Aussie Fire Bow

Fire Lighting Using a Fire Bow Drill

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This was the method used by the American Indians & also by the ancient Egyptians & others. Stone age surgeons used this system as a skull bone drill.

Drill sticks, Hearth or base boards, Sockets, Bows & Cordage
Frequently updated, more photos to follow.

This page has been compiled specifically to give information in some detail on suitable Australian timbers as well as timbers occurring in many other parts of the world, plus some methods not described anywhere else, that I have rediscovered. For things that are well described elsewhere I have provided links.

Using a Bow Drill In Standing Position

Why bother:

Well for many years I was a small time miner & prospector, & actually used the old aboriginal hand drill method occasionally in North West Queensland, in the Gulf country & around Mount Isa. I discovered that the Kalkadoons used to use a pea bush. I do not know the scientific name for it.
It is the only timber I have been successful with using the hand drill method though I have not tried many. It is difficult & very hard on your hands. Important to not use

too slim a drill as if you do you tend to rub your hands together as you drill & get blisters even quicker. Also your drill stick as well as being straight needs to be a minimum 500 mm long & more than that even better. As you rotate the drill you are also pushing down. Your hands work their way down the drill & you have to quickly move them back to the top & re commence drilling before too much heat is lost. Two people alternating can make it easier.

The bow drill once mastered is much simpler & enables you to use a wide variety of timbers.
Anyway, I can not envisage why I would ever need these skills now, living in suburbia in South East Queensland, but it has some primitive fascination & gives an unreasonable degree of satisfaction when you achieve a glowing coal. A coal is only the first crucial step to a flame of course & you need to develop fire lighting skills using only bush materials in your back yard Bar-B-Q before trying to impress anyone.

There are many web sites devoted to this field of endeavour. Almost all from the USA. I decided to learn the techniques & catalogue the timbers & methods that I found successful. I have found it to be a fascinating hobby, collecting the various timbers & learning to identify them. It really adds interest to a weekend drive if you are on the lookout for suitable timbers to try. Then it is necessary to identify your sample as it is not much use for future reference otherwise.
As well as adding interest to drives it also makes a walk in the suburbs more interesting. I have never before taken much notice of the huge variety of plants growing in our streets, parks & gardens & who cares if you pick up a dead stick & carry it home.
So you have more incentive to go for a regular walk if you are like me & really need the exercise. Then the real exercise comes when you are trying to conquer a difficult wood.

<u>Methods & Materials</u>

All the literature, both printed & on the web that I have seen shows the subject kneeling on the ground with one knee & the foot of the other leg holding down the base board. Well that posture rules most of us out for a start. Lets say I'll never be mistaken for a gym instructor. I like to stand. Its much easier to get up. I think it is also a factor in my success. About four successes to one failure. Mind you some of the success were hard earned.

Use a stable old chair or exterior stairs that you can stand alongside, or a saw horse like structure with at least a 200 mm wide plank. Put your base board on this raised platform or if in the bush , on a log. Lift your left foot up and plant it on the base board. (If you are right handed) In the bush it can be easier to dig a hole for your right foot in some situations. Anyway, you do not have to kneel on the ground.
To learn the methods, be easy on yourself to start with. You do not want to go off into the bush without even a knife, make a drill, base board, socket, bow & cordage on your first attempt, though all this is possible later.
For your first serious attempt when you feel you have all the ingredients for success, choose a cool moonlight night for reasons explained later.

1/ Choose an easy material for your hearth board & drill, locally available, from the information below. Once properly set up this should give you a coal in thirty

seconds. Progress to the more difficult timbers later.

2/ Find where the dog buries his bones, dig one up. Start with a dog bone socket. (*Actually a beef round bone or femur, one correspondent asked if he should ask a vet for a dog bone)* Once you have mastered the method using a bone socket, try a bottle cap. Get a short stick about 25mm thick. Split it in half then press the serrated edge of the bottle top (preferably beer bottle top) against the wood. The pointed top of your drill quickly indents the cap & forms an excellent socket. You use your fingers each side of the drill to hold it in position. It takes practice but the results are great as there is virtually no friction.

Obtaining A Socket

3/ Obtain about 1 metre of 5 mm rope. I prefer the commonly available ex telecom blue & white rope used for pulling cables & then sold off in flea markets. In any case rope that is not furry or stretchy. You can advance to shoe laces later.

