

DRINK swallow the named liquid (eg, **DRINK WATER**). Indicate the number of ounces when the prompt appears

EAT ingest the named food (eg, **EAT CANDYBARS**). Indicate the number of ounces when the prompt appears

EGGS freeze-dried. Value 168 cal/oz; no water; do not spoil

FIND, FLAG used with **FOOD**, the phrase allows you to be notified whenever a source of wild food is within 0.2 mile of your location. If you do not want to be stopped for discoveries of wild food, type **IGNORE FOOD**.

HANG when **HANG** is used with **FOOD**, your supplies (the backpack and its contents) are suspended from a nearby tree out of the reach of wildlife. Used with an article of clothing (eg, **HANG SWEATER**), **HANG** suspends the garment from a tree limb to dry

ICE can be a source of drinkable water. See WATER

IGNORE, SKIP used with **FOOD**, the phrase terminates notification of wild food sources. To reinstate notification, type **FIND FOOD**

NUTS either commercial salted peanuts (in initial inventory) or wild nuts found on your journey. Value 160 cal/oz; no water; do not spoil

PEAS freeze-dried. Value 93 cal/oz; no water; do not spoil

POTATOES Idaho potatoes. Value 100 cal/oz; medium water content; spoil in 10 days

RAIN can be a source of drinkable water. See **WATER**

RAISINS California seedless raisins. Value 81 cal/oz; low water content; do not spoil

RICE white rice. Value 110 cal/oz; no water; does not spoil

TASTE, SAMPLE test a food (eg, **TASTE NUTS**) for the presence of toxins before eating it. You are not at risk when tasting poisonous foods. *Wilderness* provides a description of the taste which you can use to decide whether to eat or discard the food

SNOW can be a source of drinkable water. See **WATER**

TUNA canned tuna. Value 47 cal/oz; high water content; spoils in 12 hours after exposure

WATER refers specifically to water carried in a 2-qt canteen, or to potential sources of water from rivers or lakes, a solar still, plants, or ground water. You can **DRINK RAIN, SNOW,** or **ICE** as a substitute for water. To fill your canteen from any one of these sources, type **GET WATER, GET RAIN,** etc, and then specify the desired amount in ounces. Make sure you know which sources are pure and which might be contaminated. Searching for water is accomplished with **FIND WATER**

Health and First Aid

BODY used with **CUT,** it is one of the necessary steps to treat a poisonous bite. Used with **WET,** it can lower your body temperature if water supply is available.

CUT used with **BODY,** it is one of the steps required to treat a poisonous bite. Used with wildlife, it is an attempt to kill an animal with a sharp weapon (e.g., **USE KNIFE/CUT COBRA**).

EXERCISE run in place to warm your body and increase circulation.

FIRSTAID KIT, FRSTAID KIT used to treat infection. The firstaid kit contains antibiotic preparations. **USE FIRSTAID KIT** provides the proper dosage.

FLAGYL a drug used to treat the debilitating symptoms caused by Giardia flagellate protozoa. To administer the drug, type **DRINK** (or **USE**) **FLAGYL.** Must be taken daily.

IODINE TABLETS, IODINE TAB used to purify water from questionable sources

LOWER HEAD one of three steps in treating shock

OXYGEN tank high-altitude, pure oxygen tanks. Used to prevent or treat altitude sickness. Must be preceded by **USE**

PRESSURE dressing **USE PRESSURE** stops bleeding from severe cuts. See **STOP BLEEDING**

QUININE drug used to prevent or treat malaria. Full name Quinine Sulfate. **DRINK** (or **USE**) **QUININE** daily

insect REPELLENT used to prevent the bite of malaria-carrying mosquitoes. To apply, type **USE REPELLENT.** This provides protection for one day before requiring reapplication

SALT TABLETS, SALT TAB used to prevent or treat salt deficiency. Use the phrase **EAT SALT TAB**

SHIELD EYES for treatment or prevention of snow blindness

SNAKEBITE KIT, SNAKEBT KIT used to treat the bite of a poisonous snake. **USE SNAKEBITE KIT** performs the procedures required for proper treatment

SOAP used to prevent infection. To wash, type **USE SOAP.**

SPLINT used to treat broken arms and legs. Must be made from raw materials such as limbs or branches; must be tied with rope, fishing line, or clothing. If the raw materials are present, use **MAKE SPLINT/USE SPLINT** to administer proper treatment. Weight 50 oz; volume 120 cubic inches

STOP BLEEDING has the same effect as **USE PRESSURE** for treating severe cuts

SUCK VENOM one of the steps required in treating a poisonous bite

SUNSCREEN used to prevent sunburn. Can be applied by **USE SUNSCREEN;** provides protection for one day before requiring reapplication.

WET BODY used to reduce body temperature by immersion in water. Results in further dialog about the source and amount of water to be used

Wildlife

death ADDER New Guinea. This dangerously poisonous snake of Australia and New Guinea is related to the cobra; it waits for its prey instead of using the cobra's more active style of pursuit. Its poison is a neurotoxin that affects the central nervous system, interfering with heartbeat and breathing. It is encountered in New Guinea at any time of year, usually between about 6 PM and 6 AM, in clear, jungle, or rocky terrain, and at elevations of lower than 2,000 ft

ANACONDA Bolivia. The anaconda is one of the largest snakes in the world, matched in size only by the reticulate python of southeastern Asia and the rock python of Africa. All adults are longer than 20 ft and some are longer than 30 ft. Anacondas kill their prey by wrapping their victim so tightly with their coils that the victim cannot breathe. They also defend themselves by biting with their many sharp teeth. The anaconda is encountered at any time of year or day, in and around lakes and rivers, and at elevations between 1,000 and 3,000 ft

black BEAR Sierra Nevada. The average black bear weights between 200 and 400 lbs, but some have reached as much as 900 lbs. Fast runners and skillful tree climbers, they are generally not dangerous unless you come between a mother bear and her cub. They are most likely to be encountered during March through October, between 3 PM and 7 AM, in wooded or clear terrain, between 2,500 and 8,500 ft

grizzly BEAR British Columbia. The adult male can reach 9 ft. long, and can weigh 1,000 lbs. These massive creatures once roamed the northwestern United States, but few remain. However, many can still be found further north in British Columbia. The grizzly is considered by hunters to be the most dangerous of all North American wildlife. The adult grizzly does not climb trees (as the black bear does) and cannot run downhill as efficiently as it can on level or rising terrain. It roams from March through October, generally between 4 PM and 8 AM, in clear or wooded terrain or along river shores, and at elevations of lower than 5,000 ft

CANNIBAL New Guinea. Cannibalism, although it has declined dramatically over the past 30 years, still exists in a few regions of New Guinea. Much has been written about the Dani tribe of the Baliem Valley region of west central New Guinea. More than 50,000 Dani live in the 40×10-mile valley, and at least 50,000 more live in villages in the surrounding outskirts.

