

# A Pennsic Pyro Primer

By "Smokey" Baron Dur

## **Vigilant:**

*Night watch of Roman cities whose task was to monitor for the danger of fire.*

# Introduction

This booklet is only intended to be a guide in the safe and effective use of fire. It is not an official publication of the SCA Inc. or any of its branches or organizations. It does not delineate or supersede the official rules for any event or function, but if you don't follow the "rules of thumb" contained herein, you may not live to regret it.

The author wishes to thank those who inspired this work (including those who survived) Arnoff, Gwen, the Barony of Carrillon, and Margrita as well as Express-Tech Volume Printers for their contribution in publishing this guide. Cartoons by William Blackfox (verbally released to public domain). All or part of this document may be reproduced for educational use.

*Let's keep campfire as one word, please. Smokey Baron*

# Safety First

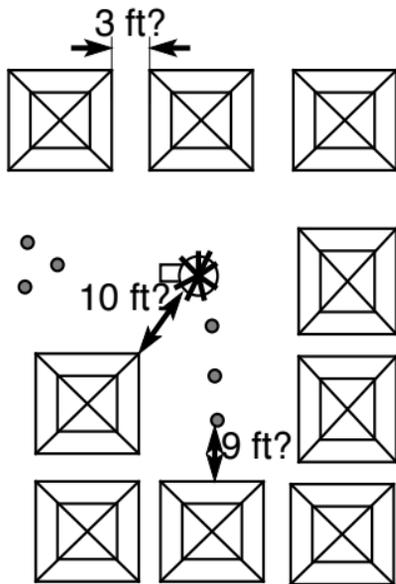
## Setup is important

Look at how you set up your camp. Is the fire pit in a main traffic area? Will your torches fall onto your tents if they are knocked down? Will sparks from the fire pit reach the tents?

Since camps change on a daily basis, you should check your layout every time it changes, and at least once a day. (Planning will be a big help here.)

Some things to check:

- Cook fires - at least 10 ft of clear space
- Bonfires - at least 30 ft of clear space
- Torches - at least (3 ft plus height of torch) clear space
- Tents - at least 3 ft between them (wall to wall)



# Teach your children well

Safety is an excellent thing for you and you children to learn together. Take the opportunity.



# Extinguishers

Fires come in three categories: A - Combustible Solids, B - Flammable Liquids, C-Electrical Sources. Extinguishers are marked with ratings (A, B and C) and a value that indicates their effectiveness against each of these types of fires.

Since most of the materials that you will encounter while camping are of the A category, water is the best thing to have around. Dry chemical and compressed gas (CO<sub>2</sub> or Halon) are best-used for fighting fires with liquid fuels (or electrical fires. But, who has an electrical fire while camping? Don't laugh too hard, it happened at Pennsic). However, they are next too worthless for fighting class A fires.



If you have to use an extinguisher, remember to fight the fire **from the bottom up**. For instance, if you put water on the base of a fire, it turns to steam. Steam is cooler than fire,



and will take away the heat as it rises into the fire above it. Since steam is water vapor, it displaces the oxygen that the fire needs to keep burning. If you throw the water on the top of the fire, the fire below just dries out what's on top so that it will continue to burn.

# You burn too

Clothing is flammable, and modern textile blends burn hotter and longer (polyester is the reason). Use a heavy apron, close-fitting sleeves, and gloves when working near fire. There is no substitute for staying alert.



BE CAREFUL WHEN STANDING NEAR FIRES  
WHILE WEARING LONG , FLOWING CLOTHING.

# Emergencies

The rules are simple:

1. Call for help!
2. Don't panic!
3. CALL FOR HELP!!!
4. If you can, combat the casualty. Otherwise, wait for help.

# Fuels

## Solid

**Wood** - This is available in three forms: Green, Dry, and Lumber. Green wood (unseasoned) is very difficult to use as much of the energy in the fire must go to drying it out. Dry or seasoned wood is easy to identify by the radial cracks that form at the end of the logs. Even if the outside of the log is wet (from rain), the interior will burn well. The best wood to use is hardwoods such as oak, ash, hickory. Fruit woods will burn well, but stay away from sappy woods such as pine. When wood burns, part of the energy must go into converting the wood to charcoal. This means that smoke will be produced which contains various incomplete combustion products. Lumber is generally bad to use for firewood as it can be too dry (and therefore burns too fast), or it can contain chemicals that release harmful fumes when burned (like cyanide gas).