Bottle Top Socket

4/ Find a green springy branch. Wattle is good. Preferably about 900 mm long & about 15 to 20 mm thick to learn with, though later you will find that a 300 mm or less length bow can work well. If possible cut the branch off leaving a small fork in the thinner end, the easier to tie the rope to.
At the thicker end, use a hacksaw or thin saw blade & make two cuts about 3 mm apart & 15 mm deep. Remove the central piece to form a slot. If you do not have a knife or saw blade, split the end of the stick, wedge the split open with something while you put the cord in then bind a bit of thin cord around the split to stop it running further down your bow.
Tie your rope to the forked end.

To set the correct length for the rope, leave a slight amount of slack & lay the rope through the slot. Note the point where it goes through the slot, removing it from the slot & tie a single simple knot in it. Sit it back in the slot.
When you twist your drill through the rope, it should take up the slack & cause the bow to hold it tight. If not, move the knot. If the cord is thin & you are afraid it will break when you first put the drill to it & apply the twist, start with the drill almost parallel to the cord & gently apply the twisting force while rolling the drill backwards & forwards. Gradually bring the drill to right angle. Doing this you can end up with a much tighter bow string without breaking it. The string or cord does not need to be excessively tight. You increase tension as required by depressing it with your fingers if it begins to slip on the drill.

Large bow with Dog Bone Socket, Drill & Base Board

Small natural Bow, Bark cord, Bottle Top Socket, Drill & Hearth board (*Lantana)*

5/ <u>Drill:</u> It is CRITICALLY important to start with a drill stick that is as straight as possible, about 250 mm long & about 15 or 20 mm thick for most timbers. If the drill stick is not straight it will wobble all over the place & will be very difficult to control. Use a knife to cut the drill end to a very short cone point. A slightly curved drill can usually be carved straight. It is much better to compromise on the length of the drill stick than the straightness. I have lit plenty of fires with a 100 mm long drill but very few with a bent one.
The socket end wants to be cut back to about pencil thickness for about 50 mm along the length to place in the socket hole if you are using a beef shin bone. Can be less if you use a vertebrae or a bottle top. Do not cut it to a sharp point as it could burn a hole in the bone & it is not necessary.

6/ Split a 20 mm to 30 mm thick by 150 mm long stick in half lengthwise, or slice the top half off about 50 mm from one end. You do not want more than 10 mm of base board beneath your drill or it takes too much punk to fill the slot up to the drill interface with the base board. Using the point of your knife, start a small depression to take the point of your drill. Don't use a pocket folding knife without being aware that if you are not careful, when you put pressure on the point it can snap shut on your fingers.

7/ Place the hearth or base board on your raised platform, about knee height, with the end to be drilled directly away from you & place your left foot on it.

I like to stand. Its easier to get up.

8/ Put your drill to the bow rope & twist the rope in a single twist around the drill. Rest the point in the depression you have made in the hearth board. Have the bow string facing your leg with the bow wood horizontal & away from your leg, the rope

pointing in a straight line along the hearth board, otherwise the drill will keep jumping out of the hearth board bowel that forms or break out the side of your board. The drill MUST be on the outside of the rope away from the bow & I find best, with the rope at your handle end on the high side above the twist . This allows you to hold the rope up with your fingers & keep an upward pressure on it. I find this easier than the reverse where you have it on the lower side & depress it as your natural grip on the handle end can be used to press upward. This prevents the rope abrading against itself. If the drill stick is inside the rope, it will quickly cut the rope. Either re twist the drill or end for end the bow & turn the drill through 180°. You will soon learn the trick. For stability, hold the socket & drill top in a position that allows you to lock your wrist hard in against your left leg, then begin a gentle sawing motion to bed the drill in, *keeping the motion in the same line as the hearth board.*

9/ After the bed or bowl is properly formed, cut an approximately 5 to 7 mm wide slot in one side of the hearth board right through until it penetrates well into the bowl & vertically down through to the bottom of the board. I find the slot works best for me if it is on my leg side for some reason.

10/ Get a piece of carpet underfelt or other material that will smoulder easily & place it under the hearth board.