As the last human remnants of the Stone Age, these unusual people are driven by tribal customs ranging from friendly curiosity, with their constant shouts of wa-wa-wa, to sudden and cruel warfare. Battles can be waged over land disputes, over the need to placate the ghosts of their forefathers, or even over the theft of one pig. Their only weapons are spears and arrows; they can throw spears for 50 ft.

The men remove all hair from their bodies but not from their heads. They cover their faces with black soot and pig fat in order to appear more handsome, as well as to ward off mosquitos. Their only clothing is a holim or tubular gourd worn over the genitals. Kepus, or bachelors, have failed to win the necessary respect to allow marriage because they have never killed other men. Many kills and extreme courage are required for a man to become a kain, or overlord.

The Dani cut off fingers or pieces of their ears each time they experience a great emotion. They prize cowrie shells and certain other trinkets which they think protect them from evil spirits. As cannibals, it is not uncommon for them to eat the palms and brains of a slain warrior in order to gain his strength and knowledge.

The Dani are generally friendly to strangers in their land, but you must remember the following principles: show respect for their tribal customs; display courage; and offer them trinkets to win their friendship. You can enhance your chances of surviving these New Guinea tribesmen by **USE TRINKETS** (if you have them).

The Dani warriors can be encountered at any time of year or day, on any type of terrain, usually at elevations between 1,000 and 9,000 ft

king COBRA Burma. This extremely poisonous snake can reach 18 ft long. Easily excited, it appears "hooded" by moving its ribs to flatten its neck. The cobra kills and eats many small animals, but fears the mongoose. Several African and Asian species can spit their venom from a distance; if this venom gets in a victim's eyes it can cause severe irritation. However, most king cobras do not attack humans unless they are surprised while guarding their eggs.

In Burma, the king cobra can be encountered at any time of year, usually between 4 PM and 8 AM, in clear or jungle terrain, and at elevations between sea level and 2,000 ft

CROCODILE, CROC New Guinea. Crocodylus Porosus, also known as the salt-water crocodile, is a huge and awesome reptile that should be avoided. Even larger than the dreaded Nile crocodile, it is often 20 ft long.

It swims up rivers for great distances from the ocean. Crocodiles traveling from Australian waters all the way to inland New Guinea have been reported. There are wartime accounts of many soldiers being eaten by these powerful creatures.

The salt-water crocodile can be encountered at any time of year, generally between 6 PM and 8 AM, in or along rivers and lakes, and at elevations between sea level and 800 ft

Indian ELEPHANT Burma. These mammals are among the largest and most powerful land animals, with inch-thick skins, foot-thick skulls, good hearing, and a superior sense of smell. Much has been written on the Indian elephant and its larger relative, the African elephant. Wild elephants roam in herds of 200 or more. Some males turn "bad" and become very fierce. These "rogue" elephants are usually driven from the herd. The Indian elephant in Wilderness, though generally not dangerous, is unpredictable. It can be encountered at any time of the year or day, in the jungle or along the edges of lakes and rivers, and at elevations between sea level and 1,000 ft

FERDELANCE Bolivia. The fer-de-lance, in the tropical regions of Mexico and South America, is one of the largest and deadliest of poisonous snakes. It has fully formed fangs at birth and, even as a baby, can inflict a deadly bite. The adult can reach 8 ft long; it can be encountered at any time of year, usually between 6 AM and 8 PM, in clear, jungle, or rocky terrain, at elevations between 1,000 and 6,000 ft

FISH varieties of fresh-water fish. Value 40 cal/oz; contains much water; spoils in 6 hours (at 65 degrees F). Must be caught by **USE BAIT/USE GEAR/CATCH FISH** or **USE** (weapon)/**KILL FISH.** Many fish contain toxins that cannot be eliminated by cooking. Be particularly wary of odd-looking fish with strange shapes and no scales, especially in the tropics

GAME small game. Value 75 cal/oz; moderate water; spoils in 18 hours (at 65° F) if not cooked immediately. Must be caught by **USE BAIT/USE TRAP/CATCH GAME** or **USE** (weapon)/**KILL GAME**

INSECTS varieties of insects which can be used as food sources. Value 40 cal/oz; contain moderate water; spoil in 6 hours (at 65° F). If they are in your area,

you can catch and eat them without first killing them. They are generally safe to eat, but you should still make a taste test

JAGUAR Bolvia. Sometimes known as "El Tigre," this is one of the largest of the great cats of the Americas. In pioneer days, some were found as far north as Arkansas, but today they range from parts of Mexico south to Argentina. This fierce cat can reach 7 ft. long and can weigh 250 lbs. It usually eats small game, but might attack and kill horses and cattle. It is usually afraid of human beings, but on occasion may attack an unprotected person. Its roar is deep and frightening. The jaguar can be encountered at any time of year, usually between 5 PM and 7 AM, in clear or jungle terrain, around rivers, at elevations between 1,000 and 4,000 ft

MOOSE British Columbia. The largest member of the deer family, it can reach over 7 ft. high at the shoulder and weigh nearly 1,800 lbs. The bull moose has heavy antlers that can spread 6 ft or more. It sheds and grows a new pair of antlers each year. By late August, it polishes these weapons against trees. The moose can be encountered at any time of year or day, in wooded terrain or along the the edges of rivers and lakes, at elevations lower than 4,000 ft

mountain CAT Chile. This small creature is only 3 ft. long from nose to tip of tail. It is relatively rare, preys on small mammals, and roams in the arid Andes to very high altitudes. It can be encountered at any time of year, usually between 6 PM and 6 AM, in clear or rocky terrain, at elevations from 5,000 to 14,000 ft.

PUMA, COUGAR Sierra Nevada, Bolivia, and Chile. A member of the large cat family, the heaviest cougar on record weighed 227 lbs. The cry of the cougar is wild and terrifyingly human. This cat usually hunts at night, but rarely seeks a human victim. It can be encountered year round, between 5 PM and 7 AM, in all types of terrain, between 1,000 and 12,000 ft

Indian PYTHON Burma. This impressive snake of southeast Asia can reach 20 ft long. By coiling around its victim, it tightens itself just enough to stop the victim's breathing and blood circulation. Pythons typically eat small animals about the size of a house cat, but may attempt to kill and swallow larger prey. All pythons swim and climb very well. They may be encountered at any time of year, usually between 6 PM and 6 AM, in all but clear types of terrain, at elevations lower than 3,000 ft

Western RATTLESNAKE, RATTLER Sierra Nevada. One of several types of poisonous American snakes belonging to the pit viper family, it often gives a warning rattle before striking its prey. Its venom can vary from slightly toxic (a small rattler or one that has recently struck a victim) to very toxic (a larger snake or one that has not expended its venom for days). It can be encountered from May through September, between 6 AM and 6 PM, in clear or rocky terrain, between sea level and 8,000 ft

