

NORTHERN



BUSH

MORS L. KOCHANSKI

CRAFT



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I am grateful to the publisher Grant Kennedy, who provided the encouragement that resulted in this book becoming available now rather than ten years from now.

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INTRODUCTION

There is no reason why a person cannot live comfortably in the Northern Forests with a few simple, well-chosen possessions such as a pot and an axe. It is also conceivable that with the right knowledge you may live well enough without a pot or axe. The reader may never have to do without these two precious items, tan a moose hide, or build a subterranean winter shelter, but intelligent advice derived from a reliable source may furnish the knowledge that allows you to do a passable job on the first attempt, should the need arise.

Fire is the most useful and important skill in basic bush living, particularly in the cold. It warms and dries, makes water and food safe and transforms any place in the forest into a home. Fire is a passable companion when you are alone, is never boring to watch, and has held our fascination from time immemorial. Possessing the means and the knowledge to light fire at any moment is a prerequisite for living and surviving in the bush. If you are fire's master it is the genie that does your bidding, but if a lack of knowledge limits your ability to master it, fire will be a trying servant that may jeopardize your safety.

A pot is an important possession for heating water, cooking, melting snow, putting out campfires, excavating earth and for collecting berries and other edibles. Drinking adequate amounts of safe water is necessary for maintaining health and reducing fatigue. Giardiasis is apt to be found in the remotest corners of the Northern Forests, a parasite that is easily killed by boiling. Boiling is the most effective and convenient method of cooking in the bush. You may get by without a pot, but it will be sorely missed.

Of the tools useful in bush living, the axe is foremost because of its versatility and durability in cutting firewood, fashioning shelters and other articles useful in daily existence. The knife is the smallest cutting tool that one may carry; small, light and unobtrusive, it is readily available for hundreds of tasks in bush living. Like fire, these tools are a great asset if used safely and knowledgeably, but impose penalties on the ignorant and careless. Using an axe to fall a tree is one of the more hazardous wilderness activities. The saw is the complementary opposite of the axe. It is safer, faster and quieter for such applications as cutting firewood.

Cordage and binding holds most things together in basic

bush living. Without cord you cannot rotate the spindle of the bow drill for making fire or drilling holes, make bow strings, fish lines, nets and snares. Without some form of binding you cannot tie up a twig bundle, lash shelter poles, or build toboggans, sleds and canoes. From a sewing thread made of stinging nettle to a tow cable of grass, cordage-making and its application is an important bush skill.

It is a major accomplishment in the bush to be able to rest and sleep with comfort when on the move. When the weather is mild, a ready-made bed can be found in the dry, organic materials at the base of a large white spruce. When conditions become too cold or wet, a fire will give respite. Under prolonged and adverse conditions, maintaining a fire is hard work because of the large amounts of fuel required. An appropriate shelter helps to keep the weather at bay and captures a fire's warmth with greater efficiency.

The raw materials used in bush living are the locally available plants and animals. The more you know about using these resources the more alternatives you have to adequately meet your daily needs. There is nothing in the bush that does not have a use at some time or other.

There was only enough space to deal with the two most important animals in the Northern Forests, the biggest and the smallest—the moose and the varying hare. The moose is a major source of meat and fabric for clothing and shelter. Where the moose feeds the village, the hare provides the day to day fare.

I did not write this book for old trappers or the people who have lived in the bush all their lives. I have written it for the person who wishes to become more knowledgeable about, and more comfortable in, the bush.

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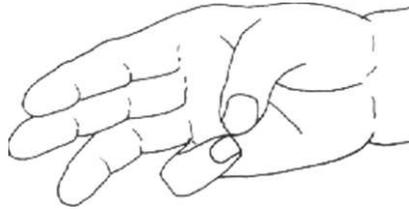
FIRECRAFT

When all else fails, fire is the simplest means of providing comfort and warmth against cold and wet in the Northern Forests.

If you were dressed in the old European tradition, with numerous layers of fluffy wool adequate to deal with the bitter cold, you would likely be wearing about nine kilograms or 25 pounds of clothing. If you are unable to dry your clothing out, within five days you would be carrying six kilograms more weight of accumulated frost. The efficiency of your clothing would be so impaired by this frost build up you could die of hypothermia within a week.