11/ If your drill has formed a point while starting the initial bowl, blunt it. The end is best if it is almost flat with just a taper around the outer edge. Set the drill up again & slowly start sawing. When it starts to smoke, continue with long smooth strokes to allow the punk (saw dust) to build up & fill the slot. You must have a certain mass of punk for ignition to take place as it helps to trap the heat.
Now apply a little more downward pressure & saw more rapidly. Count off thirty seconds of rapid sawing. REMEMBER TO BREATHE. Do not hold your breath or you will be quickly exhausted. When the smoke is coming up in copious rapidly rising coils, stop. If the punk continues to smoke, you have a coal. Remember the whole process should be gentle with the easier timbers. You do not have to use much downward pressure & you do not have to saw back & forth at great speed. Easy does it. If you saw frantically you are just as likely to loose control or become so exhausted that when you get a coal, you end up knocking it down & loosing it.

12/ Leave it for a few seconds then gently blow on it. After the coal is properly established, remove the hearth board, wrap the coal in the tinder & blow it into a flame. With some timbers you get better results if you wait for a while, even a minute or so & let the coal grow before going to the next stage of blowing & transferring to or wrapping in tinder.

NOW TAKE A DEEP BREATH & HOWL AT THE MOON.

You never know what might come out of the woods once you have a warm fire going:

http://a-nudist.com/fire11.jpg

Problems

1/ *The drill forms a point & quickly cuts through the hearth board.* After each attempt, rub the end of the drill on concrete or an abrasive surface to blunt the business end. If the drill has a hard core cut an X through the end.

2/ *Drill becomes hard to spin.* Slice some wood off the top of the hearth board. The bowl is too deep or the top end of your drill is too thick & it is rubbing on the side of the socket. Perhaps your drill stick is not straight or the bottom end of the drill has worn back & left a shoulder. From the marks on the end of the drill you can tell what

the natural centre point is, shape the drill into a circular cylinder around this centre for 25 mm back from the business end. The drill should spin easily. Disregard suggestions on other web sites about cutting flat faces on the drill to stop the cord slipping. If you have reasonable tension on the drill it should spin freely. Unless you are trying to use slippery rope or cord. Certainly rub the drill with a hand full of sand if it is really smooth, otherwise work out why it is hard to spin & solve the problem.

3/ *The rope climbs or runs down the drill.* You control this by pointing the far end of the bow up or down as required, then saw horizontally.

4/ *The drill squeaks & does not form punk or smoke*. Roughen the end of the drill & if necessary the bowl in the base board.

***5/ Heaps of smoke but no coal after major effort*. Choose another timber. Some simply do not work no matter how good your technique. If you know it is a timber that has worked before, refer to *High Humidity*.**

6/ *The drill stops rotating,* even though you continue to saw & the punk is being whipped away at every stroke. Your rope broke.

7/ High humidity.* Make sure your drill spindle & base board are absolutely dry. Even the easiest timbers are either difficult or impossible if they are not extremely dry. If you go to use a fire drill & baseboard that has previously been successful but now does not work, it probably has absorbed moisture, especially if you are trying it first thing in the morning or if it is raining. Try drying it in the sun or simply use light pressure for a couple of minutes to allow friction to dry it out. You also probably have not flattened the end of your drill or removed excess wood from the top of the bowl in the base board. *Green timber dries quickly on top of your computer monitor so make sure you take it with you next time you get lost in the bush. Do not block the air vents on your monitor or you might get to see it smoulder.

8/ *Your family & friends do not understand you & say its an obsession.* Do not worry about it. It is hard even for normal people like us to understand.

***9/ There is a smell like burning pork while you are drilling.* I know its important to get that coal glowing but you do not have to hold the red hot bottle cap with your fingers. The serrations & downward pressure will hold it against the wood insulator.**

Note: There are quite good illustrations on another Aussie site given below.
http://sdayouth.cybersite.com.au/pathfind/special/camping/wliving/wlive5.htm

Test results for various timbers & methods

From 13/4/01:

Grass Tree or Blackboy flower stalk. *(Xanthorrhoea)*
One of the easiest for both drill & hearth board. Suitable for fire lighting using bush spun cord & with any hard timber for a socket. For photo visit
http://farrer.csu.edu.au/ASGAP/APOL8/dec9714b.html

Poinciana -- *Delonix regia*
Widely grown introduced street tree. Easy species for fire lighting. I used a beer bottle top with the serrated edge pressed against a soft wood stick with a flat surface carved on it . The point of the fire drill formed an indentation in the cap & worked well. Your fingers form part of the guide & you quickly learn to centre the socket & hold it steady. With the easier timbers you do not have to work hard. Take it easy & with light pressure. For tree photo http://mgonline.com/royalp.html

Moreton Bay Fig: *Ficus macrophylla*
Quick & easy. Bottle top socket worked well with this species also. A cordage tree as well. For photo visit http://www.fitzroygardens.com/Trees%20in%20the%20Gardens.htm#Ficus macrophylla.JPG

CAMPHOR LAUREL *(Cinnamomum camphora)*
Originally from China. Beautiful tree, considered a pest in some areas.
Quick & easy to get a coal but gives off a pungent choking smoke in the process.

Lantana: *camara Verbenaceae*
Probably the easiest I have tried to date. I used a section of vine approx. 12 mm thick for both the hearth board & the drill. I got eight fires from the one bowl before I had to start another in the hearth board. I cut the vine green, stripped the bark off it & left it to dry for eight weeks. It was so easy that I believe it would be easy as a hand drill material. You need a straight section 500 mm or more long for a hand drill. Getting a straight piece of lantana this long & dry in the bush would be a challenge but a green piece could be heated over a fire & straightened once an initial fire had been achieved.
See aboriginal spear straightening:
http://ozoutback.com.au/postcards/postcards_forms/abor_craft_2/Source/5.htm

Broad leaf Pepper Tree or Pepperina Tree:- *Schinus terebinthifolia*
Introduced pest species common around Brisbane. Very good drill & hearth board. Much punk & large coal quickly obtained.

African Tulip: *Spathodea campanulata.* *See: http://mgonline.com/africantuliptree.html*
Fair to easy. Needs plenty of air to start smouldering. A helper gently blowing would be advantageous. I found a larger than usual slot in the hearth board gave best results.

Poplar Tree: (*Populus alba or perhaps Populus euramericana*) Very easy. Smokes quickly but takes a little while to ignite. Punk fairly fibrous could be the reason. With a 7 mm slot in the hearth board, more air gets to the punk & ignition is better with any of the fibrous punks. Good beginner timber.

Weeping Willow: *Salix babylonica*
Quite soft wood. Very easy to get a good coal but you must use light pressure on the drill. Otherwise it forms a coarse punk & rapidly abrades the hearth board away without heating the punk enough to ignite. This light pressure method is best on most of the soft timbers.

Cockspur Thorn Bush or Vine: *Maclura (Formerly Cudrania) cochinchinensis*. See

http://www.infinitearts.com.au/brain/database/mc.html
The photo at the above site shows this vine in fruit, (Edible) however it often has very little leaf towards the end of summer & from a distance can look just like dead lantana.
It is mostly a thorny grey bush that sends out long arching canes like a blackberry bush but with very aggressive large hooked thorns. The slightest prick can be painful. Usually seen in cleared slightly rocky ridges.
Carefully knock the thorns off a section of dead vine, using about 20 mm diameter for both the
drill & hearth board. Hard wood but starts easily if the drill is first pointed to start the bowl.

White Cedar: *Melia azedarach var australasica*
Not the easiest but OK Drill & hearth board approx. 20 mm. Bone socket. Need to use gentle pressure initially until smoking well, then firmer & faster. Slot in hearth board about 5 mm wide & well into the bowl of the drill cavity. Need to flatten the end of the drill by scraping on a rough stone, cement etc. otherwise it forms a point & does not work.

Do not let the bowl in the hearth board become more than about 5 mm deep as a deep hole wastes a lot of energy when the inevitable wobble of the drill hits the sides without generating heat.
Most of the heat is generated at the bottom of the drill.
Simply flake some wood off the top of the hearth board when the bowl becomes too deep.

Curracabah (Black Wattle) *Acacia leiocalyx:*
For photos of most Acacias, see *http://www.anbg.gov.au/acacia/photo-list.html*
Small shrub, eastern Queensland & NSW. Large sickle shaped leaves. Long twisted seed pods.
Flowers in Autumn & early winter. This wattle springs up in cleared areas particularly after fire.
It sends up straight shafts or suckers to three or four metres in lightly timbered areas & is often killed by bush fires or just dry weather at this stage.
Very hard timber & difficult to create a fire with until you develop the technique.
I found that by cutting a slot or an X in the end of the drill stick as well as the edge of the hearth board that I could be successful with this timber & several other very hard timbers. The advantage is that it is widely available.
The inner bark of the green suckers is excellent for making cordage.
A short stick of this timber with a bowl drilled into it with a fire drill makes a suitable socket for the easier timbers.

Cottonwood or Cotton Tree - *Hibiscus tiliaceus*
Widely distributed growing naturally in coastal regions of most countries bordering the Pacific Ocean & even as street trees in inland areas.
Quite hard & easiest with slotted fire drill stick. Generates copious quantities of punk (sawdust) & a large coal. Inner bark excellent for cordage. See image at:
http://www.env.qld.gov.au/environment/science/coasts/CSD4-09.PDF

Also an image with a nice picture & other pleasant browsing:
http://www.usyd.edu.au/macleay/larvae/plants/hibisc.html

Black Wattle: *Acacia decurrens:*
Feathery leaf Black Wattle, beautiful coastal wattle, green smooth bark on smaller limbs, dark grey to nearly black trunk.
Fairly easy fire lighter. I use about 25 mm drill & hearth board, preferably from a dead sucker or immature young tree that has died or been burnt rather than a branch off a mature tree. See: *http://www.anbg.gov.au/acacia/photo-list.html*

Grey Mangrove (White mangrove): *Avicennia marina*
http://www.ssec.org.au/towra/html/ecosystems.html
The most widespread and common of all mangrove species in Australia.
This tree has very hard wood. Slotted drill helps to give quick results.

Wild Tobacco Tree: *Solanum mauritianum Solanaceae* See:
http://www.boprc.govt.nz/www/green/weed121.htm
Widely distributed coastal shrub. I cut a green 25 mm sucker & left it to dry for about 8 weeks. Attempts earlier produced smoke but no coal. Once properly dry it worked well. Splitting the green stick in half & removing the pith would allow it & other timbers with a large pith to dry much quicker for the base board but you can not do that with the drill.
Need to use a section from near the top of the stick for the drill. This section has the least pith in the middle. The pith might be an acceptable bush food when taken from the green branch. Tiny sample tasted good but be careful. I have read that the berries are edible if you take the furry skin off. I have tried it & the really ripe berries are O.K. Pidgins love them so that is bound to give you ideas in a survival situation. According to one site I visited it does contain *steroidal alkaloids.* See:
http://www.hort.purdue.edu/newcrop/proceedings1999/v4-152.html#solanum

Like many plants that occur widely throughout the world, this plant is regarded as an introduced pest by many in the environmental movement, rather than just a successful species. I believe it is spread by birds & that it is a good pioneer plant for disturbed areas. Kill it off & you deny native birds their natural food. My late father was born in 1898 & he used to talk of Flock Pigeons & of Brown Pigeons feasting on these berries.

Paper barked Tea Tree: *Melaleuca quinquenervia*
Wide spread coastal tree in swampy areas. Works well but need a good socket such as bone or bottle cap. See: http://farrer.riv.csu.edu.au/ASGAP/jpg/970108.jpg

With these hard timbers I cut one end down to about half pencil thickness then to a point on the end. The other end to a very blunt cone. To start the bowl in the base board I first put the blunt end in the socket & the thin end to the base board. Even giving the drill a sharp tap with a rock or piece of timber to create the initial dent. End for end the drill once a shallow bowl has formed. The drill quickly forms a hard pointed cone shape & has to be ground back almost flat after you cut the notch.

Rubber Tree: *Calotropis gigantia.*
Spectacularly successful for the experienced. Quite difficult to start & needs a tight bow string but very good when you get the hang of it. The hearth board caught on fire on my first successful attempt. Quite hard wood with a hollow pipe in the middle. Cut half way through 50 mm from the end, split the top half off this 50 mm

section. Cut the notch. The socket needs to be very hard. Bone is good. Place the bottom end of the drill in the hollow, angled slightly back towards you so that it is located by the uncut top half of your hearth board & the hollow in the bottom half. The wood of the drill tends to crumble at the socket end. I used a dry sucker about 25 mm thick. This is a declared weed in Western Australia & there are large infestations of the related *Calotropis procera* in the Northern Territory. See:
http://www.agric.wa.gov.au/images/weeds/calotropis1.jpg

http://www.agric.wa.gov.au/images/weeds/calotropis4.jpg

http://www.agric.wa.gov.au/images/weeds/calotropis2.jpg

***Paulownia*: Chinese Empress Tree**
Plantation timber, see http://www.paulowniatrees.com.au/

Very interesting site. I found this wood difficult to master at first because it was so soft, almost like balsa wood. Smoked readily but difficult to produce enough punk to catch a coal. Successful eventually using a 12 mm branch hearth board & even smaller drill. Need a small diameter to give minimum pith in the centre. Would be excellent timber for modelling work but seems too soft for any structural uses.

Clifton Post Office Tree: Dense flowers along the limbs in Autumn. Unidentified so far. (22/4/01). Small leaf approx. 30 mm almost round but slightly pointed towards the stem. Dark green on top, paler underneath. Prominent veins underneath. Tree about 10 metres tall. Locals I have called can not tell me what it is.
Hard timber. Used 25 mm branch. After starting the bowel in the hearth board I had to cut the tip off the drill as it had a very hard heart wood. Put two cuts in an X across the end of the drill to soften the central heartwood. Worked well.

Norfolk Island Pine *Araucaria heterophylla.* See:
http://www.fore.canterbury.ac.nz/fore214/nrflksld.htm
The drill & hearth board I used were probably too large at about 30 mm. Pruned the socket end down to about pencil thickness & used a Shingle Oak branch for the socket. Successful with difficulty. Using a piece of suitably shaped metal for the socket with a timber insulator (Beer Bottle Top) worked quickly because of the extra weight brought to bear & lack of friction on the socket end. The drill quickly forms a hard central point that has to be abraded back on a piece of stone or concrete. Cutting an X slot through the hard core helped also. Later effort much easier with a drill whittled down to about 20 mm. Still needs a lot of weight. Hearth board also best if split down to about 12 mm thick.

Slash Pine: *Pinus elliottii var elliottii, P. elliottii var densa*
See: *http://www.home.aone.net.au/s_stimbers/slash.htm* Excellent. Quick & easy in every respect. I used a dead sucker from the fringe of a pine plantation that had had a bush fire through it, killing the broom stick thick suckers. Nice & straight. One of the easiest.

Black Cypress Pine: *Callitris preissii CUPRESSACEAE*. This widespread native pine west of the Great Dividing Range, has a pleasant aroma as it burns. It forms fairly coarse punk. Using a small 10 to 15mm drill it is very difficult to get a coal yet it is easy with a 25mm drill.

English Oak: *Quercus robur*. See: http://www.borealforest.org/world/trees/common_oak.htm Smokes fairly quickly but very difficult to coax a coal from it. Gives off smoke for a few seconds after you stop drilling & goes out. Fairly coarse fibrous punk. Repeated attempts in the same hearth board hole, roughing the end of the drill each time & putting some of the charred punk back under the drill eventually resulted in a good coal. I used a 25 mm hearth board & a drill carved down to about 15 mm. Bone socket was the only way to apply sufficient pressure without burning both ends. If you can light a fire with English Oak, consider yourself accomplished. I got my dead branches from a grove of English Oak growing along the roadside a few Kilometres from Clifton on the road to Kilarney, Darling Downs, South East Queensland, Australia.

Mango Tree: *Mangifera indica*. Forms fairly fibrous punk. Found it worked best with a wider slot, about 7 mm in the base board. This seems to be a good method to try with any fibrous punk. Probably allows more air in to aid ignition.

Dragon Tree: *Dracaena marginata*: See http://www.dracaena.com/forms/marginata/ Quick & easy if properly dry. Need to take the bark off & put in a sunny place for a while as the bark seems to hold moisture in.

Black Bean or Morton Bay Chestnut: *Castanopermum australe*. Quick & easy but pungent & probably poisonous smoke. This is a beautiful cabinet & turning timber that wood workers have to be careful with, not to breathe the dust when they are working with it. So I would not inhale too much of the smoke. The smell will warn you anyway. Similar to Camphor Laurel in lighting & smoke characteristics. See image: http://www.gu.edu.au/ins/lils/webb/img2/6-33b.jpg

Pecan Nut Tree: *Carya illinoensis*. Like many other samples I have tried, an apparently dry dead limb is quite moist beneath the spongy bark. I had to remove the bark & give the timber a few hours in the sun before it would work. Once properly dry it was easy. The smoke has a very pleasant fragrance & would be nice burnt for this purpose like Sandal Wood (Which I have not tried yet)

Umbrella Tree: *Schefflera actinophylla*. Like the Wild Tobacco Tree, this tree has a large pithy core. It is such a verdant grower you are unlikely to find a dead branch unless someone has pruned one. If you cut a 30 mm thick branch, take the bark off then split a 250 mm long section in half, you can easily scrape the pith out. (Scrape not gouge or pick) It will then dry in the sun in a few days. Because of the amount of pith you can have a problem finding a suitable section for a drill of this timber though it is possible, but practically any type of wood for a drill will work on it. A little difficult to get your bowl started but once it is you will have a teaspoon sized punk & coal in no time that you can cook your toast over. If you dry the pith out it makes excellent tinder to grow your coal.

TAPIOCA: *Manihot esculenta.* This timber is similar to the Umbrella Tree but you can get a small 12 to 15 mm drill with not too much pith. Once set up properly it lights easily. These timbers tend to polish rather than abrade & it makes it harder to start the bowl. Keep roughing the end of the drill. If you are starting with green timber that you have to dry, carve a few bowls in the green base board timber in preparation. It is much easier at this stage.

Macaranga: *macaranga tanarius euphorbiaceae*: One of the easy ones. A Rain forest tree with large heart shaped leaves similar to the cotton tree but the stem is attached 30 or 40 mm in from the top edge. Long thin branches, tree to about 6 metres high. Garden & park tree. See image:
http://www.treefarm.com.au/Macaranga_tanarius_x.htm & also at
http://www.gu.edu.au/ins/lils/webb/html/5-26.htm

Walking Stick Palm: *Linospadix monostachys* Nice & easy once you dry it out. I found a piece that had been cut back off a logging track There is a photo at the site below. The Stinson aircraft crash survivors ate the fruit of this palm back in the 30s prior to their rescue.
http://lamington.nrsm.uq.edu.au/images/plant/Walkingstick2.JPG

Sydney Blue Gum: I cut a young broomstick thick green sucker or seedling from a thicket of suckers beneath a mature tree. The young, basically sap wood, was soft & easily worked. Six hours drying on my Monitor Kiln & *Houston we have Ignition.* Quick & easy. To light my first gum tree fire, for the bow I used a 300mm long stick with a natural bow in it, a beer bottle top socket, twine cord made from a one metre strip of the bark off an air root hanging from a fig tree, spun into twine on a crude drop spindle in about ten minutes from root to cord & wedged the hearth board under the thong (simple Beach type Footwear for non Aussie readers) I was wearing on my left foot. Aussie or what?

Maple?. Not difficult. Sample from Jubilee Park, Tenterfield, New South Wales.

Crab Apple & Crab Pear. Sample from fruiting ornamentals near the Information Centre at Stanthorpe, Qld. Good, moderately easy.

Bougainvillea vine: Beware the thorns obviously. Quick & easy.

Grape vine: Well, I pruned my vine the other day. Dried a spindle & baseboard on my computer monitor for a few hours & found it one of the easiest yet. Used approx 15mm spindle & 20mm base board. This timber seems to rapidly reabsorb moisture after drying & it then becomes almost impossible to ignite a coal.

All the vines I have tried have been easy when thoroughly dry. Getting a straight section is the hardest part with most of them.

<u>Species with which I have NOT been successful SO FAR:</u>

Forest Oak, Rose She-Oak: *Allocasurina torulosa* CASURINACEAE

Smoulders but have not been able to get a coal.

No wood from a mature eucalyptus that I have tried in the Brisbane area has resulted in success, but young suckers as per the Blue Gum above would be well worth a try. The punk of the wood from the mature trees tends to be fibrous rather than powdery & when a coal from a small splint is applied to the punk it tends to go out rather than catch & smoulder as all the successful species do. This is a good way to test if it is worth persevering with a particular wood. If you have been unsuccessful but have

created a lot of punk, before continuing your test, try the small coal method or even a very small magnifying glass & the sun. If a tiny coal continues to smoulder & grow in the punk, it is worth persevering with. If it goes out you know you are wasting your time, unless your sample is damp. If the punk looks fibrous from a hard wood it is unlikely to work. Some timbers have a natural fire retardant. I have found that most timbers that have borers in the dry wood will work, though some are very hard.

Mulberry, no good. Coast Banksia, no good nor Shingle Oak or Horsetail She-Oak *Casurina equisetifolia* (This makes a good socket, it is extremely hard & if you knock the little branchlets off a dry stick it leaves a natural socket you can start with),

Jacaranda is no good, the punk will not smoulder. Tipuana looks good but the drill crumbles too quickly to get a coal.
Some species are better only just dry or using a different timber for the drill. Silky Oak & Small Leaf Privet both no good, Kurrajong shows promise but unsuccessful to date as a base board but as a drill works with many of the successful timbers listed above.

Pink Evodia *Euodia elleryana*
The wood of this lovely ornamental tree is also too soft, at least with a very dry stick. May also be worth a try with just dry timber rather than the old wood I tried.

Hibiscus: No luck so far.