Bengal TIGER Burma. This beautiful creature, considered more powerful than a lion, is found in many parts of India, Burma, China, and Malaysia. The male can reach 10 ft long from nose to tip of tail, and can weigh 500 lbs. It is a flesh eater. Indian tigers consume over 30,000 cattle each year. The Bengal tiger hunts at night, is a good swimmer, and can live up to 20 years. With age and a decline in energy, some tigers become maneaters. The Bengal tiger can be encountered at any time of year, usually between 4 PM and 8 AM, in the jungle or around rivers, at elevations between sea level and roughly 2,500 ft

timber WOLF British Columbia. Larger than a German shepherd dog, males weigh more than 100 lbs and can travel for hours at 20 mph. The wolf has long legs, large feet, and powerful jaws. The timber wolf is sometimes called the gray wolf because of its light-to-medium-gray coat. It has strong family ties and is a master hunter. It kills sick or injured caribou or moose. The timber wolf can be encountered at any time of year or day, in clear, wooded or rocky terrain, at elevations lower than 5,000 ft

Weapons

BOW (and arrows) must be made from raw materials available in wooded areas. The phrase sequence (**USE KNIFE**)/**MAKE BOW** creates a bow plus an ample supply of arrows

CLUB if tree limbs are in the area, you can **MAKE** a large wooden **CLUB** to use as a weapon

GUN Ruger "Security-Six" .357 magnum handgun with a maximum supply of 3 dozen, 125-grain, soft-nosed bullets. Ammunition is in shorter supply at higher difficulty levels

KILL, ATTACK used to kill wildlife, fish, or small game. An appropriate weapon must first be put to use (eg, **USE KNIFE/KILL GAME; USE CLUB/KILL PYTHON**). You are not guaranteed sucess in your attempts to kill. Your target may try to defend itself, injuring you during the encounter. The outcome depends on your physical condition, the effectiveness of your weapon, and the agility of the animal

ROCK you can use an available rock as a weapon. Try the phrase sequence **USE ROCK/KILL COBRA.** Weight 100 oz; volume 100 cubic inches

SPEAR must be made from raw materials available in wooded areas, or can be taken from a dead cannibal. The phrase sequence (**USE KNIFE**)/**MAKE SPEAR** creates this weapon

SCARE used in circumstances similar to those of **KILL,** the phrase can frighten the creature away (or antagonize it into attacking). Your attempt at scaring an animal might or might not be successful

Plants

CACTI includes a variety of cacti. Value 25 cal/oz; contain much water; spoil in 4 days (at 65° F). Generally safe to eat; to be completely safe, check for possible bitter taste.

FRUIT includes both fruits and berries. Value 30 cal/oz; fruits contain much water; spoil in 3 days (at 65° F). Be sure to taste all fruit before eating any. Check for a strange or bitter taste.

MUSHROOMS includes a variety of mushrooms. Value 25 cal/oz; contain much water; spoil in 2 days (at 65°F). These are best avoided unless no other source of nourishment is available. No sure sight or taste rules exist for recognizing the presence of toxins (other than using a published guide or eating and awaiting the outcome). Avoid eating them if alternatives exist

NUTS can be commercial or wild. Value 160 cal/oz; contain no water; do not spoil

PLANTS includes a variety of leafy plants. Value 10 cal/oz; contain much water; spoil in 5 days (at 65° F). Generally safe to eat, but watch for such danger signs as milky sap, silky windborne seeds, unpleasant bitter taste, or sharp stinging sensation when tasted.

Miscellaneous

AIRPLANE wreckage the beginning of your adventure in the plane crash scenario. To use wreckage as a shelter in cold or wet weather, type **ENTER** (or **USE**) **AIRPLANE**

CARRY, TAKE transport the named object (eg, **CARRY GUN**) if weight and volume limits are not exceeded. The **BACKPACK** and **CANTEEN** (with water) must be carried

CITY destination in the archeological expedition. To use as a shelter, type **ENTER** (or **USE**) **CITY.**

DROP, REMOVE discard or take off any item being carried, worn, or packed in the backpack. If you **DROP BACKPACK,** all items packed inside will also be dropped.

GET, FIND, CATCH in some instances, a synonym for **CARRY.** You also can use these words to locate an object (this is followed by further dialog). **CATCH** can be used specifically to trap game or fish (eg, **USE BAIT/USE TRAP/CATCH GAME**).

GOLD STATUE priceless gold icon to be recovered from the Lost City. Weight and volume vary and depend on player's body weight. Weight of statue typically ranges from 10 to 25 lbs

NATURE allows you to alter the frequency of storms or wildlife encounters during the course of an adventure

ranger OUTPOST destination in the plane crash scenario; the beginning of your adventure in the archeological expedition. To use as a shelter, type **ENTER** (or **USE**) **OUTPOST.** Appears as a large white dot (in magnified view) on the topo map

PACK, STORE place the named object in the **BACKPACK,** if weight and volume limits are not exceeded. All food items must be packed

USE use the named object for the purpose for which it was designed. For example: **USE MATCHES** lights one match; **USE SUNSCREEN** applies sunscreen, for one day; **USE FIRE** makes a fire available for warmth, cooking, and boiling water until the fire is put out with **DOUSE FIRE**. **USE KNIFE** uses the knife for one task at a time. Many objects must be preceded by USE before you can accomplish your action. Once the item is in use, follow with the action. For example, **USE ROPE/CLIMB**; **USE KNIFE/SKIN BEAR**; **USE COMPASS/LOOK NORTH**

WAIT, PAUSE temporarily cease activity. Changes (in weather, position of sun, etc) that occur as time passes continue to occur

MEDICAL INFORMATION

Injury	Prevention	Treatment
Serious Cuts	use care in traveling or in dealing with dangerous wildlife	STOP BLEEDING or USE PRESSURE
Broken Arm	same as above	USE SPLINT
Broken Leg	same as above	USE SPLINT
Shock	same as above	LOWER HEAD warm body DRINK WATER
Sunburn	USE SUNSCREEN daily or USE SHELTER or WEAR clothes that cover body	WET BODY and DRINK WATER
Snow Blindness	WEAR SUNGLASSES	SHIELD EYES or WEAR SUNGLASSES
Frostbite	WEAR clothes that cover extremities	warm extremities
Poisonous Bite	use care in dealing with venomous creatures	USE SNAKEBITE KIT or CUT BODY/SUCK VENOM/USE PRESSURE

