

**WHY KNOTS**  
by  
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Why not Knots? This is the answer to the question that may be given by a young scout just before realizing what was said. Just before he asks, What?!!

Perhaps we have skipped ahead of ourselves a little too far. It will probably be best if we go back in time to update ourselves on some history.

In the beginning God made man. Man ate of the apple and has needed some help holding himself together ever since. To fulfill this need, man invented rope.

It soon became apparent that rope simply slung over the shoulder would not hold up even his best summer furs. Man, therefore, invented the first knot. This first knot was, in all probability, the simple over-hand knot, also known as the half-hitch.

As is the case in most neighborhoods, there is always someone that has to be the best or has to have the best and be "one up" on everyone else in their neighborhood. This neighbor most probably invented the next knot which was most likely two half-hitches.

This most surely set off the race to see who could invent the fanciest or most complicated knot. The end result being that someone invented the "hatchet" knot. Certainly there was a great amount of awe by everyone when this was presented for the approval of the local knot committee. There must have been great consternation at the inability to untie this knot. Imagine the frustration associated with trying to untie this knot with the crude implements available at that time.

R. Graumont states in his *Encyclopedia of Knots and Fancy Rope Work*, "We are told by historians that rope making and knotting were generally known by many civilized races, as well as by savage tribes, long before man took to the sea." One can easily find a number of references in the bible to things being tied.

Sailors have devoted countless hours to the art of knot-tying which also includes ornamental rope designs and sennits or macrome'.

Since the dawn of man, rope has been made of materials obtained locally. The first ropes were produced from vine tendrils, animal sinews, and other available cord-like fibers. The natural fibers made rope that was pleasing to the eye and efficient for the purpose at that time. Technology has given us the ability to manufacture ropes in greater quantity, quality, and strength than early man could ever have hoped to achieve.

Some ropes are still made of natural fibers such as: cotton, manila, sisal, hemp and coir. These ropes are not as durable as those manufactured from modern man-made materials. Generally these ropes are found produced in a *laid* or twisted fashion. One exception commonly found today is *Diamond Braided Cotton*. This is not as easily found as the synthetic fiber ropes but one will occasionally run across some.

### **Coir**

Rarely used because it is the weakest of the ropes, coir rope can still be found in the Western Pacific rim and India. This rope is made from the fibers of the coconut shell. Owing to the weakness of the fibers, the rope is generally made in large diameters.

### **Cotton**

Most of the decorative rope work found on Naval Stations and ships are made of cotton rope and twines. It is a highly pliable rope that can easily be worked into complicated knots and wrappings without a lot of work. One drawback of cotton rope is that it has to be "treated" or it will rot easily.

### **Sisal**

This rope is made from the leaves of the *Agave sisalana* plant. It is very low cost but there are some drawbacks to this rope. Even though it can be treated to be waterproof, it will cinch very tight and not allow knots tied and left in a wet environment to be untied easily.

### **Manila**

This was the fiber that ropes of high quality were produced from for many years. It was still in great demand up until about World War Two. It is made from the leaves of the *Musa textilis* plant. The highest quality rope manufactured from Manila is every bit as strong as Hemp rope. It is rare to find this grade of rope nowadays.

### **Hemp**

This rope is almost impossible to find. It was produced from the fibers of the *Cannabis sativa* plant. We know this plant as the Marijuana plant, hence the rarity of rope made from these fibers. For many centuries this was the primary fiber rope was made from.

Some of the modern materials used to produce rope include the following: Polyester, Nylon, Aramid and HMP, and many varieties of Polypropylene. Ropes made of these man made materials are far stronger than natural fiber ropes. They do still have some failings. Let us review some of the properties of man made ropes.

### **Polypropylene Rope**

These man made fibers make an inexpensive, all-purpose rope. One advantage of this rope is that it floats, it is often used for rescue work or for mooring lines if the distance is not too long. Care must be used with these ropes because they have a low wear resistance and are sensitive to light. They should be stored away from ultraviolet light sources.

Fibrillated Polypropylene ropes resemble natural fiber ropes, they are very appealing to the eye and touch.

Monofilament polypropylene is this most resistant to abrasion. It usually has an oily feeling, but this is from the manufacturing process and does not detract from it's usefulness. It is not the best choice for tying knots, as they have a tendency to slip.

Multifilament polypropylene ropes hold knots very well. It is a softer rope that is handled easily and does not have as much "slippery feeling" as some of the others.

Split-film polypropylene ropes are usually the least expensive ropes made of these fibers.

Staple-spun polypropylene ropes have an easily gripped surface. These fibers produce a more "hairy" rope.

### **Polyester Rope**

These ropes are found in the twisted and braided varieties, the twisted being of the three strand type. It wears very well and has nearly the strength of Nylon rope. It does not stretch as much as Nylon and will hold more strength capabilities when wet.

### **Nylon Rope**

This was the first of the man made materials to be used for rope making. Nylon rope has a lot of stretch, as well as being one of the strongest fibers used in rope making, so it is a very good choice for climbing and rappelling. It is an abrasive resistant rope, but it does not float. Another factor to consider when using this rope is that it can lose from 5 to 25 percent of its' strength when wet.

Nylon rope is commonly used for fishing line, and can be found in twisted three strand rope, braided, and multi-braid ropes.

