



Conservation Pledge

I GIVE MY
PLEDGE AS AN AMERICAN
TO SAVE AND FAITHFULLY TO
DEFEND FROM WASTE THE
NATURAL RESOURCES OF
MY COUNTRY - ITS SOIL
AND MINERALS, ITS
FORESTS, WATERS,
AND WILDLIFE

A Manual of
WOODSLORE
SURVIVAL

AS DEVELOPED AT



Philmont

- OR -

"How to Eat Weeds and Like Em"

- BY -

RUSS VLIET

Dedicated . . .

. . . to all those persons
who come to PHILMONT . .
LIVE in her forests, and her
mountains, and her canyons
. . and learn to LOVE her!

A Manual of Woodlore Survival

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Chapter 1

Do You Like A Fight?

This age — this twentieth century — is an age where the corners of the earth have been, figuratively speaking, brought together as though by some great magic hand. This is the atomic age — the air age — the age of speed and power. From Seattle to Tokyo, from New York to Brussels, from Dallas to Sidney — all in a matter of a few short hours. Speed! Speed! Speed! Over mountains, oceans, cities, forests, islands, and deserts the mighty planes wing their rapid way. And yet, sometimes even the mightiest plane might fall and its occupants be cast out over strange and fearful mountains or forbidding forests. Flying over such vast areas of wilderness in flight from city to city, the percentages are fair that through some dint of fate someone will be forced to forge for himself in order to come safely out of those areas of wilderness. During the last war there were many such cases. In the future there will undoubtedly be more such incidents, though perhaps 'fewer and farer' between — and you may be involved in one of those "fewer" mishaps. YOU may be one of those forced by the "gods" to fall back on your own initiative to survive.

"But," you say, "the chances are nearly nil that I should be forced to that." Probably you are right, but consider the subject from another point of view — that of a sense of security and self confidence gained from the knowledge of the forest as a protector and a provider. Whichever viewpoint you do take, if you desire to know the woods more fully — to enjoy them more deeply, the opportunity of learning survival-craft is before you — now, right here on Philmont Scout Ranch. Philmont is a laboratory and proving grounds hardly short of wonderful.

Do you like a fight? The mountains! The mountains — how they call to us! The streams and rivers fling a challenge in our teeth! The winds in the timberline whispers "come! come!" And how they defy!! "Come if you can," the mountain ranges cry. "Come if you will," the shadowy canyons echo. "Conquer us — if you can!" The prairies take up the song, "Pit your hands and wits against our mysteries and force us to submit — if you can! One of us shall conquer! One of us shall conquer!" So shall it be you or the wilderness? I say it **can** be you. But do you like a fight?

But **how** to fight? What is the soldier without his rifle? What is the wolf without his fangs? What is the wasp without his sting?

To begin to fight, you must first know **how** to fight. That is the purpose of this book: to help you gain the knowledge of the forests — its pantry of food, its shelter and warmth and tools — all hidden in the trees and shrubs and grasses and rocks and streams and animals. **Knowledge** is your weapon. You must wield it well if you would conquer the wildernesses.

Do you like a fight? Then let me show you how!

AND LET PHILMONT BE THE PROVING GROUNDS!!

Chapter 2

Shelters And Beds

If one is bound by fate to have to spend any considerable length of time at all surviving in the forest, and especially if he intends to stay in

one locality for a period of time, it is imperative that he provide himself with adequate shelter and sleeping facilities. One night spent hugging a fire (that is, if he has one) and alternately freezing and burning will convince the survivor that he must act promptly towards securing some sort of adequate quarters. If it has happened to rain that night, the delayed action will probably be even more promptly executed. In addition, a shelter offers some sort of intangible security that is a great morale booster.

Factors to Be Considered in Selecting A Site for a Shelter

Many important factors enter into the selection of a "semi-permanent" shelter. They are: 1. Available food and water at hand. 2. Enough level ground for a bed. 3. Natural protection from wind and rain and floods. 4. The availability of bedding and shelter materials. 5. The absence of insect pests. A good deal of care should

be exercised in the selection of a shelter site. The prospective site should be examined well. Are there any reptiles around the site? Are there any rocks or logs that may harbor ants or scorpions? Are there any places nearby that may breed insect pests such as mosquitos? Is the site in any way naturally protected from the elements? These are questions that should all be considered.

Sometimes overhanging ledges can be utilized to an advantage. When building the shelter, it is generally best to have it facing Southeast or

down canyon and upwind of mosquito breeding places. It should be near food and water, but not so near as to scare away the animals. When camp is made, it should be made with the least possible output of time and energy. And take pains to make a good shelter — you will probably be thankful for it later on!

Types of Shelters

One of the basic types of shelter is the "brush" shelter (figure I). It is made by simply lopping off a fir, propping it upon its stump and letting it also rest upon the ground, and clearing out the inside. This shelter, however, is only good for temporary use.

A cave may often be utilized to good purpose as a natural shelter. Sometimes it is a good idea to improve upon a cave or overhanging ledge by building a leanto against it as is shown in figure III.