When you stop moving in cold weather, the first thought should be to light a fire. Your hands should not be allowed to become so numb that fire-lighting becomes difficult. A simple test of your level of physical capacity is to touch the thumb to the little finger of the same hand. The moment you have any difficulty in doing this **you should light a fire.**

In cold, wet weather when the need is most urgent, fire-lighting is often the most difficult. You may have to exercise strenuously to restore some manipulative capacity to your hands, or in your clumsiness you may drop or break matches while attempting to strike them.



The test for hypothermic incapacity. If you cannot touch your thumb to your forefinger, you should take immediate steps to warm up.

FIRE-LIGHTING

There are four basic stages in fire-lighting:

1. Ignition. Fire may be started in a variety of ways. The most common methods are matches, the flint and steel, and the bow drill.

2. Establishment. This stage involves using the most effective method to light the required type of fire with the fuel available. Fine and coarse kindlings are ignited, which in turn ignite sufficient fuel of the right quality so the fire will continue to burn even in wind or rain. Establishment is a critical aspect of fire-lighting under adverse conditions as there are often many problems to overcome.

3. Application. There are a number of different fire arrangements that produce the best desired effect, combined with the special properties of the fuels available. There are fires for cooking-, warming, drying, repelling insects, signaling and so on.

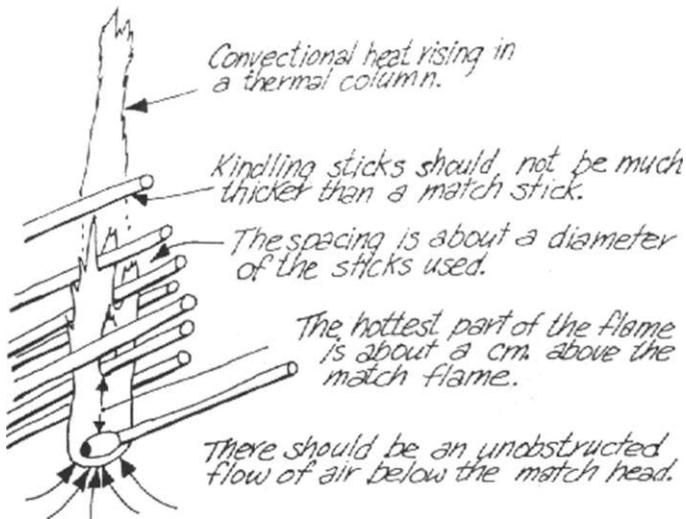
4. Maintenance and Moderation. A fire can be made to burn at a desired output with a minimum of smoke. Knowledgeable maintenance will allow you long periods between adjustments or stokings.

In a stove, a fine kindling is set on fire (ignition) which in turn ignites coarse kindling, and then a fuel that burns fairly hot (establishment). The fuel should produce a good bed of coals to better utilize a slower burning, perhaps green fuel, for staying power. If the fire is too hot, green fuel may be added or the air supply restricted (moderation). An open fire, being fuel regulated, is more complex to control than one in a stove but the stages remain the same.

IGNITION

Matches

The most common and convenient way to light a fire is, understandably, to use a match. The match flame should be instantly transferred to a combustible material while taking care to protect the flame from any wind. Open-flame methods of ignition are vulnerable to air movements that tend to extinguish a flame while it is small, but help intensify it when it is large.



The action of a match flame.

The larger the match, the more time there is to transfer the flame to any kindling, and the better the chance the flame will catch. For example, a large kitchen match will burn for at least the count of 40, one of paper for 15, and a split paper match for five. If you consistently succeed with a split paper match in wet, windy weather, you should never have a problem lighting fires in the bush.

