



~ Quick Tips on Rope ~

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NOTE ON ROPES AND LINES.

Ropes can be made from any pliable, fibrous material producing strands of sufficient length & strength. Nylon rope have the advantage of great inherent strength, lightness, resistance to water, insects and rot. However nylon rope should not be the automatic choice if choosing equipment. Nylon has the disadvantage that it can melt if subjected to heat and friction on a rope produces heat. It is also slippery when wet. While its tensile strength is good, nylon also tends to snap if subjected to tension over an edge - it does not have to be a very sharp edge either, so BE CAREFUL of this.

ROPE MAKING:

Almost any natural fibrous material can be spun into good serviceable rope or cord and many material which have a length of 12 to 24 inches or more can be braided or plaited. Ropes of up to 3 and 3 inches diameter can be laid by four people & breaking strains from bush made rope of 1 inch diameter range from 100 to as high as 2,000 or 3,000 lbs.

BREAKING STRAINS:

Taking a three lay rope of 1 inch diameter as standard the following table of breaking strains may serve to give a fair idea of general strengths of various materials. For safety sake ALWAYS regard the lowest figure as the breaking strain unless you know otherwise.

- Green grass= 100 to 250 lbs.
- Bark fiber= 500 to 1,500 lbs.
- Palm fiber = 650 to 2,000 lbs.
- Sedges= 2,000 to 2,500 lbs.
- Monkey ropes (liana)= 560 to 700 lbs.
- Lawyer vine (calamus)*= 1/2 inch diam = 1,200 lbs. Double the diameter quadruple the breaking strain. Halve the diameter & you reduce the breaking strains to one- fourth. (1/4).

PRINCIPLE OF ROPE MAKING MATERIALS:

To discover whether a material is suitable for rope making it MUST HAVE 4 qualities: It MUST BE reasonably long in the fiber. It MUST HAVE strength. MUST BE pliable and MUST HAVE grip so that the fibers will bite onto one another.

3 SIMPLE TESTS:

There are 3 simple tests to find if any material is suitable; First pull on a length of the material to test it for strength. The second test via strength is to twist it between the fingers and roll the fibers together; if it will stand this and not snap apart tie a thumb knot in it and gently tighten the knot. If the material does not cut upon itself but allow the knot to be pulled taut then it is a suitable for rope making

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providing that the material will bite together and is not slippery or smooth. You will find these qualities in all sorts of plants in ground vines, in most of the longer grasses, in some of the water reeds and rushes, in the inner barks of many trees and shrubs and in the long hair or wool of many animals. Some green freshly gathered materials may be stiff or unyielding. When this is the case try passing it through hot flames for a few moments. The heat treatment should cause the sap to burst through some of the cell structure and the material thus becomes pliable.

Fibers for rope making may be obtained from many sources; Surface roots of many shrubs and trees have strong fibrous bark. Dead Inner bark of fallen branches of some species of trees and in the new growth of many trees such as willows. In the fibrous material of many water and swamp growing plants and rushes. In many species of grass and in many weeds (pot?!?). In some sea weeds. In fibrous material from leaves, stalks and trunks of many palms & in many fibrous leaved plants such as the aloes*.

GATHERING AND PREPARATION OF MATERIALS:

In some plants there may be a high content of vegetable gum and this can often be removed by soaking in water or by boiling or again by drying the material and teasing it into thin strips. Some of the materials have to be used green if any strength is required. The material that should be green include the sedges* water rushes* and should be cut NEVER pulled. Cutting above ground is harvesting but pulling up the plant= destruction. It is advisable no to denude an area entirely but to work over a wide area location and harvest the most suitable material leaving some for seeding and further growth.

For the gathering of sedges and grasses be particularly careful therefore to harvest the material that is to cut what you require above the ground level and take only from the biggest clumps. By doing this you are not destroying the plant but rather aiding the natural growth since you are truly pruning. It is easiest method. Many of the strong leaved plants are deeply rooted and you can not simply pull a leaf off them.

Palm fiber in tropical and sub tropical area is harvested. You will find it at the junction of the leaf and the palm trunk or lying on the ground beneath many palms. Palm fiber is natural for making ropes and cord. Fibrous matter from the inner bark of trees and shrubs is generally more easily used if the plants is dead or half dead. Much of the natural gum will have dried up and when the material is being teased prior to spinning the gum or resin will fall out in fine powder.

There may be occasions when you will have to use the bark of green shrubs but AVOID this unless it is ABSOLUTELY ESSENTIAL and cut only a branch here and there. NEVER cut a complete tree just because you want the bark for a length of rope.

TO MAKE A ROPE BY SPINNING WITH THE FINGERS:

Use any material with long strong threads or fibers which you have previously tested for strength and pliability. Gather the fibers into loosely held strands of even thickness. Each of these strands is twisted clockwise. The twist will hold the fibers together. The strand should be from 1/8 inch downwards for a rough and ready rule, there should be 15 to 20 fibers to a strand. 2, 3 or 4 of these strands are later twisted together and this twisting together or laying is done with an anti-clockwise twist while at the same time the separate strands which have not yet been laid up are twisted clockwise. Each strand MUST BE of equal twist and thickness. The person who twists the strands together is called the layer and he MUST see that the twisting is even. That the strands are uniform and that the tension on each strand is equal. In laying he MUST watch that each of the strand is evenly laid up that is that 1 strand does not twist around the other two. (A thing you'll find happening the first time you try to lay up.)

When spinning fine cords for fishing lines, snares etc. considerable care MUST BE taken to keep the strands uniform and the lay even. Fine thin cords of nor more than one thirty second of an inch thickness can be spun with the fingers and they are capable of taking a breaking strain of 20 to 30 lbs or more. Normally 2 or more people are required to spin and lay up the strands for a cord. Yet many natives when spinning cord do so unaided, twisting the material by running the flat of the hand along the thigh with the fibrous material between hand and thigh and with the free hand they feed in fiber for the next spin. By this means one person can make long length of single strands. This method of making cord or rope with the fingers is slow if any considerable length of cord is required.

A more simple and easy way to rapidly make lengths of rope of 50 to 100 yards or more in length is to make a rope walk and set up multiple spinners in the form of cranks. See photo * 259b. In a rope walk, each feeder holds the material under one arm and with one free hand feeds in into the strand which is being spun by the crank. The other hand lightly hold the fibers together till they are spun. As the slightly spun strands are increased in length they MUST BE supported on crossbars. DON'T let them lie on the ground. You can spin strand of 20 to 100 yards before laying up. Do not spin the material in too thickly. Thick strands do not help strength in any way rather they tend to make a weaker rope.

SETTING A ROPEWALK:

When spinning ropes of 10 yards or longer it IS NECESSARY to set crossbars every 2 or 3 yards to carry the strands as they are spun. If cross bars are not set up the strands or rope will sag to the ground and some of the fibers will tangle up with grass, twigs or dirt on the ground. Also the twisting of the free end may either be stopped or interrupted and the strand will be unevenly twisted. The easiest way to set up crossbars for the rope walk is to drive pairs of forked stakes into the ground about 6 feet apart and at intervals of about 6 to 10 feet. The crossbars MUST BE smooth and free from twigs and loose portions of bark that might twist in with the spinning strands. The crossbar "A" is supported by 2 uprights and pierced to take the cranks "B". * These cranks can be made out of natural sticks, mortised slab and peg or bent wire if available. The connecting rod "C" enables one man to turn all cranks clockwise simultaneously. Whatever turns your crank boy! Crossbars supporting the strands as they are spun are shown "D". A similar crank handle to "C" is supported on a fork stick at the end of the rope walk. This handle is turned in reverse (anti-clockwise) to the cranks "C" to twist the connected strands together. These are laid up by one or more of the feeders. ALWAYS MAKE IT A RULE TO TURN THE FIRST STRAND CLOCKWISE; then the laying up of the strands will be done anti-clockwise and the next laying will again be clockwise. Proof that your rope is well made will be if the individual fibers lie lengthways along the rope. In the process of laying up the strands, the actual twisting together or laying will take some of the original twist out of the strands which has not yet been laid. Therefore it IS NECESSARY to keep twisting the strands whilst laying together. When making a rope too long to be spun and laid in one piece, a section is laid up and coiled on the ground at the end of the rope walk farthest from the cranks. Strands for a second length are spun and these strands are married or spliced into the strands of the first section and then the laying up of the second section continues the rope. The actual marrying of the strands is done only in the last lay which when completed makes the rope. The ends where the strands are married should be staggered in different places. By this means rope can be made and extended in section of great length. After your complete length of rope is laid up. Pass it through fire to burn off the loose ends and fibers. This will make your rope smooth and most professional looking.

LAYING THE STRANDS:

The strands lie on the crossbars as they are spun. When the strands have been spun to the required length which should be more than about a 100 feet they are joined together by being held at the far end. They are then ready for laying together. The turner who is facing the cranks twists the ends together anti-clockwise at the same time keeping his full weight on the rope end which is being laid up. The layer advances placing the strands side by side as they turn. Laying up is very fast when the layer is experienced. He quickly gets the feeling of the work. It is important to learn to feed the material evenly, and lay up slowly thereby getting a smooth even rope. Do not try to rush the rope making. If you do you will have uneven, badly spun strands and ugly lays and poor rope. Speed in rope making only comes with practice. At first it will take a team of 3 or 4 up to 2 or more hours to make a 50 yard length of rope of 3 lays, each of 3 strands. That is 9 strands for a rope with a finished diameter of about 1 inch. With practice the same 3 or 4 people will make the same rope in 15 to 20 minutes. These times do not include the time for gathering the material. In feeding the free ends of the strands twist in the loose material fed in by the feeder. The feeder MUST move backwards at a speed governed by the rate at which he feeds. As the feeder moves backwards he MUST keep a slight tension on the strands.

MAKING ROPE WITH A SINGLE SPINNER:

2 people can make a rope using a single crank. A portion of the material is fastened to the eye of the crank as with the multiple crank and the feeder holding the free end of this trend against the bundle of loose material under his arm feeds in, walking backwards. Supporting crossbars as used in ropewalk are required when a length of more than 20 or 30 feet is being spun.

FEEDING:

If the feeder is holding material under his left arm, his right hand is engaged in continuously pulling material forward to his left hand

which feeds it into the turning strand. These actions done together as the feeder walks backwards govern the thickness of the strands. (His left hand lightly closed over the loose turning material MUST feel the fibers binding or twisting together.)

THICKNESS OF STRANDS:

Equal thickness for each of the strands throughout their length & equal twist are important. The thickness should not be greater than IS NECESSARY with the material being used. For grass rope the strand should not be more than 1/4 inch in diameter for coarse bark or palm not more than 1/8 to 3/16 and for fine bark or hair or sisal fiber not more than 1/8 inch. For cords the strand should be NO MORE THAN 1/16 inch diameter. Fine cords cannot be made from grass unless the fibers are separated by beating out and combing. The correct amount of twist is when the material is hard that is the twist is tight.

FAULTS COMMON WITH BEGINNERS:

There is a tendency with the beginner to feed unevenly. This wispy sections of strand are followed by thick husky portions. Such feeding is useless. Rope made from such strands will break off with less than 1/4 of the possible strain from the material. The beginner is wise to twist and feed slowly and to make regular even strands rather than rush the job and try & make the strand quickly. Speed with uniformity of twist and thickness come only with practice. In a short time when you have the feel of feeding you will find you can feed at the rate of from 30 to 60 feet/min. Thick strands do NOT help. IT IS USELESS TO TRY AND SPIN A ROPE FROM STRANDS AN INCH OR MORE IN THICKNESS. Such a rope will break with less than half the potential strain of the material. Spinning thick strands does not save time in rope making.

LIANA, VINES & CANES:

Liana and ground vines are natural ropes and grow in sub-tropical regions scrub and jungle. Many are of great strength and USEFUL for bridging, tree climbing etc. The smaller ground vines when plaited give great strength and flexibility.

Canes and stalks of palms provide excellent material if used properly. Only the outer skin is tough and strong and this skin will split off easily if you bend the main stalk away from the skin. This principle applies to the splitting of layer cane (calamus*), all the palm leaf stalks and all green material. If the split start to run off, you MUST bend the material away from the thin side & then it will gradually gain in size and come back to an even thickness with the other split side.

BARK FIBERS:

The fibers in many barks which a suitable for rope making are close to the innermost layer. This the bark next to the sap wood. When seeking suitable barks of green timber, cut a small section about 3 inches long and an inch wide. Cut this portion right from the wood to the outer skin of the bark. Peel this specimen and test the different layers. Green bark fibers are generally difficult to spin because of the gum and it is better to search around for wind fallen dead branches. And to try the inner bark of these. The gum will probably have leached out and the fibers separate very easily. Many shrubs have excellent bark fiber and here it is advisable to cut the end of branch and peel of a strip of bark for testing. Thin barks from green shrubs are sometime difficult to spin into fine cord and it is then easier to use the #ariat plait# for small cords. Where IS NECESSARY to use green bark fiber for rope spinning if time permits you will find that the gum will generally wash out when the bark is teased and soaked in water for a day or so. After removing from the water allow the bark strips to partly dry out before shredding and teasing into fiber.

PLATING:

One many may need a considerable length of rope and if he has no assistance to help him spin his material. One can often find reasonably long material (1 to 3 feet or more) and using this material he can plait or braid and so make a suitable rope. The usual 3 plait makes a flat rope and while quite good, has not the finish or shape nor is it as tight as the 4 or #ariat plait#. On other occasion it may be necessary to plait broad bands for belts or for shoulder straps. A general rule for all plaits is to work form the outside in to the center.

3 PLAIT:

Take the right hand strand and pass it over the strand to the left. Then take the left hand strand and pass it over the strand to the right and repeat alternatively from left to right.

FLAT 4 PLAIT:

Lay the 4 strand side by side. The right hand strand lay it over the strand to the left. Now take the outside left hand strand and lay it under the next strand to itself and over what was the first strand. Now take what is now the outside right hand strand and lay it over the first strand to its left. *Take the outside left strand and put it under and over the next 2 strands respectively moving toward the right. Thereafter your right hand strand goes over one strand to the left and your left hand strand under and over to the right.

BROAD PLAIT:

To start, take 6 or 7 or more strands and hold them flat together. Take a stand in the center and pass it over the next strand to the left. Take the second strand in the center to the left and pass it towards the right over the strand you first took so that it points toward the right over the strand you first took so that it points towards the right. Now take the next strand to the first one & weave it under and over.

Weave the next strands from left and right alternatively towards the center. The finishing plait should be tight and close it.

ROUND OR LARIAT PLAIT: 4 STRANDS:

- 1) Lay the 4 strands together side by side as in fig 1 and cross the right hand center strand over and then around the left hand strand.
- 2) Take the left hand outside strand & pass it over the 2 crossed strands and then under the right hand one of the 2 so that it is pointing towards the left.
- 3) Take the free right hand strand and pass it over the 2 twisted strands to the left & completely round the left hand one of the 2.
- 4) Repeat this with the outside left hand strand.
- 5) Repeat with the right hand strand.

CAUTION: ALWAYS TEST IT.

Prior to trusting your life to a bush made rope, ALWAYS TEST IT. Use your mother in law or this lousy travel agent. Tie one end to a tree and put 3 or 4 fellows onto the other end, hang your mother in law, if it works then it is good (don't do this). Have them take the strain gently until finally all their weight is on the rope. If they can not break it then it is safe for one man at a time to use it to climb or descend a cliff face. When climbing up a bush made rope ALWAYS use the foot lock *p261 & when descending. NEVER slide down the rope. Climb down using the same foot lock to AVOID burns. The foot lock offers a measure of safety and the climber is so secure that he can actually stand on the rope and rest without his body weight being carried entirely on his arms. To prove this, use the foot lock and clasp the rope to your body with your arms. You will find that you are standing on the rope and quite secure.

FOOT LOCK:

By means of the foot lock you can climb to any height on the ropes, stopping to rest when your arms tire. The foot lock is made by holding onto the rope with both hands lifting the knees and kicking the rope to the outside of one foot. The foot on the opposite side to the rope is pointed so that the toe picks up the rope which is pulled over the foot which was against the rope and under the instep of the foot which picked it up. The 2 feet are brought together and the rope is now over the instep of one foot & under the ball of the other. Then to secure the grip and lock the rope the feet are place one on top of the other so that the rope is clamped down by the foot on top. By straightening the knees and rising the hands the body is lifted and a fresh grab taken for the next rise. In descending the body is bent the hands lowered and the foot lock released and a fresh grip taken with the feet at a lower level on the rope. It is advisable to wear boots or shoes when climbing bush made ropes. This method of descending is much SAFER than sliding. In sliding there is grave risk of bad rope burns to hands or legs.

ROPE MAKING: TIP 2

Vines, grasses, rushes, bark, palms and animal hairs can all be used to make rope or line. The tendons from animals legs also make good strings, but they tend to dry hard (very USEFUL for binding on arrow and spear heads). The stems of nettles make first class ropes and those of Honeysuckle can be twisted together to make light lashing. The stronger the fiber, the stronger the rope. Some stiff fibers can be made flexible by steaming or by warming. While pliable vines and other long plants stems can often be used, as they are, for short term purposes, they may become brittle as they dry out. A rope made from plant fibers twisted (spun) or plaited together will be more durable.

SOURCES OF FIBERS:

NETTLES: (URTICA DIOICA)

They are an excellent source of fibers but require preparation. Choose the oldest available plants and those with the longest stems. Soak them in water for 24 hours, then lay them on the ground and pound them with a smooth stone. This will shred the outer surface exposing the fibrous centre. Tease and comb to remove the fleshy matter. Hang to dry. When dry, remove and discard the outer layer. (Spin) fibers into long threads. Plaiting or twisting together to make as strong rope.

PALMS:

Usually provide a good fiber. Leaves, trunks and stalks can all be used. The husk of coconut is used commercially to make ropes and matting.

DOGBANE:

Stems also provide good fibers, with which it is easy to work.

BARKS:

Willow bark especially produces very good fiber. Use the new growth from young trees. The dead inner bark of fallen trees and tree branches should not be overlooked. But if the tree has been down too long it may have decayed too much, so test it for strength.

ROOTS:

The surface roots of many trees make good lashings. Those that run just under, or even on the surface are often pliable and strong. The roots of the Spruce are very strong. The Indians of North America used them to sew Birch bark together to make canoes.

LEAVES:

Plants such as those of the Lily family, especially Aloes have very fibrous leaves. Test by tearing one apart. If it separates into stringy layers it can provide fibers to make into ropes. Soak to remove the fleshy parts.

RUSHES, SEDGES & GRASSES:

Should be used when still green. Pick the longest specimens available.

ANIMAL TENDONS:

Are USEFUL for tying one thing to another. THEY MUST BE USED WET.

SPLITTING CANES:

BAMBOO, RATTAN AND OTHER TYPES OF CANES, VINES AND BARK; All need to be split to be used for any kind of rope making. If you try to pull away thin strips, these tend to run away to nothing. To AVOID this problem pull on the thick part to separate it from the thin. It saves both time and ENERGY.

TESTING FIBERS:

Tie 2 lengths together using an overhand knot. Try pulling it apart, using a reasonable amount of strength. If it snaps the fiber is too brittle. If it is too smooth, it will slip apart. Suitable fiber will "Bite ME BABY!" and hold together well.

PLAITING ROPE:

An easy method for the less experienced is to twist and plait strands. If you make 3 thin plaits, these can be plaited together again for thicker, stronger rope. If you are lengthening the strands as you plait, stagger the places at which you feed in new fibers. Take a bundle of fibers, tie the ends together, anchor it firmly and split into 3 separate strands (*a) Bring the left strand into the center(*b) then the right over it (*c). Then bring what is now the left strand to the center(*d) & so on (*e-f) Keep twisting the strands & keep the plaiting as tight and even as you can make it.

SPINNING A ROPE:

Twist fibers together (shown here clockwise, but what is important is to keep to the same direction). Feed in lengths of new fibers as you go so that their ends are staggered. When you have produced 3 lengths of fiber, anchor all 3 at one end and continue to twist each of them until quite tight. Temporarily fastening a toggle to the end of each will make twisting easier. Now draw all 3 strands together and twist all three clockwise - the opposite direction. Continue to add and twist until you have produced the amount of rope you needed. You will need to secure a completed section in a cleft stick to keep it tight as you work. Wrap the rope around a tree trunk to keep the working length short. To make a thicker rope repeat the process with 3 ropes you have already made or plait 3 simple ropes together.

REMEMBER:

When making a rope try to keep the thickness of the strands equal and even along their lengths. It is where a lay has a thin section that the rope is most likely to break.

WHIPPING ROPES:

The end of a rope MUST BE secured in some way so that it does not unravel. To prevent the strands from fraying, bind the rope with twine. Good binding or "whipping" MUST BE tight and neat to be effective. If it is too slack it will work loose or fall off. It is difficult to make a good whipping with thick cord and very***? this is prone to slip. Experience will enable you to match the thickness to the job. Use the whipping techniques to add a comfortable grip to handles of axes and parangs or, thicker to replace handle of a knife.

- 1) Lay a length of twine along the side of the rope, leaving its end (*a) projecting a hand's length beyond the rope's end.
- 2) Whip the twine (*b) around the rope, working towards the end, and gradually covering the piece you have laid along it.
- 3) Now form the loose end of the twine (*a) into a loop and lay it back along the whipped section.
- 4) Carry on with the whipping covering the loop until you have nearly reached the end of the rope.
- 5) Now pass the end (*b) whipping through the loop and pull the short end (*A) tight. Trim off ends neatly.

TYPES OF ROPE:

Kernmantel type encloses a central core of strands in an outer sheath. Easier to handle, except when icy or wet, but no strong as hawser. It can unravel if cut. Traditional Hawser-laid rope has 3 bundles of fibers twisted together. If one is severed the others may hold.

CHOOSING ROPE:

Match type, thickness and length of rope you carry to the demands you expect to make on it. Nylon will have advantages in very damp climates and when weight is critical but REMEMBER its drawbacks. Thickness of 7mm (5/16in) and below are difficult to handle. Rope about 9-10mm (3/8in) is usually recommended for Lashing, Throwing and Mountaineering. It can be used for safety lines and for climbing, provided belay and abseiling techniques are used. It is not thick enough for a hand over hand and foot grip. A length of 30-

40m (100-125ft) would then be as much as can be carried without encumbrance. Climbing rope **MUST BE** elastic, to absorb some of the shock, without putting enormous strain on anyone who falls. See if it has the approval of official mountaineering bodies or conforms to the British Standard 3184 (for Hawser laid ropes)

TAKING CARE OF ROPE:

Rope **MUST BE** protected from unnecessary exposure to damp or strong sunlight and in case of natural fibers from attack by rodent and insects. If it does get wet do not force-dry it in front of a fire. Do not unnecessarily drag it along or leave it on the ground. Dirt can penetrate and particles of grit work away at the fibers from inside the rope. If weather conditions will make drying possible, it is worth to wash a very dirty rope in clean water. Try to keep a rope for the job for which it was intended. Do not use climbing rope as clothesline or lashing if you can **AVOID** it. Though in survival situation you may have to use the same length for many purposes. Whipping the end of the rope will prevent fraying. To prevent a rope becoming tangled, store and carry it in a coil or skein. It will be easier to handle and to pay out when needed. Rope is a valuable equipment. You may have to trust your life to it. Do your best to kept in good condition

SIMPLE COIL:

Make a coil of rope 35-45cm (14-18in) in diameter, keeping each circle of the rope alongside the next without twisting or tangling. Leave a length at each end ready for fastening.

- 1): Bend one end back along the coil and wrap it with the other end.
- 2) Feed the "wrapping" end through the loop and pull to secure
- 3): Tie off with a reef knot shown later.

FOR LONGER ROPES:

If you wish to carry long ropes over your shoulder or suspended from a belt or from a pack, form a skein. Loop the rope backward and forward over your arm, letting it hang down about 35-60cm (18-24in) long. Leave the ends free. Take both ends together and wrap them several times around the skein. Make a loop and take this through the top part of the #skein# and finally pass the ends through this loop. Now tie off on to your pack with a reef knot.

THROWING A ROPE:

It is easier to throw a coil of rope than to attempt to sling a loose end - whether you are throwing upwards or outward - and it helps to split the coil so that it does not tangle. Have a large knot or weight on the throwing end. **MAKE SURE** that you keep hold of the other end ! Think about the anchored end and what will happen to it when the other end reaches target. If throwing a lifeline for instance to a fast-moving raft on water, are you going to be pulled into the water yourself? Anchor the end to a tree or weight. **ALWAYS** over-throw a line so that the recipient stands a good chance of catching part of the rope even if they miss the end. Coil half the rope on to the fingers and the palm of the right hand, then raise the index finger and coil the remainder on the other fingers only. Pass the second coil back to the left hand. As you throw release the right-hand coil a split second before the left. Anchor your end if you think there will be sudden strain on it and your position is precarious.

FOR A LONG THROW:

Tie a suitable missile to the end of the rope. Coil the rope carefully on the ground or loop it loosely over the other hand so that it will pay out freely as you throw the missile. Don't risk losing your end of the rope. Tie that to an anchor, a heavy stone for instance. Use a Killick Hitch* (later). If throwing a weighted rope over a branch keep out of its path as it swings back towards the throwing point! If throwing a lifeline **PLEASE** don't knock out the person that you are trying to help.

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~ Rope & Nets Tips ~

This was culled from a newsgroup some time ago. The author is a French Canadian and alot of the translation was garbled... Sorry.

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By means of the foot lock you can climb to any height on the ropes, stopping to rest when your arms tire. The foot lock is made by holding onto the rope with both hands lifting the knees and kicking the rope to the outside of one foot. The foot on the opposite side to the rope is pointed so that the toe picks up the rope which is pulled over the foot which was against the rope and under the instep of the foot which picked it up. The 2 feet are brought together and the rope is now over the instep of one foot & under the ball of the other. Then to secure the grip and lock the rope the feet are place one on top of the other so that the rope is clamped down by the foot on top. By straightening the knees and rising the hands the body is lifted and a fresh grab taken for the next rise. In descending the body is bent the hands lowered and the foot lock released and a fresh grip taken with the feet at a lower level on the rope. It is advisable to wear boots or shoes when climbing bush made ropes. This method of descending is much SAFER than sliding. In sliding there is grave risk of bad rope burns to hands or legs.

Abseil FOR ROCK DESCENT: *

The abseil is used for rock descent work generally at times it also can be used to climb up or ascent. In the abseil the body is upright but the legs are stretched out and the feet pressed against the rock face. The rope passes down between the thighs, around one thigh and diagonally up and across the upper half of the body and over the shoulder opposite then coming down at the back to be held by the left hand to check speed along with the right hand which is the master guide.*

SINGLE ROPE LADDER WITH STICKS:

A single ladder is made by opening the lays of the rope and inserting cross sticks each about 8 inches long as shown with an equal amount protruding on either side of the rope. These cross sticks MUST BE secure to the rope and it IS NECESSARY to lash to the robe above and below the sticks. The distance between the sticks should be from 15 to 18 inches. To climb a rope ladder hold the hope with both hands, bend the knees and draw both feet up together and lay them with even pressure on the next cross sticks. When the footing is secure raise the hands and continue the action which is somewhat like that of a toy monkey on a string. Bush single rope ladders have the advantage that they can be used easily by people who may not be able to climb by ordinary means. They provide an easy means of ascending and descending a cliff or a look out.

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SINGLE ROPE LADDER WITH CHOCKS:

This type of ladder has the advantage of being portable and quickly made. The chocks of hardwood a about 6 inches in diameter & 2 inches deep and are suitably bored to take the diameter of the rope. Splice an eye at the top end and seize in a thimble to lash the rope head securely. To secures the chocks put 2 strands of seizing between the strands of the rope and then work a wall knot.

NOTE ABOUT THISTLE:

They can make you an emergency rope even rabbit snare, split the stalk and weave a rope.

ROPE BRIDGE NOTE:

The first "A" frame is hooked onto the ropes and pushed forward with a stick. The footing a straight sapling is dropped down onto the crotch of the frame and the bridge builder walks out along this and hooks on the next "A" frame pushing it out the required distance and repeats the process till the far bank is reached.

ROPE BRIDGES MUST NEVER BE OVERLOADED, ONE AT A TIME IS A SAFE RULE.

If Monkey vines, Liana or Lawyer vines (Calamus*) are available instead of bush made rope use any of these. They are much stronger and will make a bridge strong enough for 4 to 6 men.

TO MEASURE THE DISTANCE ACROSS A RIVER OR GORGE:

Select a mark on the opposite bank "A" and then drive a stake on the near bank "B". * Walk at right angles for a know number of paces and put in another marker stake C and continue an equal number of paces and a third marker "D". Turn at right angles away from the river and keep moving back until the center marker stake and the mark on the other side of the river are in line "E".* Measure the distance from the third or last marker peg "D" to this point "E" and this distance will equal the distance across the river.

TO GET A ROPE ACROSS A NARROW DEEP RIVER:

Fasten a stout stick to the end of the rope. The rope MUST BE in the middle of the stick. Select a forked tree on the opposite bank. Throw the free end of the coiled line with the stick across the river to the tree. After many cast when it has caught; test it with 2 or 3 people to MAKE SURE the line is secured. Fasten the near end of the rope to a convenient anchor and then the person crossing the line, the lightest of the party hangs onto the line lifts his legs and hooks them over the rope with his feet toward the opposite bank. By this means he can work himself across the river and do all the work which has to be done on that riverside.

SAFETY LINE FOR RIVER CROSSING:

A bush rope can be spun to server as safety line for crossing flooded or fast rivers. The rope is taken across by a team member and fastened to an anchor on the opposite bank. As a safety line it should be above the water level. The person crossing should stand on the downstream side of the rope and face upstream, he crosses by moving his feet sideways. One step at a time and holding all the time to the rope which helps him keep his balance if by chance the current is so strong that it sweeps him off his feet his grip on the line will save him from being washed downstream then he can regain his footing and proceed.

1-2-3- ANCHOR:

A very stout stake is driven into the ground at an angle of about 45 degree and to the foot of this the main rope to be anchored is fastened. To the head of this stake 2 ropes are secured and these are fastened to the foot of 2 stakes to the rear. The heads of these stakes are in turn tied back to the foot of 3 other stakes. This anchor will hold secure under almost all conditions.

ANCHORING A PEG IN SAND or SNOW:

The only way to anchor a rope into soft sand is to attach it to a peg and bury the peg in the sand. Scrape a trench in the sand to a depth of between 12 to 18 inches deeper if high winds or very stormy weather are expected. Pass the rope round the centerof the peg scratch a channel for it at right angles to the peg trench. Fill in the trench and rope channel and fasten the free end of the rope to the standing end with a stopper hitch* and pull taut. The buried peg should hold a tent rope in sand under all normal weather conditions. Same applies in snow.

BUSH WINDLASS:

A bush windlass capable of taking a very heavy strain on a rope can be made by selecting a site where a tree forks low to the ground with the fork facing the direction in which the pull is required. Alternatively a stout fork can be driven in and anchored with the 1-2-3 method. The windlass portion is a forked log. The forks are notched to take the lever up to 7 feet long. The rope is passed round the roller a few times so that it locks upon itself. (If fork of the roller is long the rope may pass through the fork). This type of bush windlass has many uses.

WHIPPING ROPES:

The end of a rope MUST BE secured in some way so that it does not unravel. To prevent the strands from fraying, bind the rope with twine. Good binding or "whipping" MUST BE tight and neat to be effective. If it is too slack it will work loose or fall off. It is difficult to make a good whipping with thick cord and very***? this is prone to slip. Experience will enable you to match the thickness to the job. Use the whipping techniques to add a comfortable grip to handles of axes and parangs or, thicker to replace handle of a knife.

- 1) Lay a length of twine along the side of the rope, leaving its end (*a) projecting a hand's length beyond the rope's end.
- 2) Whip the twine (*b) around the rope, working towards the end, and gradually covering the piece you have laid along it.
- 3) Now form the loose end of the twine (*a) into a loop and lay it back along the whipped section.
- 4) Carry on with the whipping covering the loop until you have nearly reached the end of the rope.
- 5) Now pass the end (*b) whipping through the loop and pull the short end (*A) tight. Trim off ends neatly.

KNOTS:

There is a knot for every job and it is important to select the right one for the task at hand. You NEVER know when you may need to tie a knot so learn their uses and how to tie each one - well enough to tie them in the dark and under all kinds of conditions. Learn to untie them too. The only thing that is worse than tying a knot that comes undone is a knot that CANNOT be undone at a crucial moment. In the instructions for individual knots that follow the end of the rope or cord being used to tie the knot is referred to as the "live end" to distinguish it from the other end of the rope or "standing part".

NET MAKING: SNARE MAKING TOO!:

Net can be made either by making knots along a pre-cut lengths of line or by knitting mesh row by row. They are not only USEFUL for fishing. A gill net can also be hung between trees to catch bird and purse net, made from twine can be placed over animal burrows. Use the same technique to make a hammock from strong twine.

GIL NET:

Make this from parachute cords or from two thickness of twine. Parachute cord consist of inner core of fine line within an outer core. Pull the fine inner line out and cut it into manageable and equal lengths or cut lengths of thinner strings. Their length will determine the dept of your net, which will be about 3/8" that of the length of the line. Decide how wide you want your net and set the 2 poles that distance apart. Tie a length of parachute cord outer or thicker twine between the 2. Cut a piece of wood about 3-5cm (1 1/4in) across. Use this as a gauge to space out the thinner vertical threads (inner core*). Fold each length double and use the bight to make a Prusik knot over the top cord and repeat across its length. Slide the Prusik knots along to space them out equally using your gauge. For the first row, working from left to right, ignore the very first individual strand, but take the second of the pair. Hold it with the first strand of the next pair and tie both together in an overhand knot. Take the remaining strand with the first of the next pair and knot. Continue along the line, using your gauge to control spacing. Proceed to the next row in the same way but this time include the outside lines to produce a row of diamonds. Continue until the line is used up. To finish off the bottom, stretch another thicker line across between the supports and tie off all the inners (or thinner strings) in pairs around it. Carry each pair around it twice, Separate the pair and tie off around the pair. Complete the pair by securing the top and the bottom lines at each corner of the net so that the net will not slip off the ends. Any surplus can be used for attaching the net to supports and weights to keep it in position when in use.

KNITTING A NET:

A method suitable for nylon fishing line or nay other fine lien. you need a horizontal sting between posts, a main gauge, and a needle. (or just call the nearest hardware store!!!). Make the needle (*A) about 15cm long by 2.5cm wide (6 X 1in) from hardwood or bamboo. Make a NOTCH at either end and wind line around the whole needle; or try something more traditional like the lower drawing. The needle MUST BE smooth. The line is gradually unwound as you make the net. To make the net, tie a top of required length between uprights. Begin by tying a clove hitch thinner line (*C) take the needle behind the top line and bring it forward to make another clove hitch (D*). Repeat along the line, spacing the knots out with your gauge. (E*) When the rope row is complete go to the other side of the post (easier than working backward) and make the next row. Make each new loop large enough to form a square of mesh (half square at each side). Take the needle through the loop of the row above from behind, round the back of the loop and then through the front of the loop it makes. (*F). Adjust the depth with your gauge before you tighten. (*G). Switch sides again and work back in the opposite direction for the next row and continue until the nest is the required length. Tie off the bottom line with another thicker twine using the make knot but keeping the line straight without loops. Leave some free line at both ends. Tie in the ends at the top corners and the net is completed.

NET HAMMOCK:

Make a net about 75cm (2 1/2 ft) across and wider than your height. Use a good strong twine or rope for the loop and bottom lines- double twine would be a good idea. The ends have to carry your weight. Leave those ends long enough to suspend the hammock by. Cut two spacer bard to keep the hammock open. Notch the ends and slip the cords into the notches (*A). To simplifying hanging the hammock you cold tie each pair of end lines to a fixed loops such as a Bowline. Then fix one end with a round turn and two half-hitches, the other with a quick release knot in case you ever need to leave the hammock in a hurry if Caesar is at the door !

FISHING KNOTS:

HOOK ON TO GUT = TURTLE KNOT:

Soak the gut, Thread it through eye of a hook. Make an overhand loop and pass a bight through it (A*) to form a simple slip knot. (*B) Pass hook through slip knot (*C) & pull tight around shank.

HOOK ON TO NYLON #1 = HALF LOOP KNOT:

Tread end through eye. Make 4 turns around standing part. Pass live end through the loop formed nest to the hook (D*). Pull taut and sniff off fairly close to end (*E).

HOOK ON NYLON #2 = TWO TURN TURTLE KNOT:

Thread the hook. Pass the live end around the standing part to form a loop and through it. Twist live end around side of loop. Hold the loop and pull the twist tight. Pass the hook through the loop. (*F) Pull on standing part to tighten loop on hook. (*G)

JAM KNOTS: (GUITAR!)

For securing improvised hook to guitar or cord.

WITH AN EYE:

Thread gut, make 2 turns around hook and bring live end up through turns (*H). Ease tight and test for strength.

WITHOUT AN EYE:

Make a loop around lower part of shaft. Make 2 half-hitches from upper end downward and pass live end through lower loop (I*). Pull on standing part to tighten.

LOOP IN NYLON #1 OR DOUBLE OVERHAND LOOP:

Double the line to make a bight. Tie an overhand in it. (*A). Twist the end through again (*B) Pull tight (*C) and snip off end.

LOOP IN NYLON # 2 = BLOOD BIGHT:

Form a bight. Twist the end of it back around the standing part (*D) Bring end back through new loop (*E) Pull tight and snip off the loose end.

JOINING LOOPS:

CAN BE USED IN NYLON LINE BUT WILL WORK FOR DIFFERENT STRONG MATERIAL.

A fishermen's knot is recommended for gut, which probably could not stand the strain of this method.

WITH FREE ENDS:

Pass each line through the other loop (*F) and pull tight (*G).

WITH ONLY ONE FREE:

Make loop on one line. Take the live end of the other line through the loop, around it, and back through and then tie off with either of the knots for hooks on to nylon.

JOINING NYLON = DOUBLE 3 FOLD BLOOD KNOTS: *SAS 174

Place ends alongside and twist one 3 ties around the other. Bring live end back and pass it through the space where the 2 lines cross over the other line and under its own standing end. (H*) Do the same in the opposite direction with the other line. The live ends end up pointing in opposite direction (*I) Ease tight.

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~ ROPE ~
 By James Watkins
 Knowing how to apply rope to cross-country travel also makes it possible to tackle extremely difficult if not dangerous terrain obstacles. Learning the composition and behavior of cordage as well as correct knot tying, should be a priority.
 Intuition ~ Creativity ~ Adaptability

Java ~ Free!

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ROPE fulfills a wide variety of purposes, both industrial and recreational, and importantly this simple everyday implement also provides a versatile survival tool to persons skilled in its use. For example, in many disaster and rescue situations, sometimes under the worst weather conditions, it frequently is some form of rope harness or safety line that makes the saving of someone's life possible.

Knowing how to apply rope to cross-country travel also makes it possible to tackle extremely difficult if not dangerous terrain obstacles. Thus, learning the composition and behavior of cordage as well as correct knot tying, should be an important aspect of family survival education.

On both land and sea there is a seemingly endless list of usage where rope achieves its value as a tool. A person's proficient in knot tying, splicing, weaving and coiling separates the seasoned ropeman from a rank novice. The only way to acquire the skilled use of cordage is with constant practice and practical everyday experience. Therefore, to begin a deeper look into this subject, we will keep all applications and physical conditions, particularly a wet environment, in mind when describing knots and different aspects of rope in general.

Essentially cordage comes manufactured in either wound or woven Samson line. These two basic types of line are constructed from both organic and Space Age materials. For any considered purpose, all possess varying merits and weaknesses. Organic ropes, for example, include cotton and manila varieties; and nylon, polyester, polypropylene and polyethylene compose synthetics. As a last resort during a survival emergent it's relatively simple to form a line of variable strength from woodland or grassland plant fibers. The secret of rope strength lies within its stretch and shock absorbent capabilities. It's these factors that render it important to wisely choose the correct line for a specific job in mind. In simple terms, it would be near certain suicide for a mountain climber to select cotton rope rather than time proven nylon line.

Now that we have discussed the basic materials utilized in rope manufacturing, let us quickly look at the various strengths and weaknesses in organic and synthetic lines.

Cotton rope provides the best cordage for use with horses and pack animals because it offers adequate strength for the purpose and in general doesn't cause rope burn if the animal becomes ensnared. However, the glaring drawback to cotton is its limited strength, a tendency to fray, plus a very short lived durability. Under no circumstances should a person trust this kind of rope during a life threatening situation.

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Manila rope is made from an Asian hemp plant called jute which contains strong fibers that become the manufacturing ingredient of the strongest available organic cordage. It was manila which made up the mast and sail rigging of ships during the age of sail, and this line still is respected as quality rope. With proper block and tackle it works efficiently with minimal friction. While a good supply of manila rope may be desirable, this kind of cordage is subject to organic deterioration, thus requiring careful maintenance to preserve its strength and durability.

Now we cover **synthetic cordage**, the by-product of petroleum and chemical plastics. Nylon offers excellent tensile strength, elasticity, and optimum durability. This high performance plastic possesses a strength ratio of 3 or 4 to 1 over manila rope. What makes nylon so desirable is its tremendous shock absorption capabilities, resistance to fraying and rot, heat and acid, plus its almost total reliability as an emergency survival rope. Mountaineering ropes, for example, are woven from its incredibly strong synthetic. As a second choice, polyester offers a good quality rope. However, this line should be considered only as a temporary alternative to nylon. Its primary attributes feature tensile strength close to that of nylon, but half the elasticity. Importantly both polyester and nylon retain nearly their entire tensile strength when wet.

Finally, only as a last resort should a person consider polypropylene or polyethylene rope. While this line does float and offers twice the strength of manila, it frays easily and is stretch resistant which results in poor shock absorption capabilities. This synthetic also deteriorates rapidly in sunlight. Then, the least desirable characteristic of this type of rope is that knots slip and untie easily, a bad property when considering a rope for emergency survival use.

Fiber Rope - So far we've listed ropes which are available commercially, but what do you do during an on-the-spot emergency when that badly needed cordage isn't available? Fortunately, unless the terrain scenario features a bare desert, the world's plant kingdom provides the answer. Fibers compose the basic ingredient for rope construction, and three examples of natural cord making materials include tree bark, vines, and grasses. Fibers can be twisted clockwise into yarns, which in turn are twisted in reverse, counterclockwise, to make plies. Then three plies once again are wrapped clockwise to finally become a finished rope of variable strength. Indeed, it's this clockwise, counterclockwise, and clockwise procedure that creates the inherent strength of cordage. In fact, the practical applications of primitive rope work can be seen in the jungle cultures of Asia and South America where people lash together homes, bridges, boats, and tools.

Once you purchase an expensive coil of rope it's necessary to handle it so the line is properly maintained and always ready to use. At the same time a patient attitude when working with a long cable will help prevent a time consuming snarl problem. Like any tool requiring skilled use there are correct disciplines to ropemanship competence.

The way rope naturally coils is in a right-laid or clockwise manner. In fact a line should always be coiled in a clockwise and circular spiral of loops, called bights, which in turn lay slightly off set and on top of the last laid loop. The end result should be a neatly coiled rope which will unravel or toss toward a desired goal without snarling. Both the tail and lead ends should be tied off with a clove hitch or other knot which securely bonds the coil, yet simply unties in an emergency.

Four important mistakes should be avoided with a rope meant for survival purposes. First and crucially, never reuse a rope which receives a severe shock or stress to its strength. For instance, mountaineers do not trust a climbing rope once it absorbs the dead-weight impact of a falling climber. It's preferable to buy another rope than risk your life. Second, don't coil a line in a counterclockwise direction because this immediately causes the line to kink, a problem difficult to correct once it starts. Third, it's an absolute mistake to coil a rope around the elbow and shoulder as is commonly seen among the inexperienced. Finally, don't pull new line from a spool which lies on end; the spool should be mounted horizontally so the cordage rolls out in a flat manner. In the last three situations these common mistakes remain responsible for the majority of snarl problems.

In simple terms, when an emergency arises and someone's life is on the line there isn't time to play around with a clumsily put

together coil. Seamen, military and police personnel, mountaineers, and just about anyone with experience know how to coil and bind rope correctly. Also, a valued rope must be stored and preserved against the elements when not in use. It's best to hang a coil off the ground in a cool dry place out of the sun.

Knots - Now we come to an interesting subject in itself: knots and why to use a particular cinch or hitch for a specific purpose. All people should know how to tie as second nature the bowline, sheet bend, clove hitch, double becket hitch, and the carrick bend. These first class knots prove their reliable strength plus easy handling in wet or freezing weather conditions. However, in their proper place justice must also be given to the square knot, two-half hitch, timber hitch, and the square, diagonal, and shear lashings. Before going further into knot tying it's crucial to say that the weakest spot in any rope will be where a knot is tied.

The reliable bowline is among the strongest and most trustworthy cinches possible. Its primary use is in forming a temporary loop in a rope end and importantly the knot won't slip yet easily unties when wet or frozen. This is a general rule though and a cover single hitch should be added to prevent accidental slippage when the bowline is used as a personal safety line.

The sheet bend proves valuable as a general purpose knot, utilized for many situations when two ropes need to be temporarily connected. However, the knot isn't too secure when used with two different diameter lines in wet, freezing conditions. A good example of the sheet bend in use is in commercial fishing where tackle and groundline are laid for miles connected in a continuous chain. Importantly the sheet bend is quickly handled when wet or frozen, and it also withstands tremendous pressure from industrial equipment and weight.

Similar to the sheet bend the double becket hitch is utilized primarily when attaching one line to a bight or loop in another rope. This superb knot results in great strength because of its extra loop turn. It never slips when wet or frozen under load, yet easily unties.

The simple tied clove hitch provides a wonderful cinch when used to moor a boat, or tie a safety line to shore. It characteristically loosens a bit when not under pressure, but binds down tight when force is applied against the knot. Easily handled when wet, the clove hitch also is applied in tent pitching and is an integral step to all lashing jobs.

Then, the carrick bend finishes this listing of knots to use in wet environments. This incredibly strong cinch is the best possible knot for tying together a tow line. Ships at sea use the carrick bend for towing or tying together two mooring ropes. A person can almost bet that a weak spot in the rope will break before this bend gives.

As described, the primary attributes to all these first rate knots are their inherent reliability and great strength under stress, plus the fact that these cinches do not jam under wet environmental conditions. In contrast, there are a number of knots, for example the reef knot, which will positively jam when wet, thus rendering it necessary to cut a valuable and expensive rope. This isn't to say these knots haven't value elsewhere, but they shouldn't be applied during an emergency under wet conditions.

In concluding this description of knots it remains valuable to learn a few hitches and lashes which become useful in woodland work or camping situations. The simple two half hitch offers a simple cinch that hunters and hikers utilize to temporarily suspend game and equipment. A timber hitch possesses the strength necessary to drag heavy timber, while it also is quickly released when working conditions demand instant actions. Finally, the square, diagonal, and shear lashings provide the means to securely fasten together rafts, shelter, heavy utility tripods, the terminal anchor work to a rope bridge, and numerous other applications.

As we can see, rope is an extremely versatile survival tool; however, the subject only begins to deepen at this point and can't be covered further in this article. Book stores and your local library offer numerous volumes of illustrated resource material about cordage in detail. At this point the real hands-on learning can begin after purchasing some quality manila or nylon rope.