Illness	Prevention	Treatment
Infection	If cut, USE FIRSTAID KIT or USE SOAP	USE FIRSTAID KIT (contains antibiotics)
Salt Deficiency	EAT SALT TABLETS or EAT foods containing salt	same as Prevention
Food Poisoning	do not eat spoiled or toxic food; when in doubt, COOK food	DRINK WATER
Giardia	BOIL WATER or USE IODINE TABLETS	USE FLAGYL daily

Malaria	USE INSECT REPELLENT daily or USE QUININE daily	USE QUININE daily
Dehydration	DRINK WATER regularly	same as Prevention
Starvation	EAT food regularly	same as Prevention
Exhaustion	REST or SLEEP or CAMP regularly	same as Prevention
Altitude Sickness	USE OXYGEN or CLIMB down mountain	same as Prevention
Hypothermia	warm body by WEARing additional clothing, ENTERing shelter, EXERCISEing or USEing FIRE	same as Prevention
Hyperthermia	keep body cool	WET BODY and DRINK WATER

ATLAS

Bolivia

Area: 412,777 square miles. Greatest North-South distance, 900 miles; greatest East-West distance, 800 miles. It is bordered by Brazil on the north and east, Paraguay on the southeast, Argentina on the south, and Chile and Peru on the west.

The Terrain

Bolivia is a South American republic named for Simon Bolivar, who led Spain's South American colonies to freedom in the 1820s. It is the fifth largest South American country in area and one of the richest in mineral resources.

Bolivia has no natural seacoast; natural barriers include the plains of the Chaco, the Amazon jungles, and the Andes mountains. Large forests and broad pastures make up much of the terrain in the eastern portion of the country. Two thirds of the population live on a barren plateau that occupies less than one tenth of the country high in the Andes.

The country has three major regions: the western plateau; the yungas, or valleys; and the lowlands.

The western plateau is a flat, treeless plateau about 12,500 feet above sea level. It averages 90 miles wide and stretches for about 400 miles through western Bolivia. The Cordillera Occidental, or Western Range of the Andes, extends along the Chilean border and forms the western boundary. The Cordillera Real, or Royal Range of the Andes, forms the eastern boundary of this region. Mount Illampu, which rises to 21,490 ft near Lake Titicaca in the Cordillera, is the highest mountain in Bolivia. Lake Titicaca spans the border of Bolivia and Peru, 12,507 ft above sea level. It is the highest navigable body of water in the world and has an area of 3,500 square miles. Lake Poopo, a salt lake, covers 1,000 square miles of the plateau.

The Yungas are valleys and gorges along the eastern slopes of the Cordillera Real. Dense forests, overgrown with vines, moss, and ferns, cover this region. East of the Cordillera Real, the land becomes less hilly until it reaches the level lowlands.

The Lowlands cover seven-tenths of Bolivia's land mass. They lie between 100 and 1,500 ft above sea level. This area is made up of the plains of the Mamore and Beni rivers in the north, and the Chaco and Santa Cruz regions in the south. Tropical forests and dense vegetation cover about half the northern area; grassy plains make up the rest. Grasslands and scrub forests cover most of the Santa Cruz and Chaco regions.

More than 30 rivers of the Amazon system, including the Beni, Guapore, and Mamore rivers, flow throughout the northern and central lowlands. The Paraguay River and its tributary, the Pilcomayo, drain the southern lowlands.

The Climate

The western plateau is so high that temperatures there remain cold all year, averaging about 45°F. December, January, and February (Bolivia's summer months) make up the rainy season; yearly rainfall averages from 15 to 28 inches.

In the Yungas, average temperatures range from 50°F to 55°F in the higher regions; to 60°F to 70°F in the lower regions. The upper valleys get about 25 inches of rain a year; the lower valleys, average 35 inches.

Lowland temperatures average about 73°F in the South and 80°F in the North. Heavy rain, an annual average of 70 inches, falls from November to March in the northern lowlands, but almost no rain falls at any other time of year. Rainfall averages about 55 inches a year in the central lowlands and 20 inches in most of the Chaco, though droughts often occur from July to November.

British Columbia

Area: 366,255 square miles (6,975 square miles of which are inland water), third in size of the Canadian provinces. Greatest North-South distance, 900 miles; greatest East-West distance, 600 miles. Coastline, 7,000 miles.

The Terrain

British Columbia is the westernmost province of Canada. It is sometimes called the Switzerland of America because of its beautiful mountains, forests, snowfields, lakes, and rivers. Inlets of the Pacific Ocean provide more than 7,000 miles of coastline. British Columbia covers more area than California, Oregon, and Washington combined, and serves as Canada's gateway to the Pacific Ocean.

This province faces Alaska on the Northwest, the Yukon and the Northwest Territories on the north, and Alberta on the east. Montana, Idaho, and Washington are on its southern border.

British Columbia is made up of six regions: the Insular Mountains, the Coast Mountains, the Uplands Interior, the Eastern Mountains, the Transmontane Plains, and the Lower Fraser Valley. All regions, except for the Transmontane Plains, lie within the Cordillera, a belt of parallel ranges running northwest and southeast. This mass of mountains is 300 miles wide at the northern boundary of the province and 400 miles wide at the southern border.

The Insular Mountain region includes Vancouver Island and the Queen Charlotte Islands. They are part of an ancient mountain range, most of which now lies below the ocean. Vancouver Island extends over 285 miles, and averages 60 miles wide. The Queen Charlotte Islands, northwest of Vancouver Island, form part of the sunken mountain range.

The rugged peaks of the Coast Mountains stretch beyond the Fraser River. They form the high coastline along the western mainland of the province. The range is about 100 miles wide; its lowest point is the Prince Rupert area. This mountain range, whose peaks reach between 6,000 and 9,000 ft, form the western edge of the Cordillera. Mount Waddington, the highest peak, towers 13,260 ft above the Pacific Ocean. Inlets from the Pacific Ocean jut as far as 60 miles inland. Coastal islands form the Inside Passage, a protected waterway between Vancouver and Skagway, Alaska.

The Uplands Interior ranges along the east side of the Coast Mountains. The southern region contains lakes and river valleys that are rich farm and orchard lands. Cattle and sheep graze in the forested southern highlands. The northern part of the plateau is rolling countryside and contains the largest areas of level land in this mountainous part of the province.

The Eastern Mountains include the Columbia Mountain system, the Rocky Mountain Trench, and the Rocky Mountains. They lie to the east of the Uplands Interior. The Columbia system, in southeastern British Columbia, includes the Selkirk, Purcell, Monashee, and Cariboo mountain ranges. The Rocky Mountain Trench, a long, narrow valley, lies east of the Columbia system in the south and the Omineca range in the north. It forms a natural north-south highway through the province from the Yukon Territory to the state of Montana. Several rivers, including the Columbia, Finlay, Fraser, Kootenay, and Parsnip, flow through it. The Rocky Mountains run along the eastern ridge of the province in the south. Many of its peaks are more than 10,000 ft above sea level. This is the only region on the mainland of British Columbia that lies outside the great mountain mass called the Cordillera.