Matches should be carried in waterproof containers in three separate places. First, in your pants pocket (assuming your pants are the last items of clothing to be removed). A second back-up container should be carried elsewhere, possibly in your shirt pocket. The third is a reserve in your

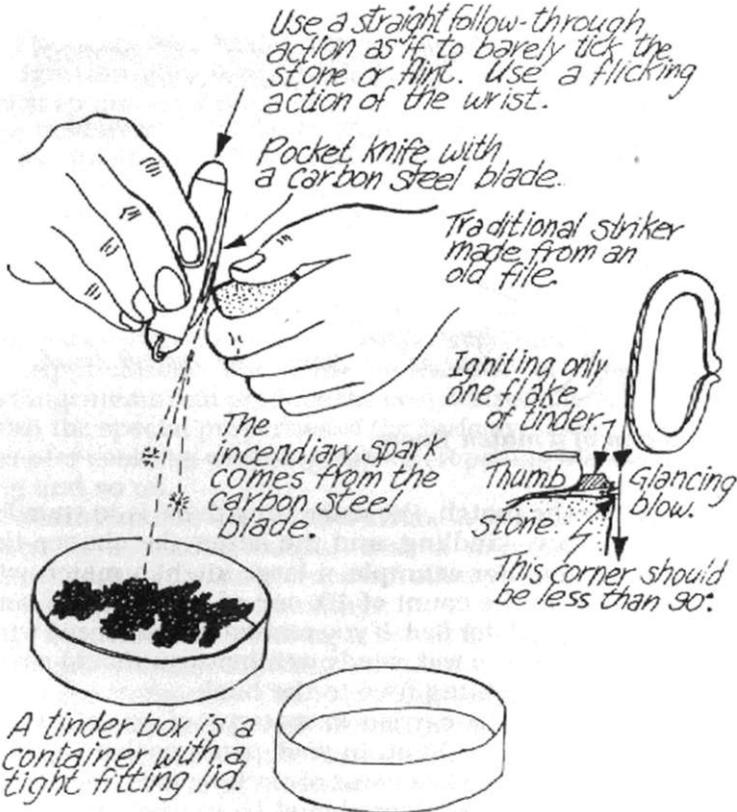
pack to replenish the other two sources.

Unprotected matches are ruined by sweat, melted frost build-up in the clothes, rain or from falling into water. A match container should be tested by submersion for ten minutes. The container must be easy to open with wet or numb hands.

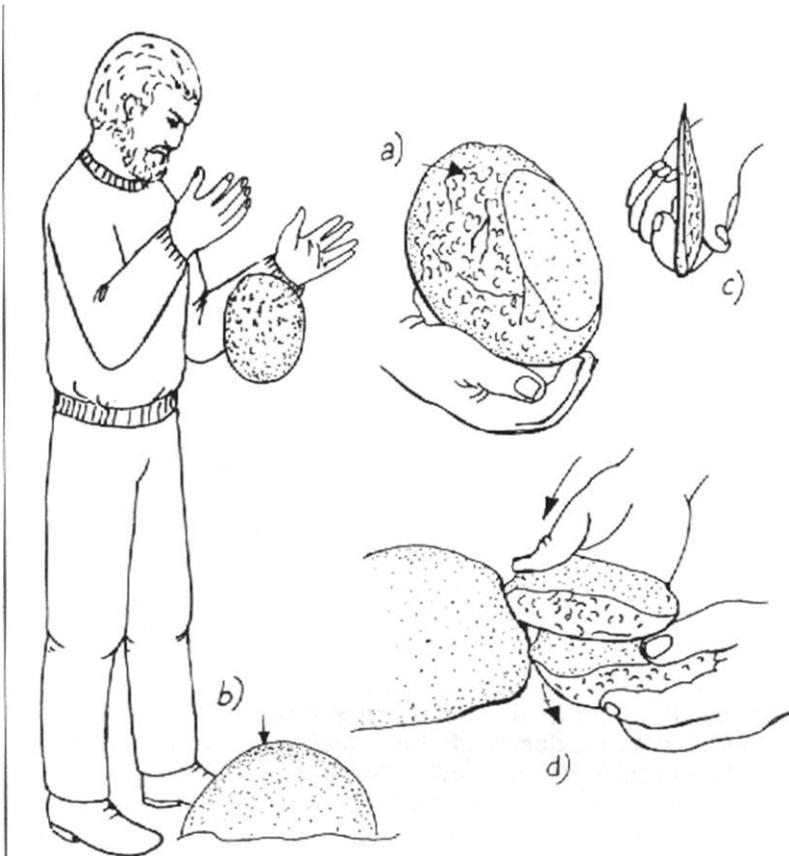
Matches should never be carried loose in any pocket. Every year thousands of North Americans suffer severe burns from this habit, with over 50 actually burning to death.