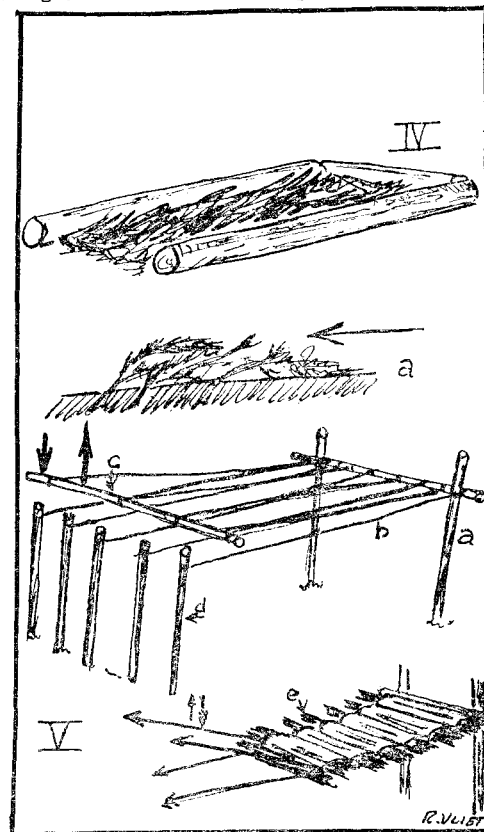
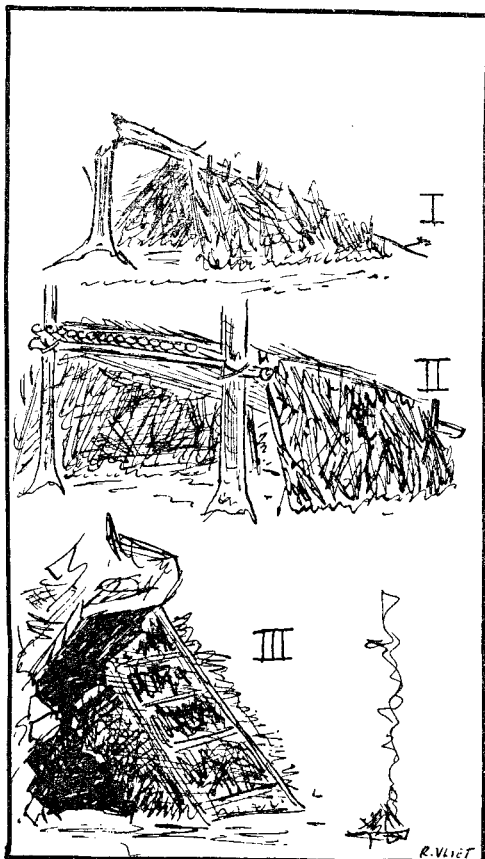
Perhaps the most satisfactory type of shelter is the thatched leanto as demonstrated in figure II. With a little labor, it can be made quite wind and water repellent. It can be thatched with moss, slabs of bark, dirt, grass, etc. to very good advantage. All of the sides except the front should be covered for warmth at night and a blazing reflector fire should be kept up in front.

Beds

There are two primary functions of a bed: to insulate the sleeping body against the cold of the ground, and to enable the body to relax more completely. These factors should be taken into consideration when preparing the bed. Also, even the smallest faults conducive to discomfort should be eliminated. The bed, when prepared, should be level, soft, dry, and free from insects. Taking these points in order, a short discussion of each will follow:

Levelness: Such objects as rocks, twigs, lumps of earth, etc., should be done away with. Sometimes it is advantageous to make a "hip hole" to conform to the contours of the body. Do not sleep with the head downhill.

Dryness: It should hardly need to be said here that complete dryness is imperative to a satisfac-



tory sleep. Use **dry** materials (which includes eliminating **green** stuff). Also, be sure that the **ground** is dry.

Insects: Get upwind of swamps and don't build a bed where there are apt to be ants and other annoying insects. Keep your campsite free of things that may attract insects. If there are a multitude of mosquitos about, it is best to build your shelter and bed where there is a slight wind to fend off the vicious invaders.

Warmth: One of the most important points of the bed preparation to be considered. Since the ground is a better heat conductor than the air, a good deal more insulation is required **beneath** the body than above it. Plenty of leaves and grass serve the purpose quite well. For warmth above, it is best provided by building a fire — if you have no blankets — in front of the shelter and keeping it going all night. A reflector fire works best.

Types of Beds

If a temporary bed is desired, a fire may be built on the ground to heat it and after it has died down, a small amount of grass may serve as a mattress. A "mattress" may also be made by poking fir boughs into the ground in such a manner as to permit them to overlap each other (figure IV-a). When using this method, start work at the **foot** of the bed.

An excellent method of preparing a bed is shown in figure IV, where four logs are put together and the cavity filled with fir boughs, moss, or grass to a depth of about two feet for maximum comfort.

A third type of bed is shown in figure V — the **woven** bed. By this method, the "loom" is set up as shown, the stick "c" is then lifted up and straw is inserted tightly at the far end. Then the stick is pulled down and a second bit of straw is inserted. The process is continued, alternately raising and lowering the "loom." The type of woven bed is more suitable where a portable mattress is desired.

Whatever type of bed you choose to prepare, make it well — every bit of effort put into its making means that much more comfort to you. A good night's rest can do wonders to a man — a miserable night may be his undoing!

NOTES:

Chapter 3

Fire Making And Cooking Methods

Fire

In the forest, especially when one is lost, fire — if it is properly controlled — is by far the best friend a man may have. In preparing food, in securing warmth, in providing a cheery security, fire is a necessity. The man who is lost in the woods for any considerable length of time will have a hard time of it if he is unable to secure fire. Fire is a tool of such tremendous importance that, to one who has never been in a situation where he has needed it, its value is incomprehensible. The man lost in the depths of the mountains and forests has half the battle of survival licked when he has obtained fire.

Materials Needed to Build a Fire

If the survivor is unfortunate enough to be without matches, the necessity arises of building a fire by other means. The materials necessary to the building of fire can all be found in the woods. In all cases, one is much more certain of securing fire if pains are taken to get the **best** materials and to have these materials in the best possible condition. In other words, controllable factors should be brought as close to the optimum as possible.

One of the basic necessities of fire-building is good **tinder**. Dry grasses, plant stems, dry inflammable bark, dry moss, bird and seed down, punk (a puff-ball sliced and dried makes fair punk) — all these make fairly good tinder. In every instance one should be sure that the tinder is **dry** and free of dirt and that it is made as vulnerable as possible to ignition. Of course, the old standby, charred cloth, should be used if available.