The Transmontane plains, often called the Peace River District, cover the northeast corner of British Columbia. The Rockies isolate the region from the rest of the province. Its broad valleys provide some of the province's farmland.

The Lower Fraser Valley is a delta region of fertile lowlands divided by small ranges of hills. It lies in the southwestern corner of the province. Dikes protect much of the delta lowlands from flooding. This valley is the main agricultural region in British Columbia.

The Climate

The climate of British Columbia varies greatly; the mountain ranges block the easterly winds that gather moisture as they move over the northern Pacific Ocean. The southern coast has mild, even temperatures that average about 35°F in winter and 70°F in summer. Victoria seldom has freezing winter temperatures; flowers bloom here throughout most of the year. The temperature ranges broaden on the northern coast and are greatest in the Uplands Interior. Cold air masses from the Yukon cover the Interior for most of the winter months. The average monthly temperature in Kamloops, in the south, ranges from 22°F in January to 70°F in July. Northern interior extremes range from −50°F to 90°F. Mild breezes along the eastern slopes of the Rockies give the Peace River District average temperatures of 0°F in January to 60°F in July.

The annual rainfall on Vancouver Island varies from about 200 inches on the west coast to 27-to-35 inches at Victoria. When warm, moist winds rise over the mountains, the moisture condenses and much rain falls on the western slopes. Because of these weather patterns, the inland regions of the province and the eastern sides of the islands are much drier than the coastal areas and the western mountain faces. The valleys of the Uplands Interior get only about 10 inches of precipitation a year, and the northern interior has from 16 to 20 inches. Most of the precipitation in the northern interior and the north falls as snow. The Peace River District averages from 15 to 18 inches of annual precipitation.

Burma

Area: 261,610 square miles. Greatest length, 1,200 miles; greatest width, 625 miles. Coast line, 1,500 miles.

The Terrain

Burma, a country in southeastern Asia, is a little smaller than Texas. This nation lies on the Bay of Bengal and is shaped somewhat like a kite with a tail. The tail is formed by a long, narrow stretch of land that runs south of the Malay Peninsula. Burma faces China on the north and northeast, the Republic of China (Laos) on the east, Thailand on the southeast, and the Bay of Bengal on the south. India and Pakistan border Burma on the west.

This country is divided into Upper Burma and Lower Burma. Upper Burma is a region of high mountains, flat valleys, and thick forests. It encompasses all Burma except for a strip of land along the west coast between the Arakan Range and the Bay of Bengal, and the area south of a line between the cities of Prome and Toungoo. The mountains stretch south from China in two arms that separate Burma from its neighbors. The country's highest peak, 12,553 ft Mount Saramati, rises along the India border in northwestern Burma. The Pegu Yoma, a long, low mountain range running north and south, separates the Sittang River valley from the Irrawaddy River valley in southern Upper Burma.

All the principal rivers rise in the mountains of Upper Burma and flow south into the Bay of Bengal. Most of the smaller streams flow into the 1,250-mile-long Irrawaddy River. Another important river is the Salweem, which flows along the eastern border of Burma.

Lower Burma includes the country's entire 1,500-mile coastline. The Irrawaddy River divides into many branches west of Rangoon. These branches fan out and flow into the Bay of Bengal through a wide, flat peninsula called the Irrawaddy Delta. The narrow plain and low mountain range extending from the Irrawaddy Delta to the Pakistan border on the west is called Arakan. The Sittang River empties into the Gulf of Martaban, the largest of Burma's many coastal gulfs and bays. The Tenasserim Coast, a thin strip of land about 50 miles wide and 500 miles long, stretches from the Gulf of Martaban. This region of mountains, fertile plains, and swamps extends to the Malay Peninsula.

The Climate

Burma is cool in the mountain regions, and hot and wet in the coastal areas. Temperatures in the mountains drop to around freezing in winter. Average temperatures in Rangoon range from 92°F in April to 70°F in December.

Rainfall in most of Upper Burma averages about 40 inches a year. Monsoon winds between May and October bring as much as 200 inches of rain to the western side of the mountains in Upper Burma, and to sections of Lower Burma.

Chile

Area: 286,396 square miles. Greatest North-South distance, 2,630 miles; greatest East-West distance, 190 miles. Coast line, 2,900 miles.

The Terrain

Chile, a republic in the southwestern part of South America, lies between the Andes Mountains on the east, the Pacific Ocean on the west, and Peru on the north. This country occupies an area slightly larger than Idaho, Utah, and Arizona combined. Like many other Pacific Ocean areas, Chile suffers frequent earthquakes. And though it has over 2,900 miles of coast, it has few good harbors.

The three major regions in Chile are: the desert; the central valley; and the forest and lake region. Desert and semi-desert land covers the northern 1,000 miles of the country. The northernmost section is a hot, dry region that is rich in minerals. Mount Llullaillaco, the highest point in Chile, rises 22,146 ft above sea level just to the south of the Atacama Desert. From the Copiapo River to the city of Illapel, a distance of 400 miles, is a semi-desert region where crops grow in irrigated valleys.

The central valley, which is rich and fertile, extends about 500 miles south of Illapel to the Bio Bio River. Some of the world's richest farmland is in this region. Several rivers cut across the valley from the Andes to the Pacific.

The forest and lake region in the extreme south is mountainous and dotted with lakes. The rivers of Chile, though wide and deep, have little economic importance. The fjords, or narrow inlets, of the southern coast resemble those of Norway. The southernmost part of the country is Tierra del Fuego, Chile's largest island. Thousands of smaller islands lie along the southern coast.

The Climate

Chile's great length and irregular surface create varied climatic conditions. The north is hot and dry; the Atacama desert frequently has no rain for an entire year. The central valley is warm during the day and cool at night. Southern Chile is cold and wet. As much as 100 inches of rain can fall here in a year. January temperatures in Chile can range from 70°F in the north to 50°F in the south. July temperatures range from 60°F in the north to 40°F in the south.

New Guinea

Area: 304,000 square miles. Greatest Northwest-Southeast distance, 1,500 miles; greatest North-South distance, 430 miles. New Guinea is one of the largest islands in the world and lies north of Australia across the Torres Strait.

The Terrain

High mountain ranges run down the center of the island. Important ranges include the Nassau, Oranje, Bismarck, and Owen-Stanley mountains. Mount Carstensz, in western New Guinea, rises 16,500 feet above sea level and is the highest point on the island. The coastal plains are often marshy. Important rivers include the Mamberambo in the west, and the Sepik and the Fly in the east.