The Flint and Steel

Wind is a major problem when lighting a fire with matches. On the other hand, the flint and steel dispenses with



The flint and steel method of fire-lighting.



Method of cracking apart a rock to expose a striking surface.

a) Identifying quartzite. Quartzite is a commonly found hard rock that makes a good flint. The best rock displays a surface marked with many crescent-shaped fractures.

b) Cracking a quartzite boulder. Quartzite boulders that are either flat or disc-like are easily cracked when dropped on a larger rock. Spherical or egg-shaped rocks are very tenacious, tending to bounce rather than crack. Rocks that must be thrown to be broken are dangerous and may rebound towards you or the flying shards may cause injury.

c) A quartzite flake. A flake that is knocked off a quartzite boulder is usually sharp enough to be used as a chopper or saw for working wood or as a knife for skinning.

d) Breaking quartzite into small pieces. Once a quartzite boulder is broken in half it is easily fractured into smaller pieces that are more suitable for use as flints. The flints should have sharp edges that can be struck with the steel.

an open flame and uses wind to advantage. Though not as convenient, it is a superior method under all adverse conditions. When you are down to your last ten matches you may choose to conserve them by converting to the flint and steel.

The Flint. Any rock, such as quartzite, that is harder than carbon steel can be used. Wherever rocks are found, some are always hard enough to act as a flint. The rock usually has to be cracked apart to expose a sharp edge to strike against. When the steel is struck against this edge, a fine shaving of metal is produced becoming so hot in the process that it burns.

The Steel. The steel or striker must be of tempered carbon steel to obtain the best sparks. Although many other substances may work, few have the intense fiery focus or incendiary spark like a burning fragment of carbon steel. A natural stone, known as iron pyrite, may be used as a striker or both striker and flint. Two pieces of pyrite may be struck against each other to obtain an incendiary spark. It is difficult to produce sparks from pure iron or stainless steel.

The Tinder. Tinder is a special material that will begin to glow from an incendiary spark. There are three tinders commonly used in the Northern Forests.

1. Synthetic Tinder. Made by charring any vegetable fiber such as cotton, linen or jute. To make a small quantity of cloth tinder, tear out ten strips of old blue jean material a few centimetres wide and 20 centimetres long. Drape the strips across a stick and set the material on fire. As the flame dies down stuff the burning mass into an airtight container. Once the flame subsides and the charred material begins to glow, the lid is put on to exclude oxygen. If no airtight tin or tinderbox is available, two pieces of bark can be used. To make larger quantities tightly roll up and bind a jeans pant leg with wire. Build a fire over the bundle. When it dies down, stuff the glowing mass of cotton into a jam can with a tight-fitting lid.

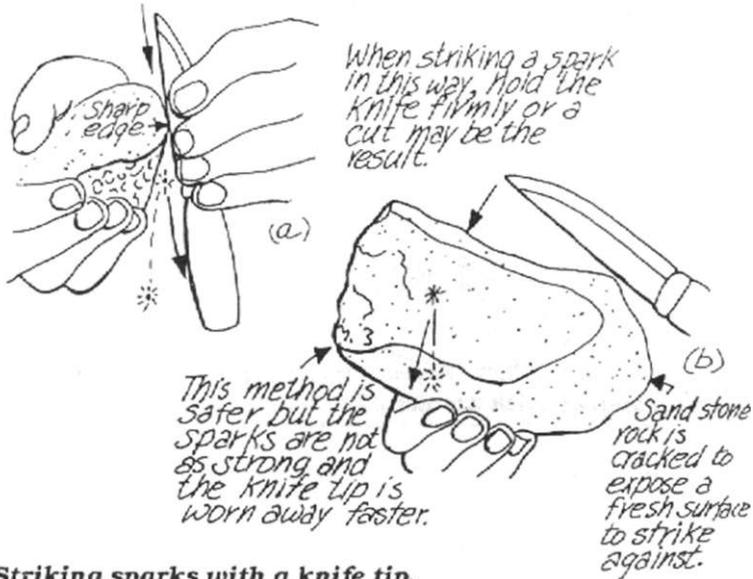
2. Natural Tinder. Made by extracting the context or cottony substance from the hoof, or false tinder fungus, and boiling it in a slurry made from the powdery-grey ash of a wood fire. The false tinder fungus is usually found on dead birch and occasionally on aspen. It is easy to identify as it looks like a horse's hoof.