<u>Waiting to dry.</u>
An Australian native ginger: *Alpinia coerulea*. A clumping plant with upright arching stems to 2 m, having long fleshy green leaves. Small white flowers on the stem ends are followed by a raceme of blue fruits, each about 1.5 cm diameter. The fruits can be easily opened and the pith around the seeds eaten. It has a refreshing lemon taste. Spit the seeds out.
Update: Worked well.

CORDAGE

This is a fascinating hobby in its own right. There are many plants in the Australian bush & in suburbia from which you can make a bow string, or cordage for other purposes. You can make coarse rope for lashing timber together or fine thread for fishing line or sewing repairs. The inner bark of most wattles or even the whole bark, wild frangipani, fig tree bark, strips of bull rush & many other materials make excellent cordage. Simply tear bark or inner bark fibre into about 5 mm wide strips, then you can use just your fingers & thighs or make a simple spinning drop spindle from a forked stick. You simply fasten two or more (though even one can be used) strips of your fibre to the fork or even a rock, hold the other end & give it a spin to twist the cord. Continue twisting until it starts to kink up, double your cord over & it twists back on itself automatically. Add more twist & in no time you have twine. Shorter pieces can be added to make longer cord & once doubled into twine is as strong a if single lengths of fibre had been used.

<u>Simple hand method.</u>

If you happen to have a Monsterio Delicio or a philodendron, cut a stalk & split it

open. You will find numerous hair thin tough fibres embedded in the spongy stalk. Strip about ten strands out of what ever length you can obtain. Pinch one end of all the threads between the middle finger of your left hand & the palm. Then about 25 mm from your left hand, pinch the threads with your right forefinger & thumb & roll the threads together. You can pinch the resultant thread between your left forefinger & thumb while you twist the next 25 mm and so on until it is all twisted. Hold both ends & add extra twist while keeping gentle tension in the thread. When the twisting results in the thread forming kinks, double the thread over & hold it between two fingers. It will automatically twist together. This is twine. You could practice with a 300 mm long piece of cotton thread or multiple threads, but if you twist the wrong way it will come apart.
Instead of just using your fingers you can pinch the threads or fibres with your left hand & roll them together between your palm & thigh. This teaches you the basic principle & is the method you can use if you have fibre of sufficient length so that when it is doubled over, the resultant twine is long enough for your purpose. For lengths of twine of a metre therefore you need fibre two metres long. This is by no means impossible, but by the time you are ready to light a fire with home made cord you will be quite capable of using a 300 mm long bow. This is a much easier length cord to make. The twine only needs to be about 2 mm thick or about 1/8 of an inch. If you are using bark twine, keep it moist. If it dries out soak it until it is quite limp. Short tufts of cotton & wool can be spun in a similar way. A good drop spindle can be made from a discarded CD & a piece of dowel or a stick. More detailed instructions can be found on spinning at:
http://www.handspinning.com/lollipops/spininst.htm

There are many web sites devoted to spinning & making cord but for a bow string, keep it simple.

Some interesting links other than those given above:

Bandicoot Bill's bush matches. Good Aussie site.
http://users.hunterlink.net.au/~madms/fires.html

http://www.artrans.com/rmsg/ ROCKY MOUNTAIN SURVIVAL GROUP - A Survival Information Clearinghouse. Newsgroups
http://www.artrans.com/rmsg/_newsgroups/

The Primitive Skills Group! ***http://users.aol.com/tbprim1/Primskill.html***

Ontario Trackers ***http://wmuma.com/ontariotrackers/sitemap.html***

PRIMITIVEWAYS http://www.primitiveways.com/ One of the most interesting sites I have found on this subject. The Egyptian bow drill looks interesting though I find the simple methods I use with a single twist hard to beat if you have reasonably strong cordage. I have not tried the Egyptian method but I believe it has the advantage of allowing you to use much thinner cord. That could be a significant advantage in some situations.

Fascinating article on stone age surgery:
http://www.trepanation.com/master12b.htm

A marvellous advance on the bow drill, pump drills were also used for fire lighting as well as drilling rock & shell ornaments & later even for drilling metal:
http://www.best.com/~dforthof/HenryCowell/activities/97_ohlone_day/pump_drill.ht

Another site: http://www.ilovewood.com/pump.htm

And another on this topic: http://www.nps.gov/tuma/Pump_drill.html

Unrelated to fire but if you are interested in old ways have a look at a primitive lathe you could build yourself. file:///C:/Program%20Files/Microsoft%20FrontPage/aussiefirebow.html