Fire by Flint and Steel

A hunting knife or an axe or a file should serve nicely in the role of steel for this process. In addition, one will need flint or a suitable substitute such as **quartz**, quartzite, or any other very hard rock. Flint can be found on many parts of the Ranch and quartz and quartzite are quite common. The best place to look for them is generally along the banks of streams. I have usually found it best to get a hunk of quartz out of the stream and dry it in the sun, and then to crack it open to get a rough or sharp edge.

In starting a fire by flint and steel, the tinder is set on a dry surface, free from drafts of wind or drops of water. The flint is then held in one hand and an edge of it is struck sharply with the piece of steel to produce a spark. The flint should, of course, be struck in such a manner as to enable the spark to fall into the tinder. As the sparks so produced are extremely hot, the tinder, if it is susceptible to high temperature, should catch and the glow should begin to spread. The tinder should then be picked up in the hands and blown gently to increase the size of the glow and to raise the temperature to a point where a blaze will burst forth. When this happens, more tinder should be piled on, followed by small pieces of wood. Bigger and bigger pieces are added until a goodly blaze is secured. If one has no steel, two hard rocks when struck together often produce a spark.

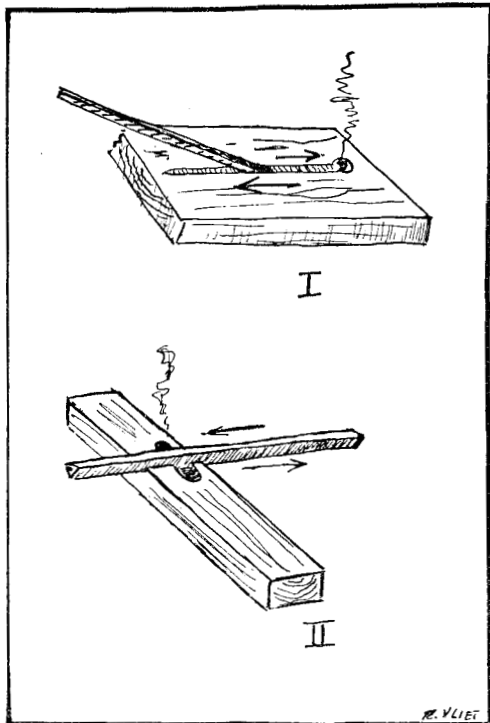
Fire by Friction

The basic principle behind fire by friction is that when two pieces of wood are rubbed together, the friction produced will be the cause of a

high temperature — a temperature near the burning point. The best woods to be used in fire by friction are: Yucca (see page 53), Willow, Cottonwood and Aspen (the root preferred) (Figure V). The proper kind of wood, when rubbed, produces a fine carbon dust. If the wood produces a gritty coarse dust, it should be thrown away and another type used.

Many different methods of using fire by friction have been devised by man. Some of the better methods follow:

Fire Plow (figure I): This method requires plenty of elbow grease. A large piece of good soft wood — about one by two feet — as shown in the drawing, is required. A groove is cut in the upper surface and a small hole carved at the end of the groove as shown in the drawing. A second stick, carved to the shape of the groove and a bit harder than the base board, is cut. The process then consists in pushing the stick back and forth (as shown by the arrows in the drawing) and bearing down upon it at the same time thus producing a fine carbon dust and a temperature high enough to ignite it. When the dust begins to glow, it should be gently blown and tinder then placed upon it. The fire plow requires plenty of muscle. It was at one time commonly used by the natives of Polynesia.

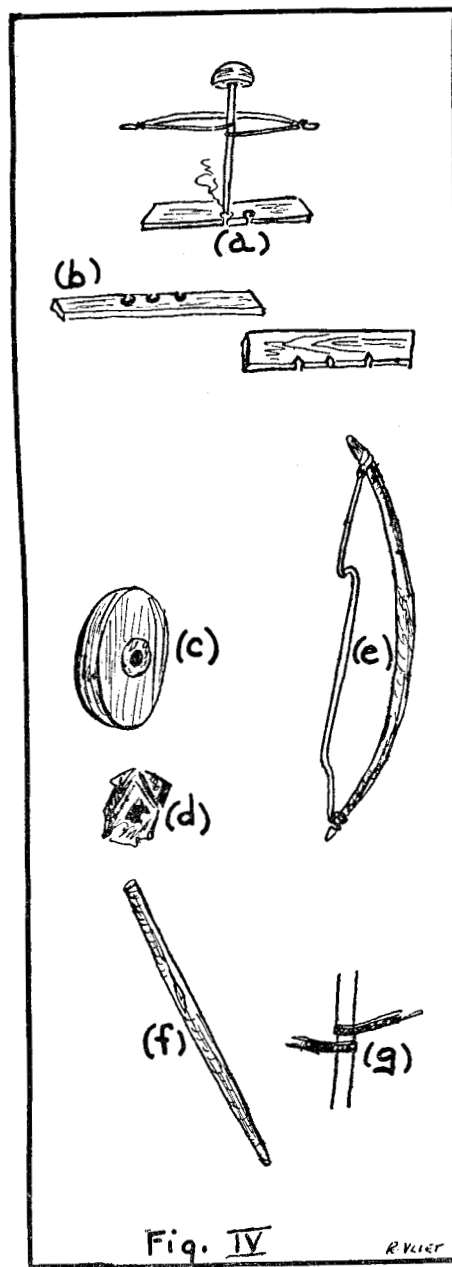


The Saw Set (figure II): This particular fire by friction set operates quite similarly to the fire plow. In this case, a "ditch" is carved in the board and a "V"-shaped groove is cut across it. The stick, cut to fit the groove, is then placed in the groove and pulled back and forth. An advantage of this friction set is that it can be operated by two persons at one time.

The Bow and Drill set (Figure IV): This method is perhaps the most common and also the best method of fire by friction that there is. The parts constituting this set are:

1. The **Spindle (f):** Made of Yucca or other soft wood. It is about one and one-fourth feet long, octagon shaped about the sides, and rounded at one end.