3. True Tinder Fungus. Found on living birch trees, it is also easy to identify as it appears already charred. The light-

brown interior material is dried to prepare it for use.

Striking the Spark. It takes practice to obtain a good spark. Use a supple flick of the wrist to make a light glancing blow. See how close you can come to the flint with the striker, yet miss it. You know you have a good flint, steel and technique when you can make sparks that strike the ground from a standing height.

Striking into a tinderbox may cause many pieces of the tinder to glow. To ignite one flake, hold it under the thumb above a sharp corner of your flint and strike the spark upward into it.



Striking sparks with a knife tip.

a) The safest way to use a hunting knife as a striker is to employ the tip of the blade. The sparks are not as intense as those produced with the drill.

b) Striking sparks with the back of a knife. This is the most effective way to strike sparks with the back of a straight knife. It is risky if the blade is not held firmly as the stone is struck.

Producing Flame. Make a ball of dry material such as grass, inner bark of black poplar or aspen and old man's beard. Place the glowing flakes of tinder in the ball and blow into flame. To keep the smoke out of your face hold the kindling above eye-level and blow up into it. The burning ball of kindling is used to ignite twigs or shavings.



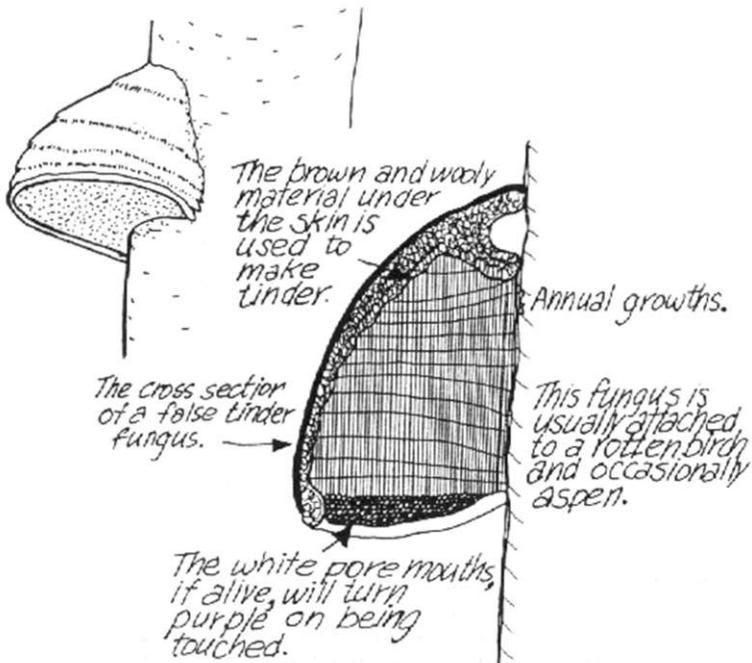
Striking sparks with an axe.

The Bow Drill

Lighting fire by friction is an exacting skill requiring considerable background knowledge. It sharpens one's fire sense and induces a great feeling of accomplishment.

Moisture is a major problem in friction fire-lighting. When fire hazard is high, it is easy to start a fire with a bow drill. You are likely to obtain an ember if there has been no rain for two days, the weather is hot and sunny, and the fire is made in the hottest part of the day (mid-afternoon). Due to the low relative humidity normally found in winter, the bow drill works well, unless there were extensive autumn rains. Laying a board and drill on "dry" ground for a half-hour may cause failure because of the moisture that is absorbed.