**Charcoal** - This material is basically carbon. When wood is heated to high temperatures in the absence of oxygen, all the volatiles are driven off. Charcoal is nearly smokeless, but it still produces incomplete combustion products like carbon monoxide. Like it says right on the bag, don't use this for interior heating (like inside your tent). When you bank your fires, you will produce charcoal.

**Wax** - This material is the solid form of liquid fuels. It has a very low volatility, but when heated to only a few hundred degrees it will burn rapidly. Wax is useful in starting wood fires (just drip some melted wax on a piece of kindling and it will light very quickly).

# Liquid

Liquid fuels come in two general categories, low and high volatile. This relates to the ability to "flash" at room temperature (if you heat a low volatile fuel, it will increase it's ability to "flash"). Technically, volatility is the rate (at a given temperature) that a substance will produce "free radicals" that are combustible. In the right mixture with oxygen, the free radicals will burn explosively or "flash", or they will burn in a sustained fashion.

**Grease (Fat) and Vegetable Oil** - These are low volatile fuels that you create or use in cooking. Since you will be heating these up, they can flash-fire in the pan.

**Lamp Oil** - This is a low volatile fuel, highly refined for use with oil lamps. Can be used as torch fuel.

**Fuel (Diesel) Oil** - This is a low volatile fuel that can be used as torch fuel. **It is not recommended for use in oil lamps** (the oil is not very refined and burns very dirty.)

**Kerosene** - This is a high volatile fuel that should only be used in lamps specifically made for kerosene. **It is not recommended for torch fuel.**

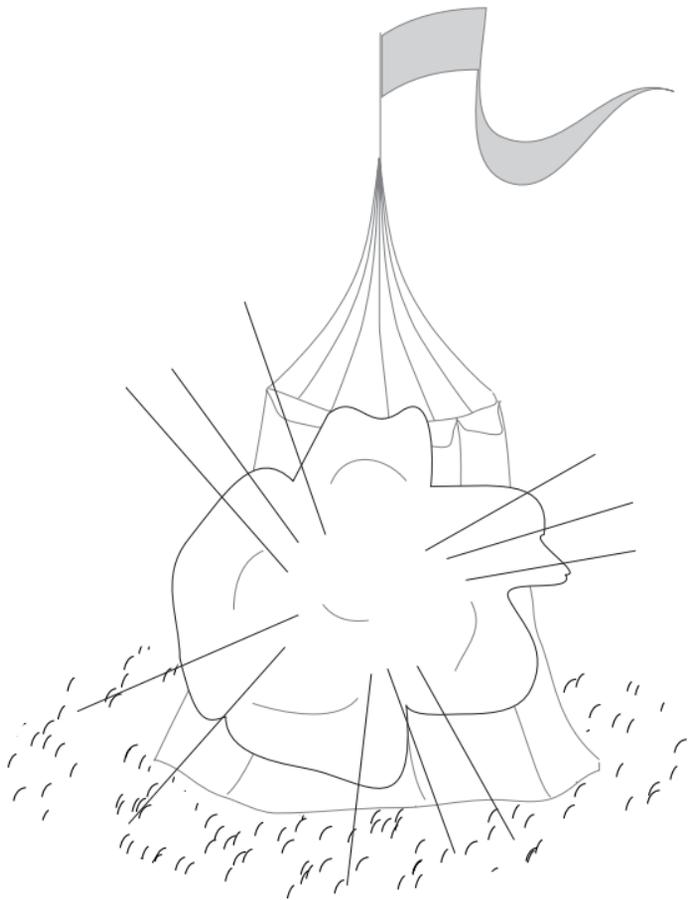
**Charcoal Lighter Fluid** - This is a high volatile fuel that should only be used to light charcoal. Read and follow the directions on the can. **Don't spray this on a fire that is already lit!**