2. The **Fire Board (b):** Made of the same type of wood as is the spindle, it is four inches wide, twelve inches long, and three-quarters of an inch thick. Holes are started on the fire board by drilling with the spindle as explained below. After a hollow has been started, a "V"-shaped groove as indicated in the drawing is cut. Don't get the "V"-groove too deep or too shallow!



3. The **"Thunderbird"** (figures c and d): The Thunderbird" is made of hard wood such as a pine knot, or a stone, etc. If wood is used, a hole is cut large enough to receive one end of the spindle. This hole should be greased to permit free movement of the spindle. The hole should be about one half inch deep.

4. The **"Bow"** (figure e): The bow is a stiff branch about two and one-half feet long and should be curved. A leather thong is tied to the ends, leaving plenty of slack in the thong as indicated in the drawing. If a leather thong is not available some sort of string can be substituted. However, if string is used, the chances of its strain and friction against it are quite large.

After all the parts have been prepared as explained above, the set is put together. First, the leather thong is wrapped about the spindle as shown in figure (g). The end of the spindle that has not been rounded is placed in the hollow of the fire board (previously, tinder has been placed under the fire board and directly beneath the "V"-groove). The assembled bow and drill set is shown in figure (a).

The fire board is held to the ground, so that it will not slip, by the left knee and the right foot is set on the board. The thunderbird is then held firmly in the left hand and a little pressure made to bear on it. The right end of the bow is then held in the right hand and drawn slowly back and forth causing the spindle to revolve within the fire board hollow. The friction caused then produces a fine carbon dust in the hollow. This dust, soon

smoldering and glowing, falls through the "V"-groove onto the tinder below. When this occurs, the tinder is picked up and blown gently until a flame bursts forth.

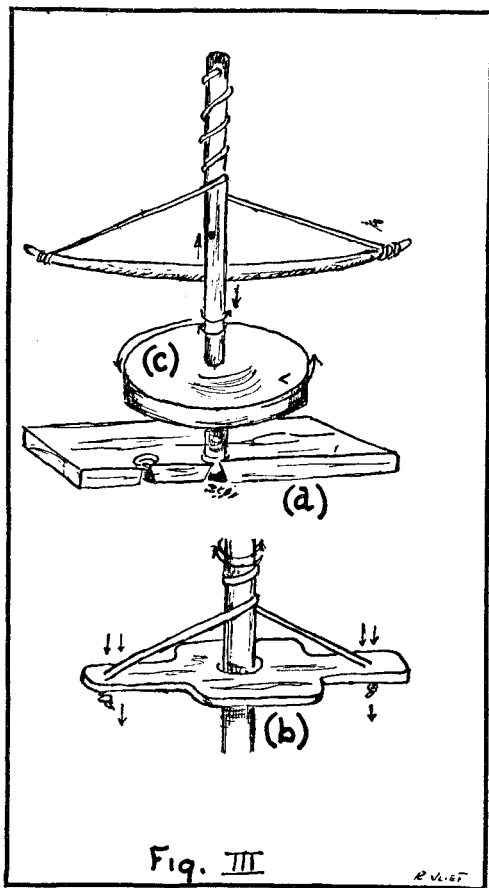
5. The "Pump" fire drill (figure III): This method is very similar to the bow and drill described above. There are only two major differences, both of which are calculated to reduce the usual labor required in fire-making. They are:

a. The **bow**: The pump drill derives its name from the fact that the bow (a), rather than being drawn across as in the bow and drill set, is pushed down. As it is plain to see in the drawing (a), the leather thong is much longer than in the bow and drill set. The purpose is this will be made clear in the following insertions. A board hollowed out in the center (b) in figure III, may be substituted for the bow. Indeed, it is usually better than the bow.

b. The "wheel", (c) in figure III: the wheel as shown in the drawing, is attached firmly to the spindle. It should be about two inches thick and about one and one-half feet in diameter. Its purpose is explained below.

OPERATION OF THE PUMP DRILL: The equipment is set up as shown in drawing (a), figure III. The leather thong is twisted about the spindle as shown and the spindle is held steady by using a thunderbird as described under the bow and drill set. It should be plainly seen, then, that when the bow is **pushed down**, the spindle will revolve. The wheel, also, being attached to the spindle, will revolve. When the leather thong has been pulled until it is nearly straight, the pressure upon the bow should be released, allowing the wheel to continue revolving, thus rewinding the leather thong. The bow is then pushed down again and the process repeated. After the dust has caught, the blaze is started as described under the bow and drill set.

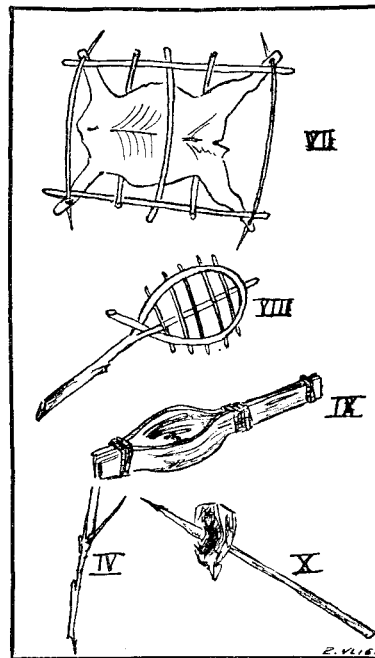
Making fire by flint or steel or by friction is no easy matter, as anyone who has tried it knows. Often it is a process of several hours and much sweat and aching muscles and when a fire is at last gained, you can make sure that it will never be allowed to go out. What a lovely friend is Fire — and how hard she is to gain!!



Cooking Methods

A great majority of the food gathered in the wilderness requires cooking before it becomes edible or, at least, before it becomes palatable! There are, of course, many methods of cooking foods that are quite satisfactory; among them roasting, broiling, baking, steaming, boiling, and infrequently frying.