Suitable woods. Any dry, firm, non-resinous wood will likely produce an ember. A screeching drill indicates the wood used has a high resin content. The drag created by resin is exhausting to overcome and the powder has a higher



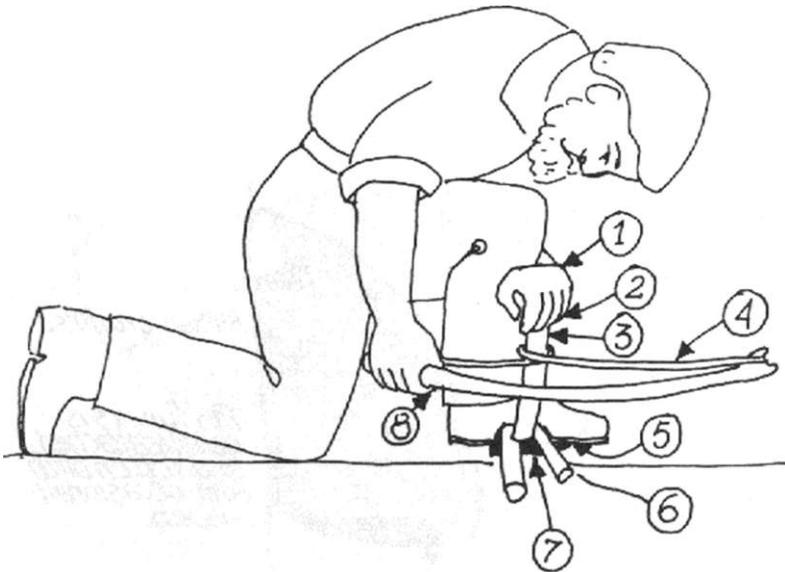
Cross section of false tinder fungus. The fungus is found on dead birch and occasionally on aspen.

ignition point difficult to reach by normal drilling. Wood that is low in resin may not screech but produces a powder composed of tiny rolls, which is a sure indication that it will not work.

Some woods must be sound to work well, while others are best if attacked by a fungus. If the board and drill are from the same piece of wood, and difficulty is encountered, then both pieces should be discarded. The board and the drill must be of the same hardness, or the drill must be the harder of the two. or it will wear away before it can generate the required heat. Aspen, willow and balsam fir work well when both the board and drill are of the same wood.

A superior combination is a punky aspen heartwood board and a dry, weathered wolf willow drill. Aspen and willow are popular because of their availability. Both are easily shaped with a knife or a cracked rock.

Suitable wood is weathered grey, has little bark left on and comes from a protected, sunny location (such as on the



Proper use of the bow drill.

1. *The wrist fits snugly against the shin to steady the drill.*
2. *If you do not bear down enough on the socket you will not make smoke. If you bear down too hard you may become exhausted before you get an ember.*
3. *Hold the drill vertical.*
4. *The bow is horizontal and at 90 degrees to the drill.*
5. *The instep of the foot is close to the drill.*
6. *The board must be on a firm footing.*
7. *Kindling.*
8. *The thumb and fingers are used to vary the tension on the bow string.*

south side and close to a big white spruce). It must be vertical with no old man's beard and should be collected well above your height to ensure the minimum of moisture.

Aspen may be found in three suitable forms. The first is firm, in diameters of up to ten centimetres, well-weathered and grey displaying a large check. The second is attacked by a fungus that makes it light and punky and causes the top part of the tree to break off two or three metres from the ground. The third and best board of all, comes from a living aspen attacked by the conk fungus that so weakens the tree internally it falls, usually fracturing into pieces that can be removed without using an axe. This wood is both light and firm, much like balsa.

Drill. A straight drill works best. It should be thicker than the thumb and about a hand span long. The dimensions are not critical as drills a centimetre thick and a few centimetres long or a few centimetres thick and a metre long will work. The larger diameter drill provides more traction and imposes less wear on a weak cord.



*Both ends of the drill should be alike.
Reverse ends often while drilling.*

Wood must be dry, firm and hard.

The straighter the drill and the rounder the cross section, the smoother the action.

If the central portion of the drill is larger in diameter than the ends, the bow cord will ride better.

The best woods are:

1. Wolf willow
2. Some Salix
3. Aspen
4. Balsam fir.

Drill ends should be spherical to paraboloid in shape.

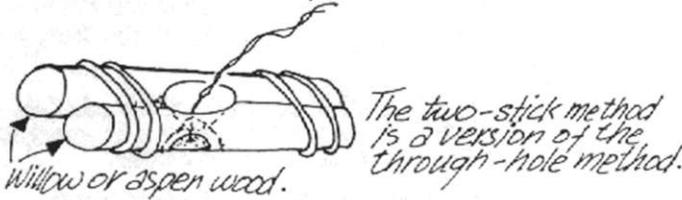
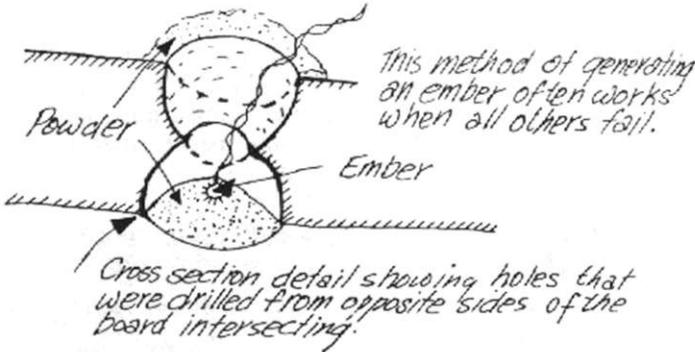


A standard sized drill is about thumb thick, but it may range from that of the little finger to twice thumb thickness.

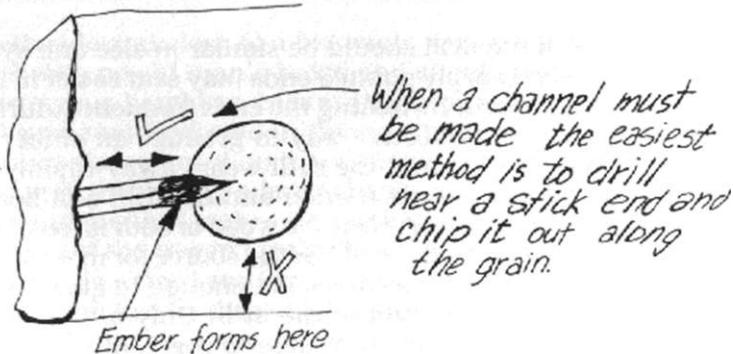
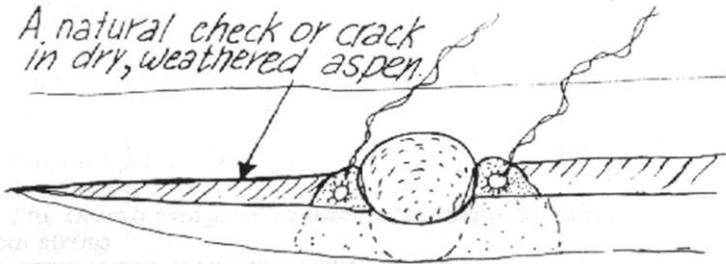
The drill.

Both ends of the drill should be similar in size and symmetry. Initially, sharply pointed ends may seat easier in the socket and fireboard. Switching the ends frequently during drilling is the most effective way to produce an ember, if there is little friction, and the drill wears away rapidly, it is too soft. If there is little friction and the drill and board polish instead of charring, then the wood of both is too hard.

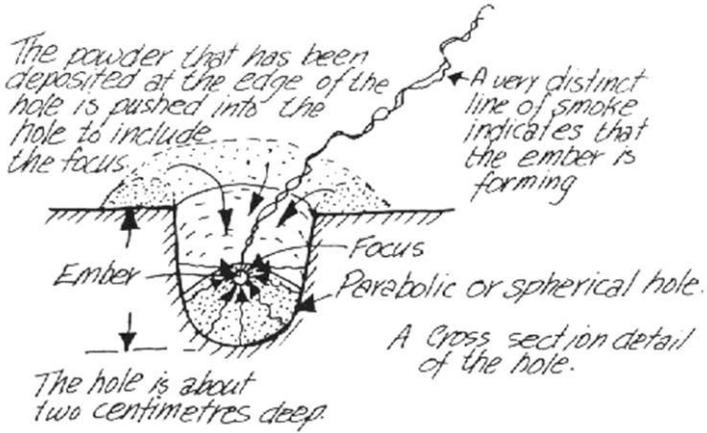
Fireboard. The board should be the source for most of the powder that eventually becomes hot enough to glow spontaneously from the friction of the drill. Only a dry board allows the build-up of temperatures to this ignition point. The board needs only be big enough to be easily held down with the foot.



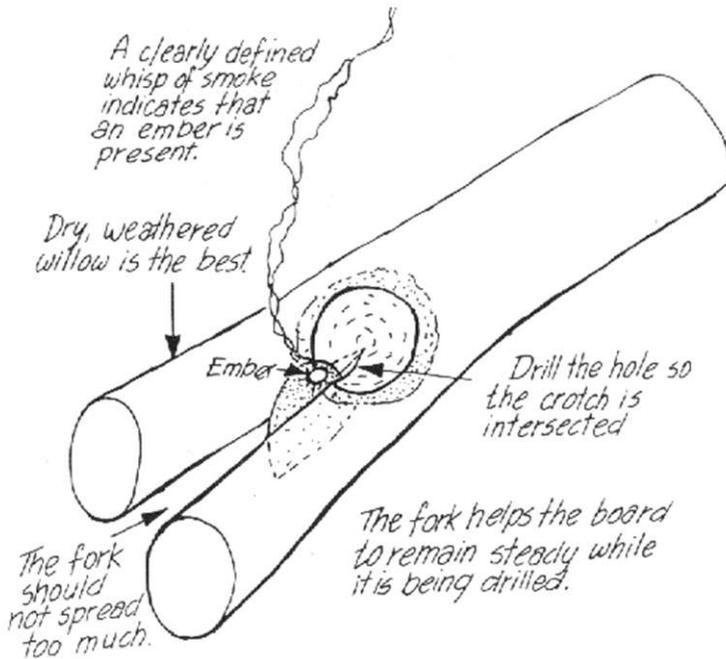
The through hole and two stick methods used with the bow drill.



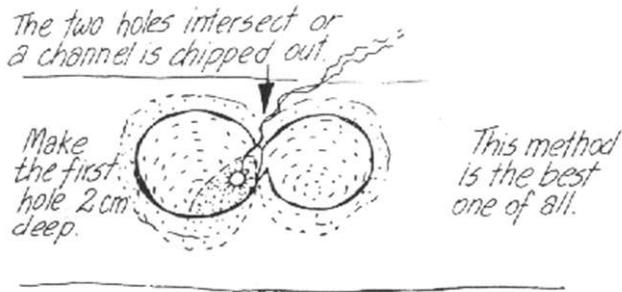
The crack-hole and hole-edge methods of drilling an ember.



The one-hole method is the fastest method known for producing an ember by drilling.

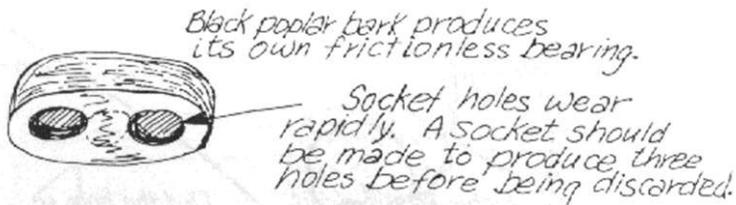


The fork-hole method of drilling an ember.



The two-hole method of drilling an ember.

Socket. A socket should be comfortable to hold in the palm of the hand. The diamond depression from both a dry or green "diamond" willow may be quickly made into a socket. One of the best sockets is easily made from the soft, thick outer bark of the black poplar. In a few moments of use it develops an almost frictionless bearing surface. With other sockets the hole may have to be inlaid with something smooth and hard. Green leaves, soap or grease can be used to reduce the frictional drag that is so physically exhausting to overcome. When a lubricant is applied, c _ly one end of the drill can be used for the entire drilling operation.



The drill socket.

Bow. The bow is a straight stick that ranges in length from that of the arm, to that of elbow to finger tip. If too flexible, it will not grip the drill and if too rigid, it will rapidly wear out the bow cord. When the bow is held at the ends and bent, it should flex slightly. A dry bow, being lighter and more resilient, is superior to a green one. The tip of the bow may have a fork (if willow) or a hole (if spruce) and the handle should have a hole through which the cord passes snugly so that its tension can be easily adjusted.