### Aramid and HMP Rope

This type of rope is extremely strong for its' weight. It is made of the some of the more recently developed materials. The stretch factor for this rope is almost insignificant. Tight curves and knots do have a detrimental effect on the strength of this rope. Aramid fibers are only found in the core of the rope.

High-modulus polyethylene, (or HMP), is the strongest fiber that modern ropes are produced from. It has very little weight for the strength it possesses. It will commonly be found in the core of ropes, and is a common material found in fishing lines. A polyester sheath will normally cover the HMP core.

We need to now move on from the types of rope to what can be done with them.

Just as early man decided to make use of ropes by tying different types of knots, so do we need to use them in the same fashion. Knots range from the very simple to the extremely complex. Usually the more complex the knot, the more beautiful it becomes. There are exceptions to this, such as sennits, but they are usually attractive because the rope is used in a repetitive scheme. We are normally used to calling sennits by the name of macrome'.

The first edition of *A Handbook for Boys*, or what we know as the Boy Scout Handbook, list fifteen knots, splices or hitches that every boy should know. The latest edition of *The Boy Scout Handbook* only lists six knots or hitches in the requirements for a boy to be able to advance to First Class Scout.

There are other mentions of "need to know" knots in merit badge books, but these are for the most part elective merit badges. It would seem that there is a de-emphasis on the ability of a young man to be able to tie knots.

I can think of a large number of trades or skills that require the use of knots on a daily basis. One of these are the surgeon, imagine what difficulties there would have been closing up wounds in people had it not been for the invention of the Surgeon's knot!

On a daily basis the construction industry is dependant upon the workers knowing how to tie knots to construction materials and equipment so that it can be hoisted or lowered without chance of injury or damage. Some of the knots used on a regular basis in construction are: Bowline, two half-hitches, Becket hitch, rolling hitch, square knot, running bowline, taut line hitch also (known as the Mangus or rolling hitch), clove hitch with half hitch, scaffold hitch, equalizing bowline ,and sheep shank.

Iron Workers use a variety of these knots from the first day they start their apprenticeship. It is very important for a person to be able to tie these knots in order to hoist, lower, or "lash off" materials, or equipment. It is a necessity to tie a tag line to materials when they are being placed in order to be able to guide them.

Some of the apprentices are aware of how to tie some of the knots they need to know, because they learned them in scouts. Many have to be taught in class, or on the job. Those that already know their knots are given more responsibility and are trained for other jobs while the other apprentices are still trying to learn how to tie knots.

Carpenters, boilermakers, pipe-fitters, millwrights, and laborers all have to know some of these knots. Part of their jobs requires them to be able to use knots in one form or another.

Sportsmen and hobbyist alike are dependent on their ability to correctly choose and tie knots. Imagine the angler trying to catch a trophy fish without having the ability to tie a hook to the fishing line. It is apparent that some people would miss more than a few meals, were it not for their ability to correctly use ropes, strings, and the proper knot for the situation.

Imagine how you would feel going on a rappeling or climbing expedition with a guide that didn't know how to tie knots. That could very well be a story with a tragic ending instead of a delightful experience.

It would seem that the emphasis on knot tying in scouts has been replaced by keyboard punching and computer literacy. This is doing a great disservice to the young men in our organization. They still should be able to tie most of the basic knots prescribed in the first edition of the scouting handbook.

The knots, bends, and hitches recommended are: overhand knot, figure of eight, square or reef knot, sheet bend or weaver's knot, bowline, Halter (slip or running) knot, sheepshank, clove hitch, timber hitch, fisherman's bend, two half hitches, Blackwall hitch, becket hitch, fisherman's knot, and carrick bend. Most of these are relatively easy knots and hitches to tie. Some of them take a little practice to "get it down".

Of the aforementioned knots, the one only rarely used today is the Blackwall hitch, generally a clove hitch would be used instead. This, however, still leaves 14 knots that are commonly used even today.

The square or reef knot is probably the most common knot we are familiar with. This is knot every scout or sailor should know how to tie with their eyes

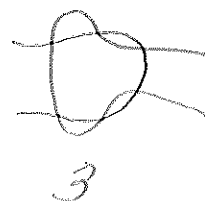
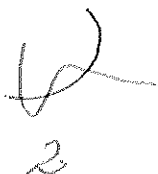
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closed. The sailor should know how to tie it simply because that is the knot used on their neckerchiefs. The scout should know it because it is a common symbol for joining.

The square knot is simple to tie if you follow some simple instructions, the first of which is to get a piece of rope to work with.

Now for the real working of the rope!

Hold an end of the rope in each hand. Take the end in the right hand and put it on top of the rope in the left hand. (*illustration 1*). Now twist it all the way around the left hand rope. (*illustration 2*) Now take that same end and put it back across the top of the other end and twist it all the way around through the loop formed in the first step. (*illustration 3*) Success! You have now tied the square knot.



Most of the knots are this easy to tie. All it takes is a little persistence and practice. It is usually easy to get help if you need it, just look for the person running around with a piece of rope in his hand. The true aficionado of knotting is very rarely far from rope. Some are members of the International Knotting Society. All of them love working with rope.

It seems modern technology has taken the place of what used to be a common lesson for every boy. Take care of your ropes. Know how to use rope and tie the proper knot for the occasion. It could be that knowing a few simple knots will allow you to keep a life from being endangered, or you could even save a life with your knowledge.

## **Bibliography**

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