**Gasoline (Camp Stove Fuel)** - This is a high volatile fuel that should only be used in camp stoves (follow the manufacturer's specifications). Some stoves are "multi-fuel", while others can only use the manufacturer's refined fuel. **This is definitely not recommended for torches!**



# Gas

Propane - This form of fuel has two specific dangers to be wary of. Loose fittings can leak gas. The leaked gas is heavier than air and will pool in dangerous concentrations (EXPLOSIVE!). Disconnect canisters or close the primary valve on the tank (if you are using the larger tanks) when not in use.



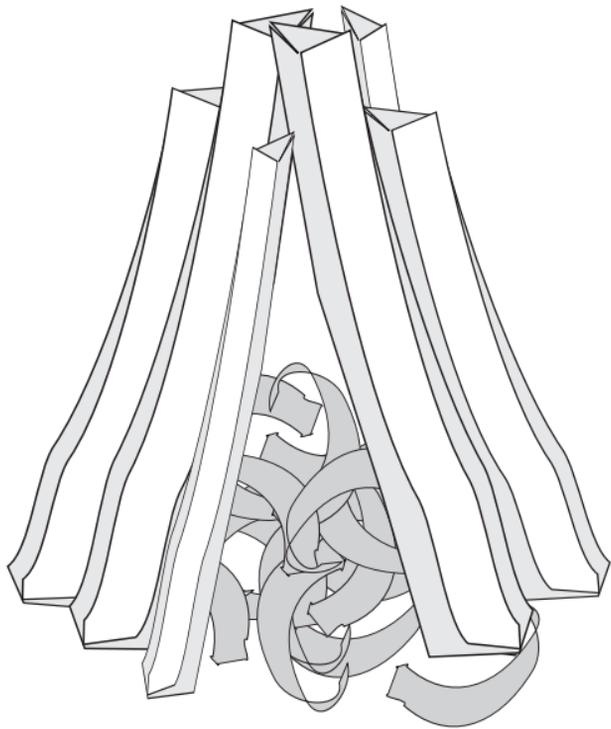
# Storage

Firewood has no special storage requirements (but it will work better if you keep it dry). Store candles in a cool place, and wrap them with wax paper or parchment. Do not store liquid fuels in any tent or structure where fumes can accumulate. Do not leave liquid fuel containers sitting in the direct sun as this will cause them to "boil off" flammable or explosive fumes (cover your containers with a tarp and cap them securely).

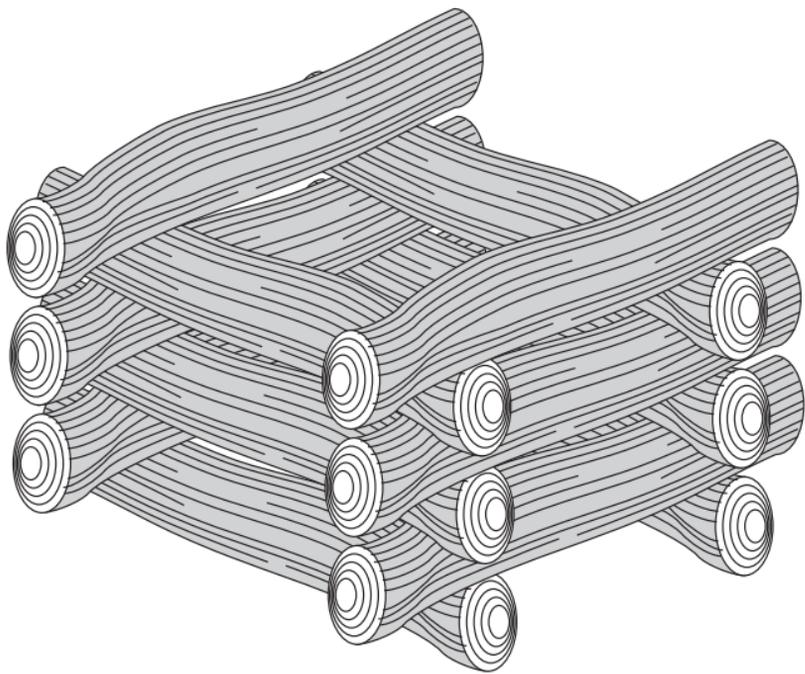
# Fire Starting

## Setup

Laying the fire - You want the fire to start quickly and with a minimum of fuel. Two classic lays are the "teepee" and the "log cabin." The teepee is good for getting a small fire going quickly without much charcoal produced. The log cabin will produce a fair amount of charcoal as the fire falls in on itself. You will probably need a teepee inside of the log cabin to get it going.