Most of New Guinea is covered with tropical jungles. Wild animals on the island, such as the echidna and the bandicoot, are related to animals found in Australia. Other wildlife include apes, baboons, snakes, and crocodiles.

The Climate

New Guinea's climate generally is hot and humid except in some parts of the mountain region. The island has an overall average temperature of 80°F.

Sierra Nevadas

The Terrain

The Sierra Nevada Mountains form a massive granite wall more than 400 miles long and about 70 miles wide in east-central California, a Pacific coast state bordered on the north by Oregon, on the east by Nevada and Arizona, and on the south by Mexico. The range covers 31,000 square miles between the Great Basin in the eastern portion of the state, and the Central California Valley, which is made up of the San Joaquin and the Sacramento valleys.

Several peaks in the north-south range rise over 14,000 ft above sea level. They inlude 14,495-ft Mt. Whitney, the highest mountain in the United States south of Alaska. The lowest pass in the range, Beckwourth, is more than 5,000 ft above sea level. The Donner Pass, a landmark in the settling of the West, is the only route open year-round. In the west, raging rivers have cut deep canyons through the mountain chain. The most famous of these valleys, Yosemite, was formed by glaciers.

The western face of the Sierra Nevadas is rich in gold deposits. Silver, copper, granite, marble, and slate (used for roofing) is also taken out of these mountains. Forests cover about 43 out of every 100 acres in California, and the Sierra Nevadas occupy the pine region of this timberland.

This varied region includes natural attractions such as Lake Tahoe, and the General Grant, Yosemite, and Sequoia national parks.

The Climate

The Sierra Nevada, because of its high altitudes, is the coldest part of California. Freezing temperatures occur here even in the summer. Winters are long and harsh, and snow covers some peaks throughout the year. Average yearly snowfall at Tamarack is 454 inches.

E

USING WILDERNESS IN THE CLASSROOM

Wilderness can be a valuable instructional tool when applied to the study of geography, ecology, meteorology, human physiology, and wilderness survival skills. It also can offer an environment in which to investigate decision-making, resource-management, and problem-solving. As with any simulation, *Wilderness* is a model of the real world; it does not duplicate reality. Unlike most simulations, however, *Wilderness* integrates expertise from several scientific fields, creating realistic interrelated systems of events. Textbooks, appropriate for presenting isolated facts, cannot provide the dynamic aspects of an interactive system.

The suggestions for classroom applications do not cover the entire range of possibilities that *Wilderness* contains. They are intended merely to help you begin thinking about uses that would benefit your students. We welcome your comments concerning applications you develop on your own.

Topics for Study

Wilderness was designed as a global simulation of the skills and problem-solving techniques needed to survive in hostile alpine and tropical environments. The *Wilderness* adventurer must make decisions and endure the consequences of those decisions in circumstances he would encounter if he actually attempted to live off the land in an isolated area. However, you might want to structure your students' interactions with *Wilderness* to emphasize the following skills in preparation for the overall survival experience. (See the explanation of Research Mode in Chapter 1 and Chapter 8.)

Map Skills

Wilderness contains equipment that provides opportunities for learning and applying skills related to reading a compass, adjusting readings for discrepancies between magnetic and true directions, and interpreting topographic maps in relation to actual environmental topographies. This gear includes a compass, a topographic a map, a watch, and an altimeter. See Chapter 2 for a detailed description of the displays, and Chapter 3 for an explanation of navigation techniques.

We suggest that you obtain topographic maps from the U.S. Geological Survey for the areas surrounding your community so that the relationship between maps (two-dimensions) and real topography (three-dimensions) is made even more tangible for your students.

Wilderness Hazards

The dangers of travel through uncivilized areas are integrated into the *Wilderness* experience. An actual journey into the wilds, is too expensive and too dangerous to be practical but it is not impossible. Students planning on venturing beyond wilderness boundaries can be sensitized to the kinds of dangers they must be prepared for in the real world.

Backpackers are allowed into many areas in the U.S. simply by requesting a wilderness permit from a U.S. Forest Service Ranger Station. You might want to help students plan back-country trips (after they have acquired survival skills) by collecting information concerning nearby wilderness areas. Contact your local chapter of the Sierra Club or the National Park Service for assistance.

Health

Wilderness contains a sophisticated model of normal human health and physiology which provides dynamic feedback about the effects of the environment and circumstances on the human body. The effects of temperature, clothing, energy expenditure, shelter, weather, altitude, illness, trauma, and other factors create an individual physical profile related to the adventurer's own physical characteristics entered at the beginning of the journey. (See Chapter 6 for more information.)

Nutrition

Information about the relative nutritional value and spoilage rates of various foodstuffs is available in *Wilderness*. A thorough understanding of this material is needed for planning diets carefully to avoid malnutrition and enervation during the survival ordeal. You may want to provide students with parallel instruction concerning the qualities and properties of various foods. (See Chapter 5 for more information.)

First Aid

Some *Wilderness* situations might require self-administered first aid to regain normal health and functioning. These occurrences range from sudden trauma (such as broken limbs resulting from falls) to more subtle ailments (such as infections or food poisoning). *Wilderness* produces the different responses to properly and improperly administered first aid and provides help in situations in which the player does not know what is best for his survival. In each case, the student has the opportunity to learn how to react to unanticipated problems and how to avoid similar situations in the future.

A related project you might consider could involve research into the requirements enforced by OSHA (the Office of Safety and Health Administration) for first aid equipment in work places. You might also consider conducting an in-depth investigation into the first aid techniques used in *Wilderness*.

Weather

One of the variables that must be considered in *Wilderness* (as well as in real-life survival) is weather. Students can learn to anticipate weather on the basis of previous weather patterns, characteristics of the regions in which they are traveling, time of day and year, and movement to new terrain conditions within a region.

Excellent collateral material is available in the Farmer's Almanac (or its equivalent for the various regions included in *Wilderness*). Students also should be encouraged to investigate routine reports from the National Weather Service, and to track information similar to that provided in *Wilderness* for its effects in your local area.

Value of Equipment

Throughout the *Wilderness* adventure, the player must experiment with and improvise different types of tools, clothing, and shelter in order to survive. Valuable lessons are the appreciation and understanding of the value of using equipment effectively and the need to consider efficiency when making survival decisions. These concepts are also valuable in day-to-day problem solving. Encourage students to expand on the equipment and natural resources provided in *Wilderness*. Have them assemble their proposed survival kits as if they were really preparing for a survival trek.

Another exercise you might want to consider could involve gathering information about a particular geographic region; then, based on this set of topographic and climatic facts, have the students determine the supplies that would be most necessary and most valuable.

A related project could be structured around the Inventory List contained in *Wilderness* (see Appendix A). Give students a specific geographic region, and have them rank the supplies in order of importance.

Personal Preparedness

No one can anticipate a situation in which they will have to survive on wits alone. *Wilderness* provides the opportunity to see the effects of personal characteristics (especially overall physical condition) and creativity under extreme circumstances, on the ability to adapt to adverse conditions.

Objectives

Teachers will want to use *Wilderness* for many kinds of overlapping objectives, such as topic-specific skills (related to the topics outlined above), general wilderness survival skills, and general individual and group process skills. We suggest the following for structuring the *Wilderness* experience for your students:

* To teach specific skills, prepare students with explicit, conceptual instruction before they work with *Wilderness*. If you provide this early preparation, students will be better able to react to the challenges offered in the simulation.
* To encourage general problem-solving, avoid any direct instruction concerning the target concepts. Rather, review experiences with students after their sessions with *Wilderness*. Ask the students to summarize the most critical elements of the environment and the challenges they faced. Encourage students to generalize, then to test those generalizations in future sessions.

* Provide opportunities for group process development by creating teams that make joint decisions as the adventure unfolds. Consider splitting these teams into Players and Evaluators, with the Evaluators responsible for critiquing the group process of the Players. In alternating sessions, Players and Evaluators should exchange roles.
* Take advantage of the Research Mode to encourage students to explore the topography of a model without having to worry about the health and danger aspects of the simulation. In some instances, you might wish to have students play through the normal simulation, but allow them to continue play, and use the Resurrection option if they die.
* To emphasize the effects of physiological factors on ability to survive, suggest that students work through the simulation several times with identical parameters except for variation in specified gender, weight, frame, height, or resting heart rate.

Repetitive Strategies

Wilderness can store an unlimited number of topo maps and an unlimited number of saved games for future completion. You can use these features to set up identical circumstances, conditions, locations, and entry points for groups of students assigned to the same survival task (for competitive problem solving) or for a single student or team to have several opportunities to work with a single survival scenario. In either case, you can use the students' natural desire to master situations to motivate them in solving problems in successful, creative, efficient ways.

F

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G

LOG SHEETS

Disk number ____	Country name ____
Map name ____	Scenario # ____
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Customer Service and Warranty Information

Customer Service

If you have questions about using an Electric Transit program, after reading the manual, please call us at 805/373-1960. We will be happy to help you Monday through Friday, 9:00 AM to 5:00 PM Pacific Standard Time.

Warranty

Electric Transit, Inc. warrants to the original consumer purchaser that this Electric Transit product shall be free from defects in workmanship and materials for a period of 90 days from the date of purchase. Electric Transit will replace free of charge any Electric Transit product found to be defective during this warranty period. Please call our customer service number (805/373-1960) before returning any product to Electric Transit to determine if it is a hardware or software problem. Have the model of your computer, and the title and version number of the program (found on the program title page) handy when you call. By returning your owner registration card, you will speed up the replacement process, should the need for replacement arise.

Back-up Copies

One back-up disk per product may be purchased directly from Electric Transit for $12.00 if, and only if, your owner registration card is on file at Electric Transit.

Disk Replacement After Warranty Period

If you need to replace your Electric Transit program disk after the 90 day warranty period has expired, Electric Transit will replace it for $12.00 if, and only if, your owner registration card is on file at Electric Transit and you send in the damaged or defective disk.

TRAVEL PASS

This pass drops you right into the wilds of the Sierra Nevadas. It is included for those of you anxious to start your *Wilderness* trek. All vocabulary words are clearly identified in uppercase, boldface type (eg, **USE AXE**); single keystrokes appear in brackets (eg, [**RETURN**]). Phrase sequences such as (**USE KNIFE**)/**MAKE GEAR**/**USE BAIT**/**USE GEAR**/**CATCH FISH** represent a series of responses. Type in the first phrase, press [**RETURN**],and wait for a response from the program. When you see a flashing square (the cursor), type in the next phrase. Parts of phrases in parentheses are optional. For an in-depth understanding of the complexities and challenges possible in *Wilderness*, consult your manual.

Insert the Sierra Nevada Country side of your *Wilderness* Disk in the disk drive and turn on your computer and monitor. We suggest you use a color monitor to more vividly recreate nature.

After a few moments, you see the title page. Press [**RETURN**]; the Main Menu appears. Select [**1**] **A FIRST JOURNEY ON THE SUPPLIED MAP** and press [**RETURN**]. The next screen you see, YOUR FIRST JOURNEY, asks you to insert the Journey Disk and press [**RETURN**]. Remove the *Wilderness* Disk from the disk drive, flip it over and reinsert it with the Journey side of the disk up; then press [**RETURN**]. Now, reinsert the Country side of the disk, press [**RETURN**], flip it over again and reinsert with the Journey side up, and press [**RETURN**].

Read the two pages of introductory information that appear on your screen. They contain facts you will need for successfully completing your journey. When you have completed the introduction, press [**RETURN**].

You are transported to a remote location in the Sierra Nevada mountain range; the plane wreckage of your ill-fated flight appears in the foreground. MAKE SURE THE TINT ON YOUR MONITOR IS ADJUSTED PROPERLY. You also might be able to see mountain peaks, rivers and lakes, and stands of trees. You are looking at a three-dimensional panorama of the immediate surrounding area. In *Wilderness* terms, this is called the VIEW screen and is one of six information screens built into this adventure simulation. Now type **TOPO** and press [**RETURN**].

This is your topo map, a two-dimensional representation of the 90×67 mile area in which your journey takes place. Note the legends in the border of the map. Now press [**S**].

This scale feature magnifies a portion of the map. You can scan this map by using the following keys to move the magnification window: [**K**] moves right, [**J**] moves left, [**I**] moves up, [**M**] moves down. (You can also use arrow keys). Move around on the map until you see a large, white dot. That dot is the ranger outpost, your destination. Now press [**V**], then [**RETURN**].

You're back at the **VIEW** screen. To orient yourself and to discover where on the map your present position is located, you have to look around. Type **LOOK RIGHT**. You are looking at the landscape that is 90° directly to the right of your original point of view. Now type **PAN RIGHT**, and you see the surrounding terrain as if you were slowly turning your head to the right. Press any keyboard key to stop. The other surveying words you'll need are listed below. They all can be preceded with **LOOK; PAN** can be used only with **RIGHT** and **LEFT**.

LEFT 90° left of current view
RIGHT 90° right of current view
HALF LEFT 45° left of current view
HALF RIGHT 45° right of current view
BACK 180° (behind) current view
UP 45° above horizontal
DOWN 45° below horizontal
FORWARD straight horizontal view
SUN places sun in center of field of view

You can use compass points (North, South, East, West) if you have the proper navigation instruments or if you use the navigation techniques described in Chapter 3 of the manual.

Now type **STATUS**. This screen, the third of *Wilderness'* information sources, gives you an up-to-the-minute report on the environmental conditions, your physical state, and your goal percentage. Use the **STATUS** screen to find out what's going on with you or your surroundings at any given moment.