The easiest method of cooking in survival is, of course, that of **roasting**. By this method the carcass of the animal is simply thrust upon a stick (figure X) or upon sticks (figure VIII) and held over the coals until done.



Another easy method is that of **baking**. There are many ways of baking food over or in an outdoor fire. The food can be placed in a mud-pack and then put under the coals to bake, or it can be baked by placing it directly upon the coals. Another method of baking, commonly used for fish, is that of "planking." By this method, the fish is split down the center and tacked (skin side down) to a plank. It is then placed before the fire and basted occasionally until done. It is sometimes good to boil wild meats, especially if they are tough before baking.

Food can also be **steamed** by preparing it in an **Umu** (or Imu, if you prefer). The Umu consists of a pit lined with rocks. A fire is built in the pit and the rocks heated to a great intensity. When this is reached some of the rocks are removed and food — wrapped in leaves and mud — is placed inside. Rocks are

then put over the top and covered with more leaves and dirt — anything to hold in the heat and moisture. It is left to remain in that condition until the food is considered done, usually about two or three hours.

Food can be cooked upon flat rocks if any are available.

Perhaps the best, though not the easiest, method of preparing food is that of **boiling**. There are several important advantages of boiling over other methods. Among them are the facts that (1.) Many foods, especially greens and small bits of food, cannot be satisfactorily prepared by any other method than boiling (2.) by boiling, various foods can be put together and the flavors of the more palatable varieties can permeate the less tasty specimens and (3.) the water in which the food is cooked will serve the dual purpose of retaining most of the vitamins and providing more bulk to put in the belly. Indeed, on survival, it is best even to stew the **fruits** one is able to gather. A soup made of meat, vegetables, or fruit is hot, filling, and nourishing.

Generally, if one is going to boil a thing, it is necessary to have something to boil it in! A container or utensil of some sort is a prereq-

uisite. Since one does not usually find pots and pans hanging on trees, it is necessary to improvise the container. Unless one is able to find a hollow rock of suitable size and depth, it becomes necessary to make the utensil out of wood or bark. Therefore, a discussion upon how to make these utensils follows, after which we will return to the cooking methods:

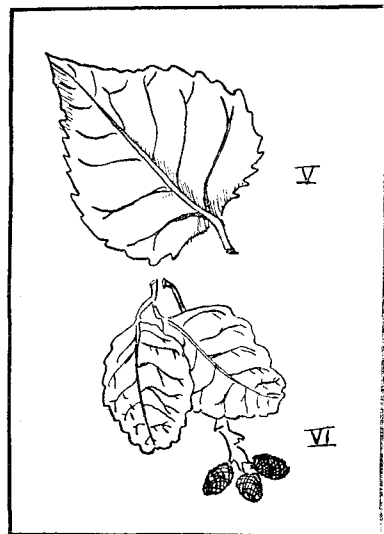
Utensils

Skin Utensils: After digging a hole slightly larger than you intend the utensil to be, spread a skin over it, peg in the sides to the ground, and shove the center of the skin into the hole in the ground, forming a hollow. Add water and heat as related under "Cooking Methods" below.

Wooden Utensils: get a log of soft wood — Aspen and cottonwood being the best — lop off one side and hollow the log out, using axe, knife, and fire until a suitable size is reached. Although a little tedious to make,

I maintain this type of utensil is the easiest to prepare considering the material at hand on the Ranch.

Bark Utensils: The bark utensil has long been a favorite of the Indian in those regions where suitable bark is obtainable. For my own part, however, I have found it difficult to find a tree yielding a bark pliable and workable enough to mold into a satisfactory bark utensil. Nevertheless, with considerable patience and reasonable skill, a suitable bark utensil can be made from native materials. Those trees yielding the most workable bark in this section of the Rockies are the Cottonwood, the Aspen (figure V), the Box Elder (or Ash-leaved Maple), the Rocky Mountain Alder (figure VI), and the Spruces (figure II, page 64). When working the bark, great care should be taken not to crack the bark or form any sort of holes whatsoever. A good



procedure to follow is to soak the bark for several days before using it in order to make it more pliable.

Some Types of Utensils

Figure IX shows a spoon made from bark and figure IV on the same page shows a simple fork.

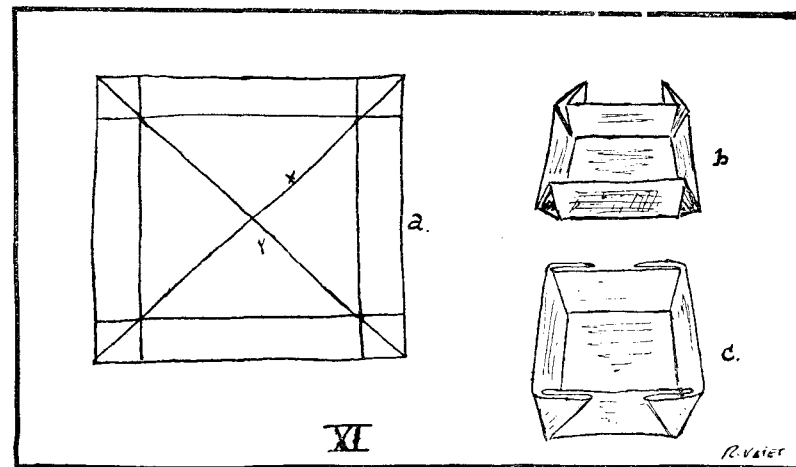
In figure XI we see the simple "square" kettle. It is made by creasing the bark on all lines indicated (excepting the diagonals X and Y) and folding as shown in (b). When it has been properly folded (c), pegs are stuck into the corners to hold them together. Take care not to crack the bark!

Figure XII illustrates the "Seton" kettle, introduced by Ernest Thompson Seton (see bibliography). The procedure . . . one of folding the corners together and binding them . . . should be quite evident from the drawing and need not be elaborated upon further here.