Since fire goes up faster than down, put the smaller, more easily burned material closer to the center of your lay with progressively larger material on the outside. The smallest material (tinder, paper, wood shavings, etc.) should be piled in the center. Remember to leave access to the center of the lay so you can light it.



# Igni- tion

You can improve your matches by dipping them in melted wax (long enough for the wax to soak into



the wood, not just coat the match head). Hard to start fires (such as wet wood or charcoal) can be helped along with candle wax, wax paper, waxed milk cartons, etc. Don't over-apply "starter fluid" to charcoal as all it does is waste the fuel. **DON'T put liquid fuel of any type on any fire that is already hot or burning as it can flash right back to the container (that's a bomb you're holding there, son).**

# Cooking

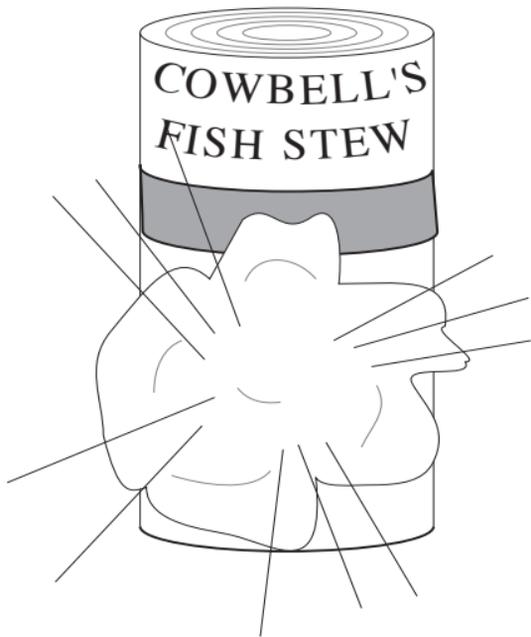
Campfire cooking is something of a science, much like cooking on the stove at home. (This is the lesson for the 14th generation apartment dwellers)

If you keep the following tips in mind, you should be able to cope with the new experience:

- The fire is irregular in heat output; you can work around this and still be able to cook effectively.
- Start with simple meals (like soup or kebabs) until you get the hang of it.
- Be patient, it will boil.
- Stir regularly.
- Take food out of the cans to cook it as many cans have a plastic lining.
- If you burn the soup, chop up a potato and throw it in to absorb the burnt-food taste.
- Soaping the outside of your pots will make it easier to get them clean, but if you cook over coals this won't be necessary.

