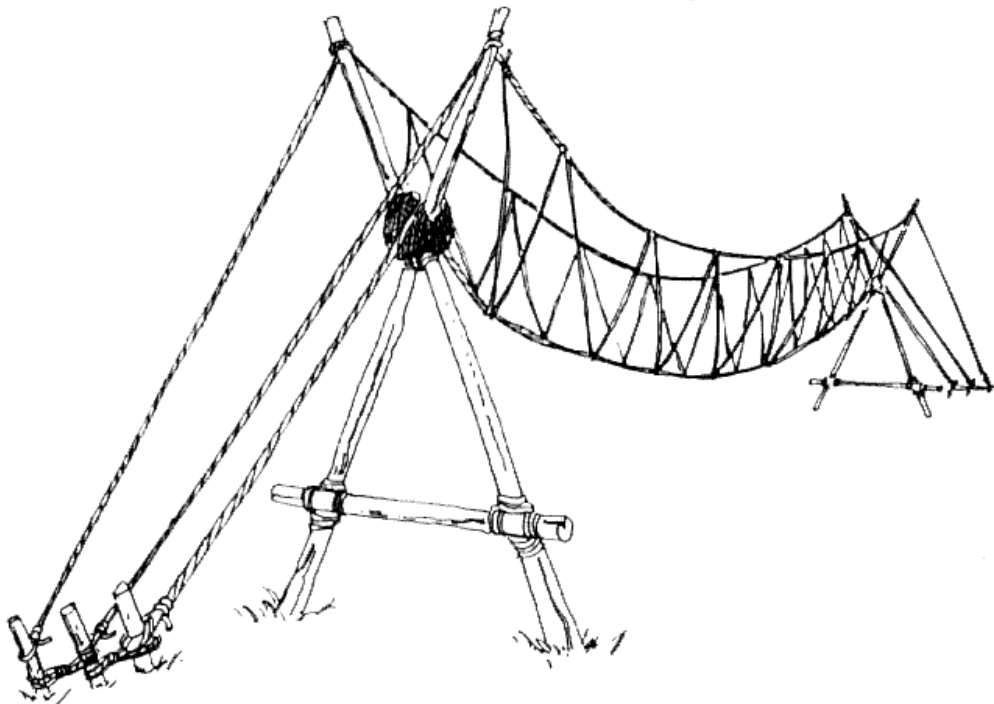


15th Cheltenham (SHURDINGTON) Scouts



PIONEERING BADGE BOOK



Pioneering Badge - Requirements.

Compiled by Philip Power - Hayes & Harlington
Greater London Middlesex West

1. Demonstrate and know the uses of the following knots and lashings:
 - Sheetbend
 - Clove Hitch
 - Round Turn & Two Half Hitches
 - Bowline
 - Timber Hitch
 - Sheepshank
 - Square Lashing
 - Sheer Lashing

2. Demonstrate the following:
 - West Country Whipping
 - Simple Whipping
 - The correct way to Coil a Rope
 - The use of simple Blocks & Tackle

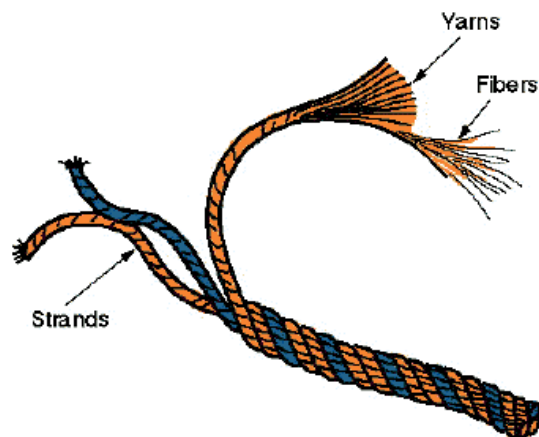
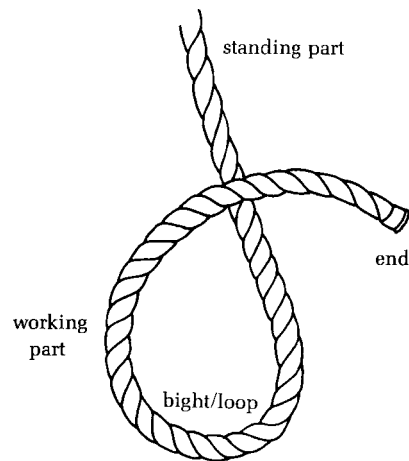
3. Have a knowledge of the following:
 - The use of levers to extract or move heavy weights.
 - An understanding of the need for supervision and safety in pioneering projects.