In figure XIV we are shown a pot of my own invention. Though a bit more elaborate than the preceding examples, I have found it fairly satisfactory where a deeper pot is desired. My procedure in making it was to cut off a green aspen log about two feet long and one and one half feet in circumference. After I had done this I peeled off the bark carefully and set it aside. Next I cut the log proper down to one-half foot (keeping the bigger end) and cut a "groove" as shown in figure (b). Then I rolled the bark up until it was slightly smaller than the grooved log, overlapping the sides in the process, and bound it with leather or twine. The next step was to place the log in the small end of the bark cylinder and to force it in as tightly as possible. Sometimes pegs as shown in figure (c) can be used.

The final drawing, figure XIII, though it is not a "cooking" vessel, has been included in this chapter for the sake of convenience. It is a fishing basket made by bending a slab of bark (a) in half, binding the sides, adding a cross stick to hold the sides apart, and attaching a carrying strap. It is very good for use where one is gathering fruit or greens or where one needs a basket to store trout in while fishing.

Heating the water: The usual method of bringing the water to a boil when using a bark utensil and especially when using a hollow log is to heat rocks until they are white hot and then drop them into the water. A pair of tongs and a poker are necessary equipment when using this method. After the rocks have lost their heat, remove them from the water and return them to the fire. Keeping adding new rocks to the water. When using rocks, one should avoid those rocks which, when hot, will burst or shiver. They are very dangerous. The best type of rocks to use are round pieces of quartz gathered from the stream. After they have been properly heated they will of course, be quite sterile. The "hot stone" method of boiling water is much faster than the "civilized", external heat, method. I have known it to boil water within three minutes, but it has the disadvantage of not being capable of supplying sustained heat. It does, of course, require constant vigilance. For speed in cooking, it is best to cut the meat and vegetables into small pieces.



Chapter 4

Edible Wild Plants, Food Producing Shrubs & Trees

Included in this chapter are some fifty-one wild plants, trees, and shrubs found growing on Philmont that provide survival food. No doubt, although an attempt has been made at completeness, there are many more edible wild plants that were not known to the author at the time of the writing of this book. However, the following plants are most common.

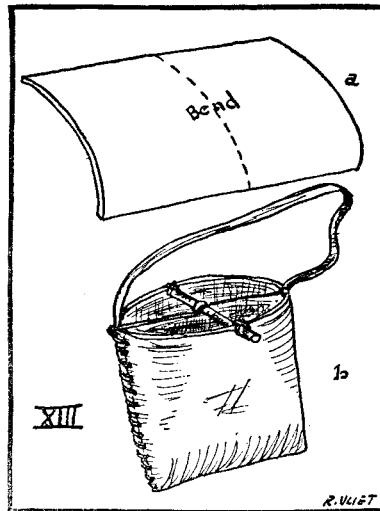
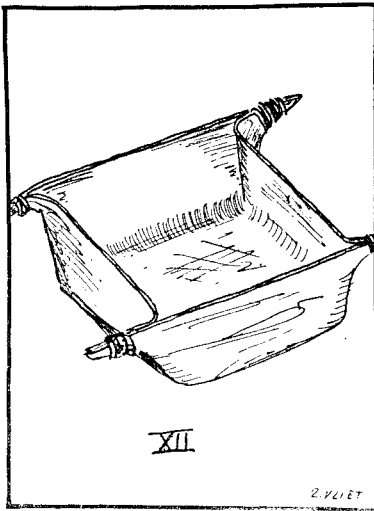
One should not get the mistaken idea that, since the plants are edible, they **taste** good! Many do not. Many plants are inedible raw, and plenty of them require special preparation to make them more palatable. However, in cases of necessity, one does not argue over such trifles as taste! **Nutrition** is the all-important point. To illustrate: on several occasions I have taken boys new to the subject on survival trips. The first two or (in cases of very strong willpower) three days the tendency was to discard the crude food — although it had been prepared as well as possible under the circumstances — with a wry grimace. Very soon, however, little pangs of remorse inside their shrunken stomachs impelled them to give the stuff a try, and thereafter their appetite rapidly improved! When you have to eat, you have to eat — and eat what you have! Unless there is something radically wrong with you, your body will soon force you to take in that energy-providing necessity — food — that one **must** have to live. I have never known any who, if they overcome their civilized scruples, have not returned from a survival trip as healthy — or healthier — than when they started. So why not overcome those scruples from the beginning and avoid that silly waiting for the pressure and pain of hunger to get you started?

Although this point has been pounded at you throughout this book, please let me repeat it here. Survival is going back to the primitive. It is, in its crudest, but basic sense, living like an animal. Like the wild beast, if you are to survive, your thought, time, energy, resources — everything — is spent on the all-important problems of warmth, shelter and food — and especially food. So don't expect the food to come to you, you go to it! It takes lots of work and long hours, especially for the novice, to gather enough food for just one meal for just one man. Go out and get that food!!

In many cases, the food must be especially prepared to eliminate their unsavory flavor, as in the case of mature dandelion greens or mature strawberry blite. Usually the process is to give them several boilings, changing the water each time. Of course, this is going to reduce greatly the food's nutritive value. If you think that, after such processing, you will still get enough actual food content, then go ahead and prepare it that way. Sometimes, however, when food is scarce, the best policy is to take it like castor oil, smile, think of all the wonderful vitamins your body is getting, and **pretend** that it tasted good!