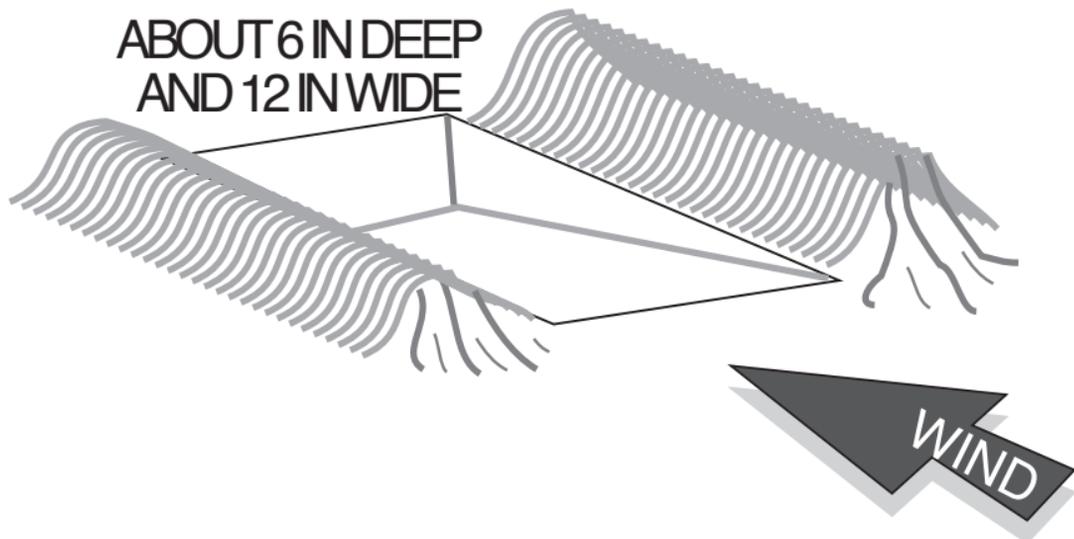
- Wear a heavy apron (it makes a good pot-holder.)
- Heat your dishwater while you cook, it will cut down on clean-up time.

**Don't heat unopened cans! They can explode and spray their boiling-hot contents on you!**



# Pits

**Trench** - The simplest fire pit is the trench (see the diagram). Note that the wind should enter the trench in the shallow end (the West end for Pennsic). Build the fire in the deep end and rake the coals up to the cooking area.





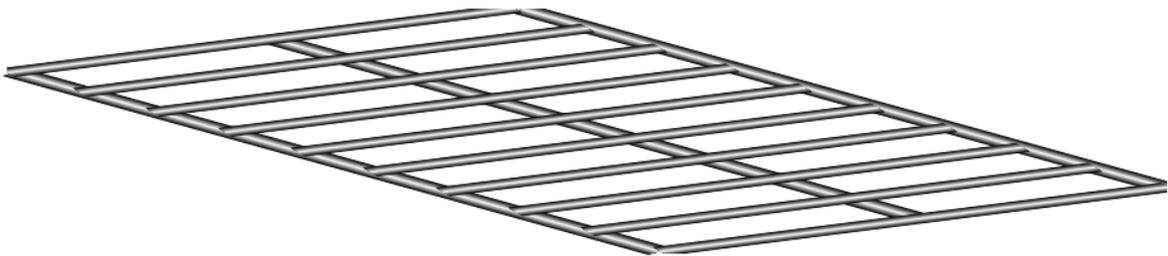
**Fill it in** - Keep the material you remove from the fire pit close to it (you can use it to smother the fire). When you decamp, please fill the pit back in (leave the grounds as you found them, or better).

## Tips and Tools

When cooking with campfires, remember that you have radiated heat to work with instead of conducted heat like home. It is not necessary to put the pot **in** the fire to get it hot (you can place it next to the fire and get almost the same results. Also remember that it will take a little longer to cook (campfires are not as efficient as your stove at home), so be patient.

*Fire Rake* - this is an essential tool for campfire cookery. While a stick will work to move coals around, you are forever having to replace the stick. The simplest form of a fire rake is just a long piece of steel with the end bent 90°.

*Grills* - Raid a junkyard for the racks out of old ovens to set your pots on. You can get "beach grills" that will cost a fair amount, but can be used for direct grilling of food.



*Pots and Pans* - If you are cooking with a campfire, cast iron cookware will even our the heat. The usual kitchen stuff will work well with camp stoves, but can be tried with charcoal (this will work, but not well).

*Ovens* - The Dutch have a great solution to this problem. If you use a large pot (one of those canning kettles will work) and place it so that it absorbs the radiated

heat of the fire it will work very well as a quick oven. You can also heap coals and ashes on top of the pot (just like the Dutch oven) for added heat. (Use a cooling rack inside the pot to keep your cookies from sticking to the bottom.) Another method is to wrap the item to be baked and bury it in the ashes, and then rake coals on top of it.

# Lighting

Use daylight for detail work, and save the night for romance...