4. As a member of a group of three to six Scouts, complete the following:
 - An Indoor Pioneering Project
 - A Pioneering Model
 - An Outdoor Pioneering Project

Note: Alternative activities may be undertaken as agreed with the examiner.

Terminology.

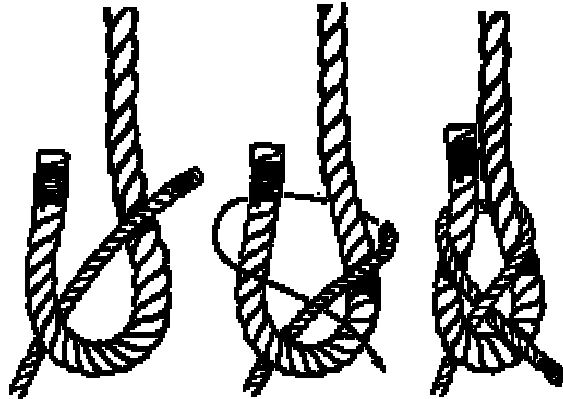
Throughout this course will be using some special terminology that refer to bits of a rope. Have a look at these pictures before you start reading this booklet; then you should begin to understand us a little more easily!!



The Sheetbend.

- Used to join two ropes of different thickness.

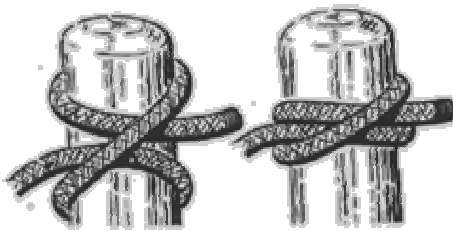
- Make a loop in the rope with the larger diameter. Take the other rope; pass it up through the loop and then around the back of the loop. Finally pass it under **itself** only and pull tight.



- To make more secure 'tie-off' the free ends with Half Hitches around the standing part of each rope.

The Clove Hitch.

- Used for securing a rope to a spar when the strain is at right angles to the spar.
- Also used as the starting point for many lashings.
- Place the rope over the spar, go around the spar and form a cross with the rope. Bring the rope around once more, pick up the cross and thread the rope beneath it. Pull tight.



- To check the Clove Hitch is correct, take the short end, pull it around the pole; if the hitch falls apart then have another go.

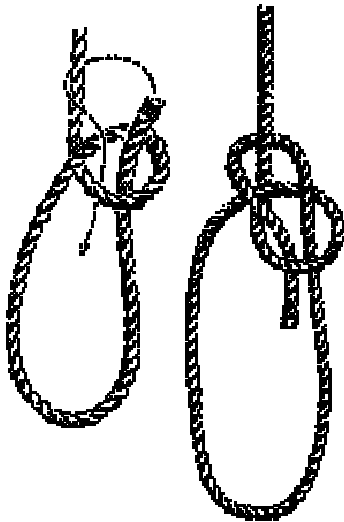
The Round Turn & Two Half Hitches.

- Used for attaching a rope to a spar when the strain is not constant.
- Pass the rope around the back of the spar and around again. Take the short end, pass it over the standing part of the rope and back through the loop you have just created. Pass the working end over the standing part again and repeat what you have just done.
- It is perfectly OK to make as many round turns and Half Hitches as you want, after all safety is everything.



Bowline.

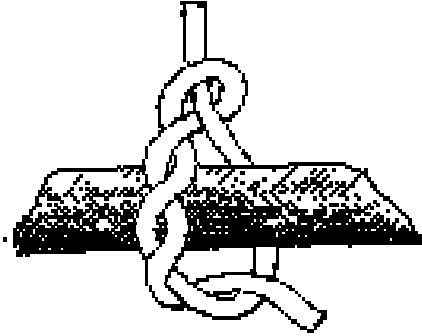
- Used to create a loop in the end of a rope that will not slip, but allegedly unties easily.



- Take the rope; make a small loop a reasonable distance from yourself by passing the end of the rope from left to right over itself. Pass the end up through the loop, take it around the back of the whole rope and back down through the loop.
- You may see this knot used in Rock Climbing.

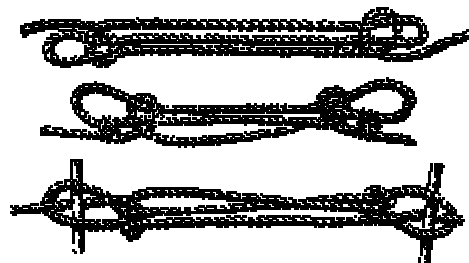
Timber Hitch.

- Used to attach a rope to a large log or bundle of wood.
- Pass the rope around the spar. Create a running loop by taking the working end around the standing part of the rope and underneath itself. Twist the working end back on itself to use all of the spare cordage. Pull tight.
- This hitch is used to start the diagonal lashing from the Advanced Pioneer Badge.



Sheepshank.

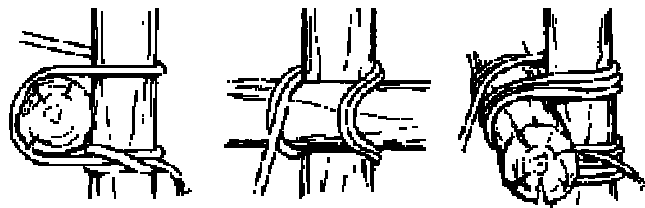
- Used to shorten a rope without cutting it.
- Make an "S" in the rope. Form a small loop in one end of the rope by passing it under its own standing part. Pass the end of the "S" into the loop from the back and gently tighten. Repeat this at the opposite end.
- The Sheepshank can be secured as you can see from the pictures.



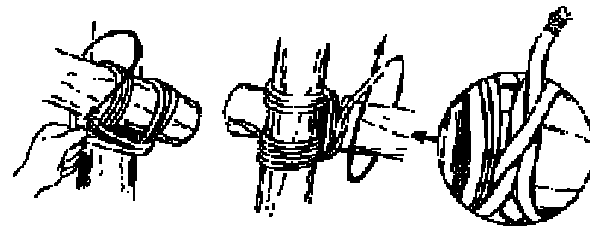
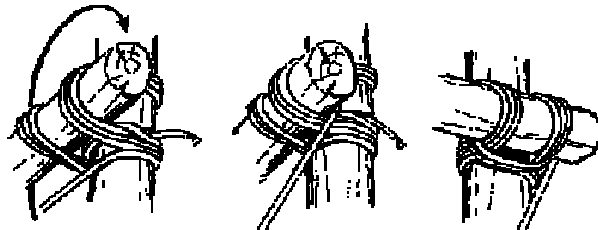
Square Lashing.

- You will be using this lashing for virtually all the lashings you do on a project, so make sure you know it **very** well. The pictures here are very clear.
- Neatness and tightness is the key to creating a perfect lashing, after all it could be your lashing that is holding up the whole project.

- Use the square lashing for joining all spars that cross over each other.

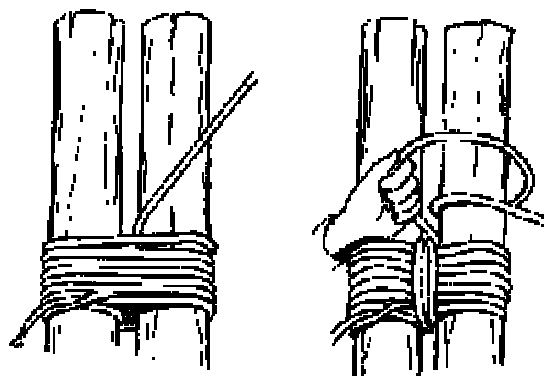


- Start with a Clove Hitch on either spar, then go over the spar next to it, under the next and so on. Make the turns so that each successive turn lies outside the previous one on one spar and inside on the other. After three or four 'turns' make some frapping turns by treading the rope 'around' the lashing and finish with a Clove Hitch on either spar.



Sheer Lashing.

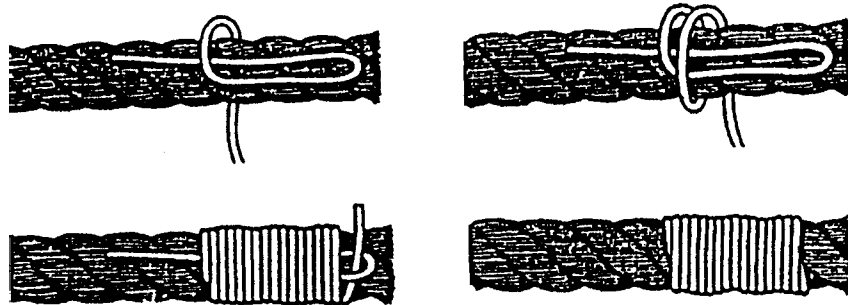
- The Sheer Lashing is used either when we wish to lash two poles together or when we need to form a set of sheerlegs.



- Start with a Clove Hitch around either spar and wrap the rope around both spars a number of times. Now make some frapping turns by taking the rope between the spars several times. Finish with a Clove Hitch around either spar.

Simple Whipping.

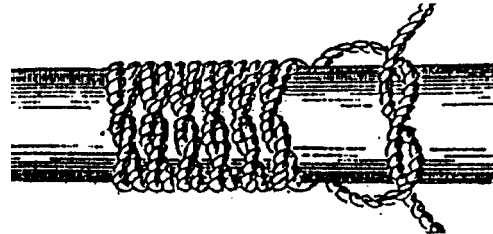
- Like all types of Whipping, this is used to secure the end of a piece of rope, to stop it from fraying.



- The pictures above explain themselves. At the last stage, pull the long end tight, to make the short end disappear.
- Ensure each turn is very tight, this will ensure the whole whipping doesn't fall apart.

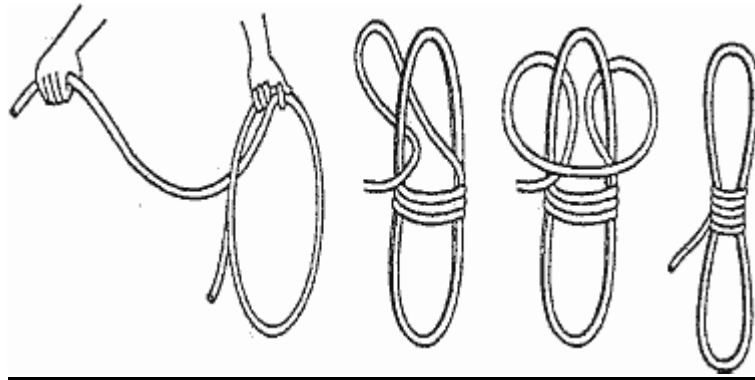
West Country Whipping.

- Again, the West Country Whipping serves the same purpose as the Simple Whipping.



- To make a West Country Whipping, place the middle of the whipping twine under the rope, bring the ends up and tie an Overhand Knot. Lower the two ends and tie an Overhand Knot underneath, continue this process and finish with a Reef Knot.
- Both of these whippings can be made on other things, not just rope, for example cup handles or torches.

Coiling A Rope.



Coil a lashing clockwise then take any one loop except the last one, and pass it through the whole rope.

Coil a large Hawser on the ground. Coil the rope clockwise into a circular shape and tie pieces of sisal around it in several places to keep it in shape. Then hang it in the stores.

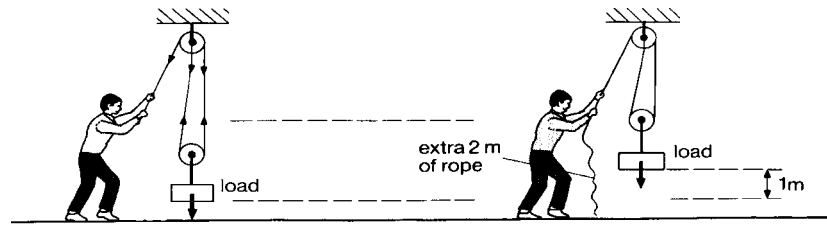
Block & Tackle.

These are the main ideas behind Block & Tackle. There is a lot more to learn which is beyond the scope of the course, but listen carefully to the instructors, as they are likely to tell you a little more than is written here.

The Science.

A pulley system is a simple machine. It multiplies force to reduce the human effort required. In the picture below, the man wishes to lift his load 1m, using this 1-1 pulley system he can half the effort he needs, but he has to pull 2m of rope through the system.

We will be using pulley systems with much more 'multiplication power' than this. The main idea to remember is that the less the effort

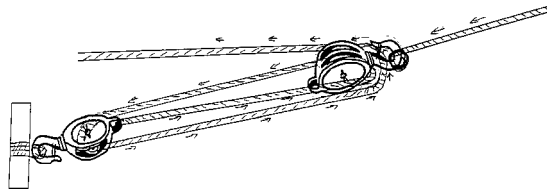


you need to put in; the more of rope you need to pull through the system. These two quantities change in proportion.

Practical Blocks & Tackle.

As well as understanding how a Block & Tackle system works you need to be able to reeve one up and know how to use it. Reeving up Block & Tackle is something we aren't even going to attempt to show in pictures, simply listen carefully when it is explained.

This picture shows a typical use for a Block & Tackle; to tighten a Hawser. This task

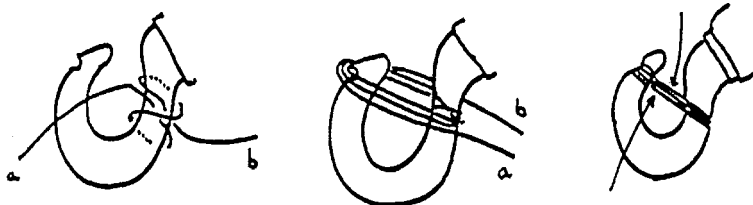


would be near impossible without the use of such a device. The smaller Block is attached to a holdfast such as a tree or other Anchorage. The Hawser is attached to the other Block. All we now have to do is pull on the loose end of the reeving rope to tighten the Hawser.

Mousing.

Blocks generally have hooks on and so very rarely ropes can slip off of these hooks if the tension is changing. So in interests of safety we need to prevent this happening by 'mousing' the hook. The picture below is a step-by-step guide to this.

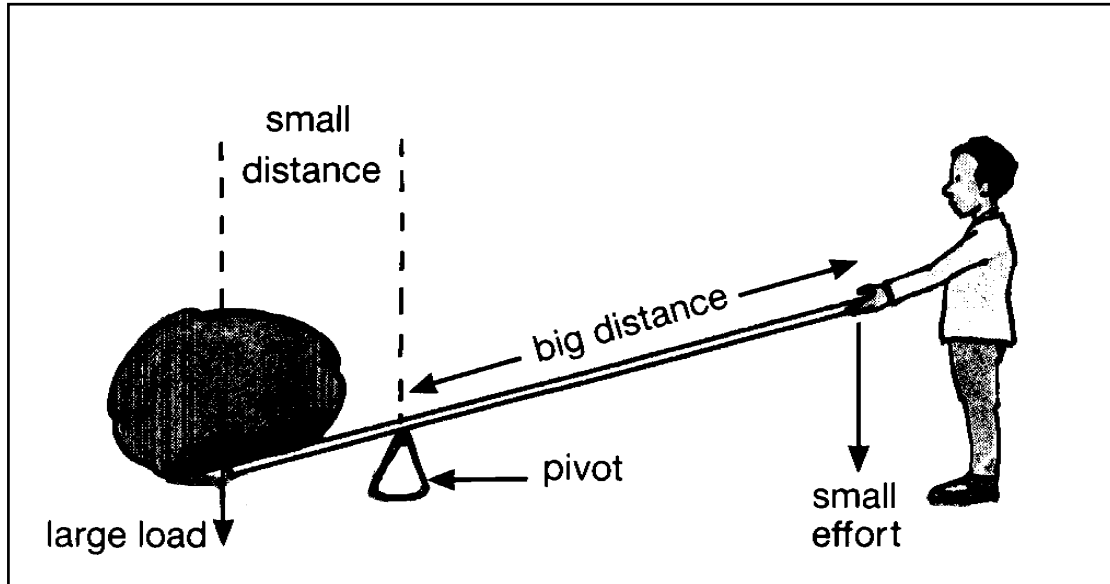
Start with a clove hitch in the centre of a piece of sisal on the hook. Work both ends (a & b) around the lip of the hook as shown in the



second picture. Using both ends put Thumb Knots around the 'rope' you have created. Finish with a Reef Knot.

Levers.

Again, there is a lot, lot more to this subject than you need to know for the Pioneer Badge. A Lever is another type of simple machine. The basic ideas are summed up in the picture below.



- The man can lift the large load with a small effort by placing the pivot or Fulcrum in the correct position.
- The closer the pivot point is to the load, the less effort he needs to put in.
- The longer the 'big distance' is, the less the effort required is.
- So a perfect lever would be very long, with the Fulcrum very close to the heavy weight.

This is all very interesting, but quite unlikely to happen in Pioneering. What you are likely to be required to do is to extract a picket using a Pioneering pole, so watch out and someone will explain how to do it.

This system works on the mathematics of balancing and is simple to explain if you know a little algebra. If you are interested in finding out about this, ask and we will be more than happy to explain.

Historical Note: The Pulley and the Lever are two of man's Simple Machines. The others are the Wheel, the Incline Plane, the Screw and the Wedge.

Supervision & Safety.

We've collected some ideas about Supervision & Safety when Pioneering. Of course there are many more things we can consider and we'll be talking about this during the course.

"All Pioneering projects must be carried out with care and attention to detail. If your tower falls down, or your bridge collapses, someone could be seriously hurt¹." This is perhaps the most important point to focus on. Above virtually all other things that could happen, a Pioneering project, or even a tiny bit of it, falling on you will, we guarantee, hurt you the most. To avoid anything like this happening make sure you tie every lashing tightly and correctly, listen **very** carefully to the instructors and don't be afraid to start running if you see something falling towards you!!

In the Advanced Pioneer Badge you will learn how to store and maintain pioneering equipment correctly, to avoid it becoming dangerous to use and thus causing someone an injury. The way in which we use equipment is also very important; using the wrong bit of equipment can also result in catastrophe.

Here are some general pointers about safety:

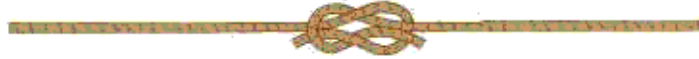
- Use ropes that are 'up to the job' and are not damaged. If a rope snaps, you could be on the end of it, standing next to it or be near something it is holding up. In any case, you could get hurt.
- When using pulleys, use a rope of the correct size. Keep your hands well away from the blocks; it is very easy to damage a finger or two! Also, mouse the hooks on a block, to prevent a rope slipping off.
- Pioneering poles are large and heavy. They tend to hurt when they knock against your head or land on your foot. For this reason try to wear hiking boots when Pioneering and carry a Pioneering pole between two people, making sure you look where the ends of the pole are going, especially around corners.
- We will probably have to use a sledgehammer at some point during the weekend. Many scouts find using one of these almost impossible, don't worry, that's why we have instructors. If you want to have a go, feel free, just try keeping your fingers away from the metal bit, look around you before you start and look what you are hitting.
- Pioneering stores can also be dangerous. Look where you are walking, especially when carrying large ropes and mind your head!

¹ Pioneer Badge Guidelines, The Scout Association

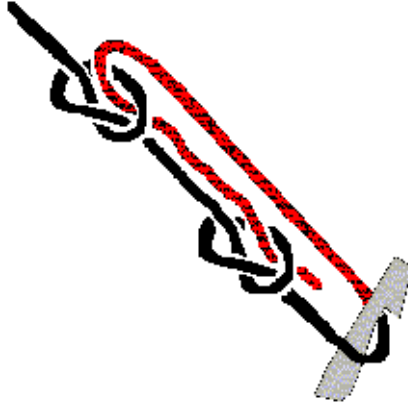


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15th Cheltenham (SHURDINGTON)



The GUYLINE HITCH ([see Animation](#))



(Drawing from the mid-50s)

The **Guyline Hitch** is an ideal replacement for a guyline with a missing 'runner'.

It is easily adjusted by pulling on the working-end of the rope, and self jamming.

The history of the majority of the thousands of knots we use in our daily work and play is unknown and stretches back far beyond the days of the tall ships, when knots abounded.

There are a few though that are quite recent 'inventions' and the **GUYLINE HITCH** on the left is one of them.

This knot is a wonderful replacement for a tent or flag pole guyline which has lost its wooden or metal runner.

You simply tie two overhand knots (or figure of eights which jam less), take the rope round a peg, and downwards through the two knots - as in the diagram.

The Guyline Hitch was 'invented' by our Senior Scouts at 1st Sliema (Bernard's Own) Scout Group in Malta in the mid 50's. This was in the days when the only tents available to us were ex-Army surplus which were invariably damaged and much of the guys and runners missing.

'Necessity is the Mother of Invention', I guess.

Paul Calleja-Gera (ex Senior Scout Leader - Sliema Group, Malta)

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