One other word: Like all survival procedures, one must know the how and why of things. You have to understand something of the habits and characteristics of the plants for which you are searching. **You must look for food plants in the habitats and situations in which they are naturally expected to be found.**

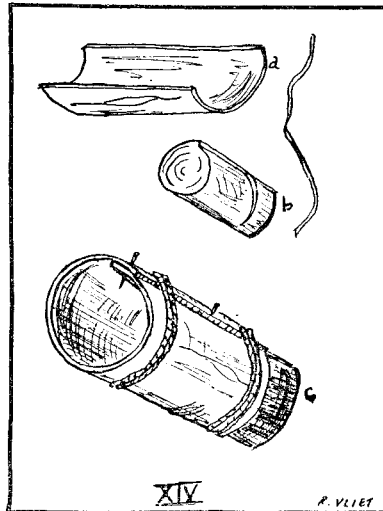
If you are in doubt as to the reliability of an unknown or doubtful specimen which you have discovered, the only safe procedure is to give it the "test." The "test" is discussed at the beginning of both the chapter on poisonous plants, and the chapter on mushrooms (chapters 5 and 6). **DON'T TAKE RISKS!!**



Water can be heated in bark utensils by applying external heat if one is careful to keep the flame **below** the water line within the utensil.

A final note to add to this chapter is the importance of **SALT**. Salt is many times unattainable in these mountain regions, although it is generally recognized as a necessity to body health. Since salt is an alkali, a "substitute" can be prepared by boiling water on wood, straining the liquid, and evaporating it to a white, crystalline alkali. It should be used **very** sparingly. The best substitute for salt is, in reality, sugar. A further description of the above topic may be found underneath the discussion of the food uses of the sunflower, page 45.

In conclusion, may I add that, if one is willing to go through the procedure of making adequate cooking equipment and of taking proper care during the cooking of the food, the meals prepared may not be unsatisfactory. Indeed, they may be quite tasty (especially if you are hungry enough!!)



NOTES:

BULRUSH—May—September

Identification:

A tall, light green, soft-fleshed marsh plant.

Probable Habitat and Season:

As mentioned above, it is found in or around marshes, lakesides, and slow streams, especially in the lower altitudes. It grows from early spring through autumn, although it is best to use them in the spring when the young shoots are developing.

Preparation:

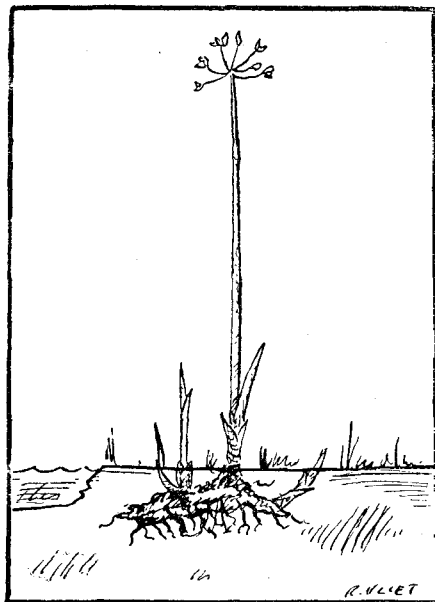
Fresh vegetable: The young shoots and the tender parts inside the base of the stalks are edible raw or when boiled or added to stews.

The young base roots are also edible raw or cooked. Peel off the outer skin before using.

Sugar substitute: A weak syrup can be prepared from the Bulrush roots by first cleaning them thoroughly, bruizing them, adding water, and boiling down the liquid to whatever thickness desired. Boil from seven to fifteen hours or more. This is a method once used by Indians in areas where no method of obtaining sugar was available.

Flour: Clean the roots thoroughly, dry them very thoroughly in a dry place or in the sun (a process requiring several weeks), and then remove the fibers from the root. Next, pound up the remaining dry pulp into a flour. The texture of the flour, of course, depends upon the energy expended in its preparation. The flour is sweet to taste and good in the preparation of cakes, etc.

Notes:



PRICKLY PEAR CACTUS—July—September

Identification:

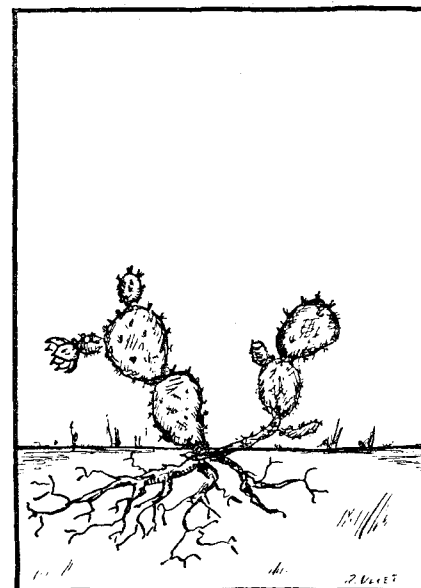
The leaves of the Prickly Pear Cactus are large, flat, round, fleshy, green in color, and adequately protected by a multitude of sharp thorns. The blossoms are large and yellow, reddish, or orange in color. The fruit is dark red or purple when ripe. New plants grow out of the leaves as they decay.

Probable Habitat and Season:

A plains plant preferring dry soil, it grows the year 'round. The flowers blossom from late May through July and the fruit develops from July through September.

Preparation:

Ripe fruit: Skin the "pears" carefully as there are many



small thorns on the skin. The fruit is then eaten raw or stewed.

Starchy vegetable: Put the large fleshy leaves in mud and roast thoroughly for about forty-five minutes. Then peel off the skin and eat the pulpy inner part. One good method of using the baked leaf is to put two of them together into a sandwich.

Notes:

CATTAIL—June—September

Identification:

Tall firm stalks with interesting flower structure at tip, composed of a dense "spike" with flowers above and below. After flowering, the flowers fall off, leaving a dark brown spike. The leaves are light green, long, and flat. The height of the plant varies from three to six feet.

Probable Habitat and Season:

The cattail grows in moist marshy places from late spring through late fall. It is not very common on the Ranch.

Preparation:

Fresh vegetable: The tender inner stalks of the young plant are delicious when washed and eaten like celery.

Boiled vegetable: The inner stalks, after cleaning, are excellent in stews or when boiled in salt water.

Pull up the root, clean, scrape, slice, and boil for a starchy vegetable.