*Adults can carry candle or oil lanterns at night,  
Let children use flashlights.*

# Lamps

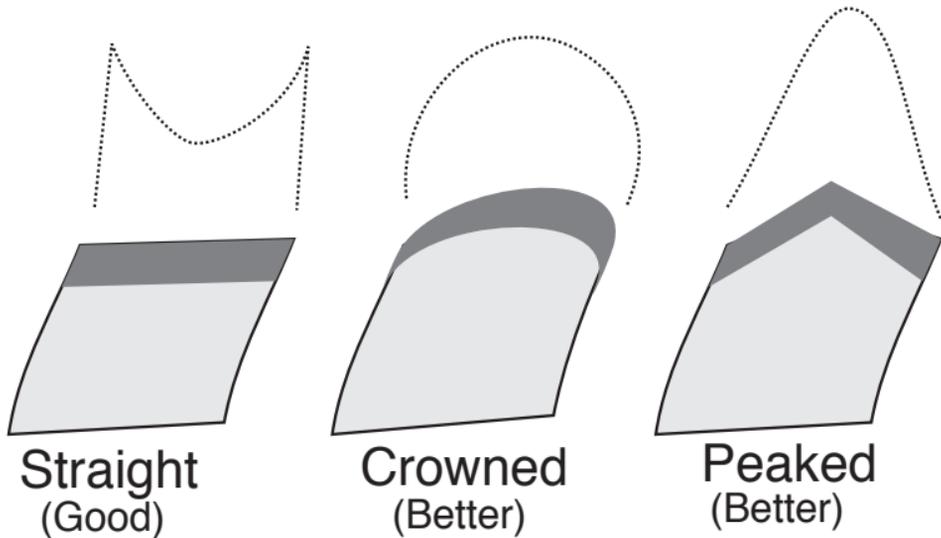
Trimming your wicks will improve the performance of your lamps. Remember to clean the chimneys as well. If the lamp is smoking, the wick is up to far. Use reflectors and light concentrators to get more light on the subject.

Trim wicks with small (embroidary) scissors.

Trim round wicks flat on top (like a crew-cut.)

A clear bottle full of water can act as a lens to concentrate light.

## Characteristic Flame





**NO Tiki-torch is  
"portable"**

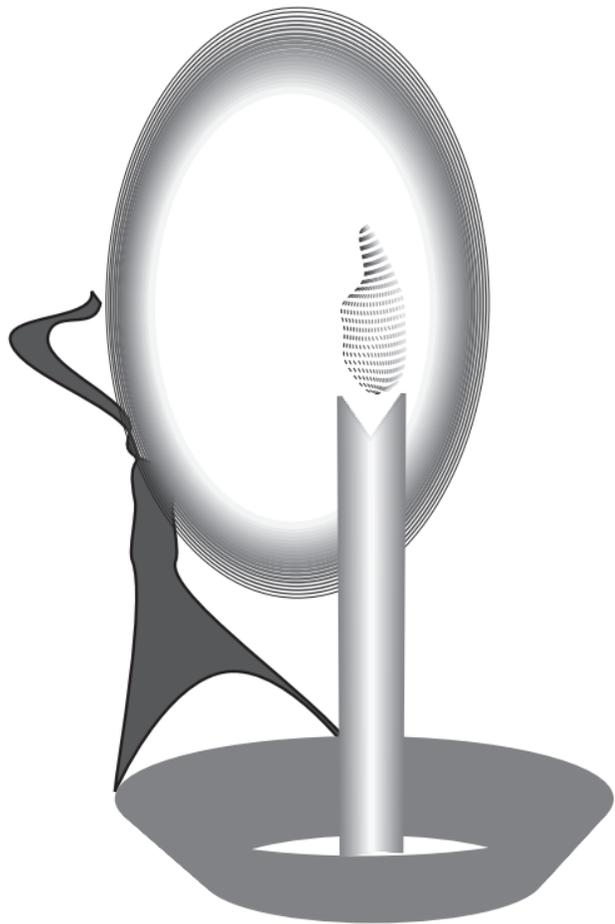
## Torches

The small, screw-top canister torches are the safest. The two piece bowl torches are like Malatov Cocktails (on a stick) and should not be used. When possible, group torches in clusters to reduce the chances of knock-down. Trim the wicks and try to wind-proof the torches (if you use a reflector, this can do double-duty). **NO TIKI TORCH IS MADE TO BE HAND-CARRIED! PERIOD!**

*It is generally unsafe to use any flame-powered illumination or heat source inside a tent; there is just too much at stake. If you take the risk, you force others to share the consequences. They may not want to.*

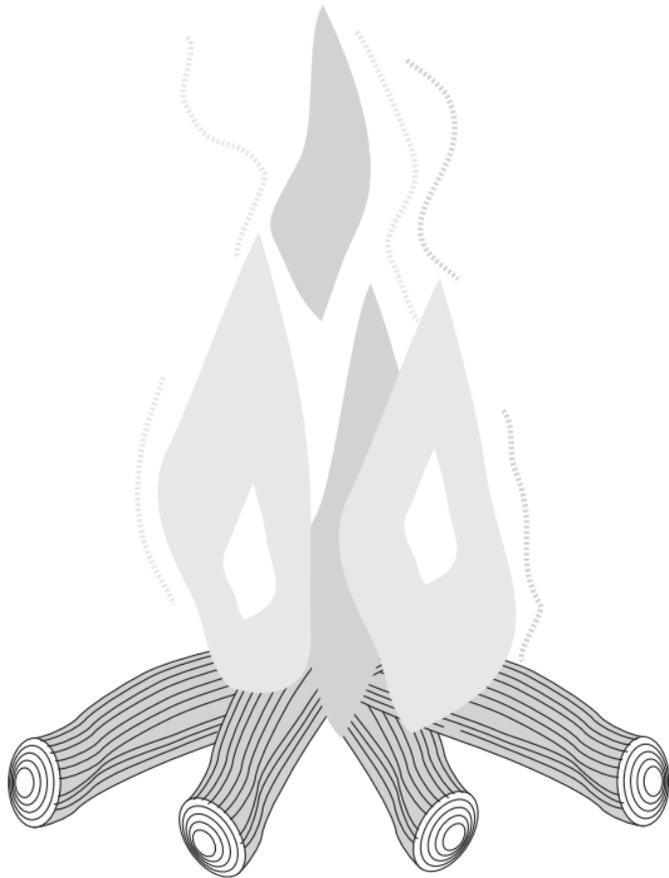
# Candles

These work best in lanterns or with chimneys. At the very least, put a catch pan beneath candle holders. These things drip all over stuff, and the drippings can increase the flammability of whatever they soak into. Bucket candles should be used with a stand (for hanging them) or placed on a bare spot on the ground (scraped to bare earth). The bucket can get hot enough to ignite adjacent material. Lawn candles are to be planted in the ground (clear the area around them), and are **not** for carrying around!



# Campfires

If you want to brighten things up with your campfire, try adding kindling (small bits of wood). This will burn quickly and brightly. You can also toss in your candle stubs or blocks of paraffin wax. **DON'T PUT FLAMMABLE LIQUIDS ON FIRES!**



## Some General Reminders:

- Never leave any fire unattended.
- Booze and Fire are a bad mix.
- Drop and Roll!
- Only you can prevent Camp Fires.
- Don't be a Pennsic Celebrity.
- Properly dispose spent fuel containers.
- Don't pollute.
- A clean camp is a safe and happy camp.
- Scrape dishes and pans before washing. Strain dishwater thru grass or cloth to remove food particles before dumping water in sump.
- Mark holes to prevent falls.
- Mark ropes to prevent tripping.
- *The Law of Six P's*: Proper Planning Prevents Pretty Poor Performance.
- Murphy was an optimist.
- Stupid rules are for stupid people. **Don't be the reason for the next stupid rule.**
- Squire! Sheath thy sword!
- This is Pennsylvania; the laws are different here.
- If you want the comforts of home, try a motel.
- If you must get drunk, do it at your own camp.
- Many learn by example. **Be a good one.**

**Bring your own first-aid kit.**  
(Think of the friends you might make.)



**Above all, have a good war with only memories and no scars.**