Now type **INV**. This screen lists all supplies (and their present locations) from which you can choose your survival gear. The **CANTEEN** (with water) and the **BACKPACK** must be **CARRY**ed. All food items must be **PACK**ed. You can **WEAR** or **CARRY** (as appropriate) all other items. Notice what you are **WEAR**ing, what items have been **PACK**ed for you (for this first adventure), what gear you are **CARRY**ing, and what supplies remain on the ground **(GND)**.

The **HELP** screen, available by typing **HELP**, gives you up to ten of the most important pieces of survival advice for your situation at any particular moment in your journey. But, it will cost you two points every time you ask for **HELP**.

Press [**V**] to return to the **VIEW** screen.

The panorama you see before you is displayed from your point of view. When you travel (using the words **WALK** or **RUN**), you move in the direction in which you are facing.

Following every travel command, you are asked to indicate the number of hours to be traveled. Travel time can be expressed in tenths or hundredths of an hour as well as in whole-hour increments (eg, 2, 1.4, or 5.25). Your journey continues for the amount of time indicated unless something occurs to stop you. You can be interrupted by several categories of events. They include:

- leaving a campfire without **DOUSE**ing **FIRE**
- presence of wild food sources
- changes in weather conditions
- changes in terrain
- changes in health
- presence of discarded items
- encounters with wildlife
- presence of shelter

To manage the situations you encounter during your trek through the wilds, you must use one-, two-, or three-word phrases. **SLEEP** and **WALK** are recognized phrases, but some situations require a verb and a noun: **WEAR PARKA** or **USE MATCHES.** In other circumstances, you must use a verb, an adjective, and a noun: **WEAR COTTON SOCKS** or **USE FIRSTAID KIT.** Phrase sequence is important when trying to accomplish tasks which require several steps; the order is logical: **USE GUN**/**KILL BEAR**/**USE KNIFE**/**SKIN BEAR**/**USE MATCHES**/**MAKE FIRE**/**USE FIRE**/**COOK BEAR**/**EAT BEAR.** A listing of the most important vocabulary words appears on the reverse side of this pass. A comprehensive glossary with definitions and examples is contained in the manual.

GOOD LUCK

Survival Phrases

(Words in italics do not apply to your First Journey)

Information Screens

VIEW
TOPO; SCALE
INVENTORY
STATUS
HELP
CLUE

Navigating & Traveling

LOOK or **PAN**
LEFT, RIGHT

LOOK only

HALF LEFT, HALF RIGHT, UP, DOWN, SUN, BACK, FORWARD, COMPASS, NORTH, SOUTH, EAST, WEST

USE SHADOW/LOOK (compass point)
USE SHADOW/LOOK AZIMUTH/type in degrees
USE COMPASS/LOOK (compass point)
USE COMPASS/LOOK AZIMUTH/type in degrees
STATUS (note time)/**LOOK SUN**/estimate North
STATUS (note time)/**USE WATCH/LOOK AZIMUTH**/type in degrees

WALK
RUN
CRAWL
USE ROPE/USE PITONS/USE AXE/CLIMB
SWIM
USE RAFT/ROW

Making Camp

MAKE CAMP
USE MATCHES/MAKE FIRE/USE FIRE/COOK (food)
USE GLASS/MAKE FIRE/USE FIRE
MAKE STICKS/USE STICKS/MAKE FIRE/USE FIRE
USE FUEL/USE MATCHES/USE *STOVE*/COOK (food)
DOUSE FIRE
HANG (clothing) or **FOOD**
(USE AXE)/MAKE HUT/ENTER HUT
(USE AXE)/MAKE IGLOO/ENTER IGLOO
(USE AXE)/MAKE TRENCH/ENTER TRENCH
(DROP PAD)/DROP *BAG*/ENTER *BAG*/SLEEP or **REST**
ENTER TENT

Gear & Supplies (precede with **PACK, CARRY, WEAR, DROP, or USE**)

AXE
BACKPACK
BAG *(sleeping)*
BALACLAVA
BOOTS
CANTEEN
COTTON SOCKS
COVER (ground)
CRAMPONS
FLASHLIGHT
GLASS (magnifying)
GLOVES
HAT
JEANS
JERSEY
KNIFE
MATCHES
MITTENS
PAD (ensol)
PANTS
SHORTS
SNOWSHOES
STOVE
SUNGLASSES
SWEATER
TENT
THERMOMETER
TRAP
TRINKETS
FUEL
GAITERS
GEAR (fishing)
PARKA
PITONS (and carabiners)
SHOES
UTENSILS
WATCH
WOOL SOCKS

Food & Cooking

APPLES
BACON
BEANS
BOLOGNA
BREAD
CANDYBARS
RICE
CARROTS
CHEESE
USE FIRE/COOK (food)
EAT (food)
EGGS
FIND FOOD, FLAG FOOD
FIND WATER or **GET WATER**
PEAS
POTATOES
RAISINS
SKIP (or **IGNORE**) **FOOD,**
TASTE, SAMPLE (food)
TUNA
USE FIRE/USE UTENSILS/BOIL WATER
USE RAINCOAT/MAKE WATER
DRINK WATER
(or **RAIN, ICE,** or **SNOW**)

Health & First Aid

USE SNAKEBITE KIT
EXERCISE
USE FIRSTAID KIT or **USE *SOAP***
USE FLAGYL
IODINE TABLETS
LOWER HEAD
USE OXYGEN TANK
CUT BODY/SUCK VENOM/USE PRESSURE
USE QUININE
USE REPELLENT (insect)
EAT SALT TABLETS
MAKE SPLINT/USE SPLINT
STOP BLEEDING
or **USE PRESSURE**
USE SUNSCREEN

Wildlife

ADDER
ANACONDA
BEAR
CANNIBAL, DANI
COBRA
COUGAR
CROCODILE, CROC
ELEPHANT
FERDELANCE
FISH
GAME
INSECTS
JAGUAR
MOOSE
Mountain CAT
PUMA
PYTHON
RATTLESNAKE, RATTLER
TIGER
WOLF

Plants

CACTI
FRUIT
MUSHROOMS
NUTS
PLANTS

Weapons

BOW (and arrows)
CLUB
GUN
KNIFE
ROCK
SPEAR
SCARE (animal)
CLIMB TREE
WAIT
USE (weapon)/**KILL** (animal)
USE KNIFE/SKIN (animal)/**USE HIDE/*USE SEWING KIT*/MAKE** (clothing)

Miscellaneous

ENTER AIRPLANE
CARRY
DROP, REMOVE
STATUE
GET
NATURE
ENTER OUTPOST
ENTER CITY
PACK
USE
SAVE
RESTORE