Roast vegetable: Pull up the root, remove root hairs, wash and put in coals for about half an hour. Serve with salt, or meat gravy if possible.

Gruel: Prepare the root as for boiled vegetable above. Cut into small pieces, remove fibers, add a little water and boil into a thick gruel.

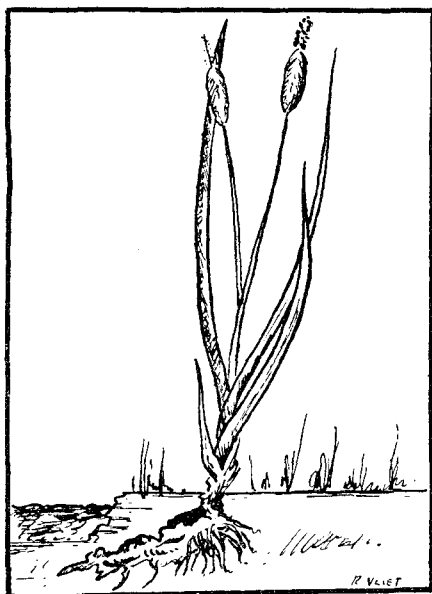
The staminate flowers can be pounded, mixed with water and made into mush.

Meal: Dry the root thoroughly, skin, remove fibers, and pound into meal.

The pollen of the plant (above the spike) is delicious either eaten raw, or ground into flour. It resembles musty wheat in flavor. Used in making cakes.

Soup: Add the pollen to soups for flavoring and thickening.

Notes:



CHICKWEED—May—October

Identification:

The stem of this plant is weak, branched with a hairy fringe. The leaves are found growing opposite each other on the stem. The flowers are white, somewhat star-shaped with heart-shaped petals. Height—about twelve inches.

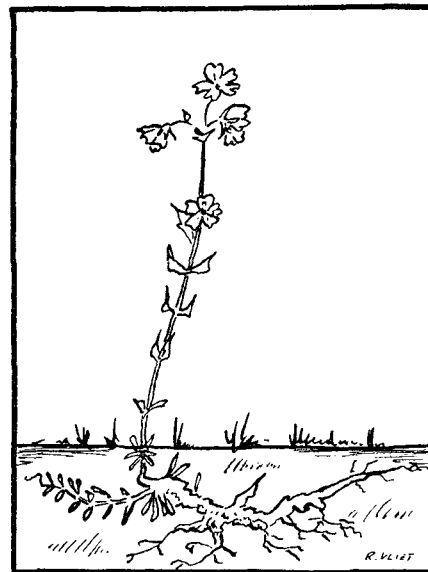
Probable Habitat and Season:

A common weed in fields and meadows and valleys. It prefers moist soil and it flowers throughout most of the year.

Preparation:

Greens: Wash thoroughly the young stems and leaves and boil as greens.

(Chickweed is one of the plants from which seed food is obtained for the use of birds in captivity.)



NOTES:

YELLOW & BLUE CLOVER—April—August

Identification:

Yellow Clover: The plant, as a general rule, is sprawling. The leaves are soft, light green, and grow in groups of three. The flowers are bright yellow and grow in clusters. Also called "Sweet Yellow" Clover.

Blue Clover: A shrubby, branching plant with pretty blue or purple flowers. The Blue Clover is shown in the drawing. Both species are, of course, legumes.

Probable Habitat and Season:

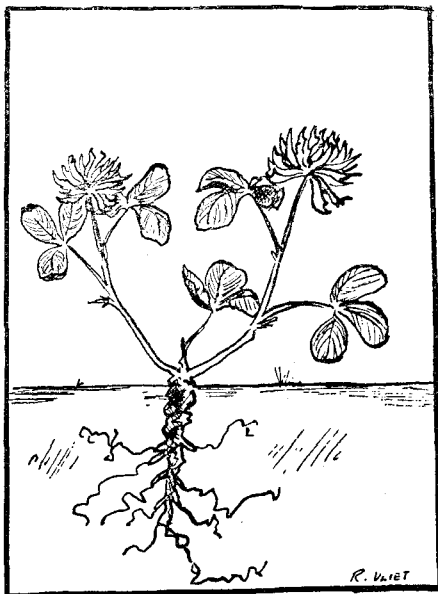
Common in the fields and meadows of the lower altitudes on the Ranch. Thrives from April through August.

Preparation:

Raw vegetable: The blossoms, stems, and seeds are cleaned and dipped in salted water, a practice once common among the Indians of this region. The mature plants are, however, rather strong to the taste.

Salad: Wash the blossoms and stems, remove the bad parts, and mix with other fresh vegetables for a green salad.

Notes:



COMFREY—June—August

Identification:

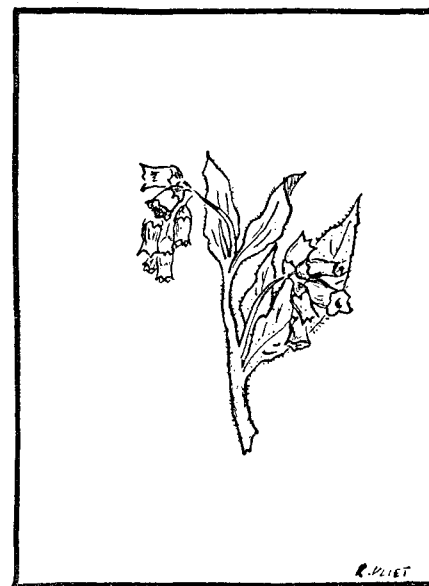
A coarse, hairy, branching plant, about one to two feet high, growing from thick, bitter, black roots. The flowers may be either purple or yellow, the latter being the most common of the two on the Ranch. It is an introduced plant and resembles very closely its relative, the Puccoon.

Probable Habitat and Season:

Growing in waste places and especially in moist soil, it flowers from June to August.

Preparation:

Cooked vegetable: Gather and clean the young leaves and boil as greens.



Notes:

