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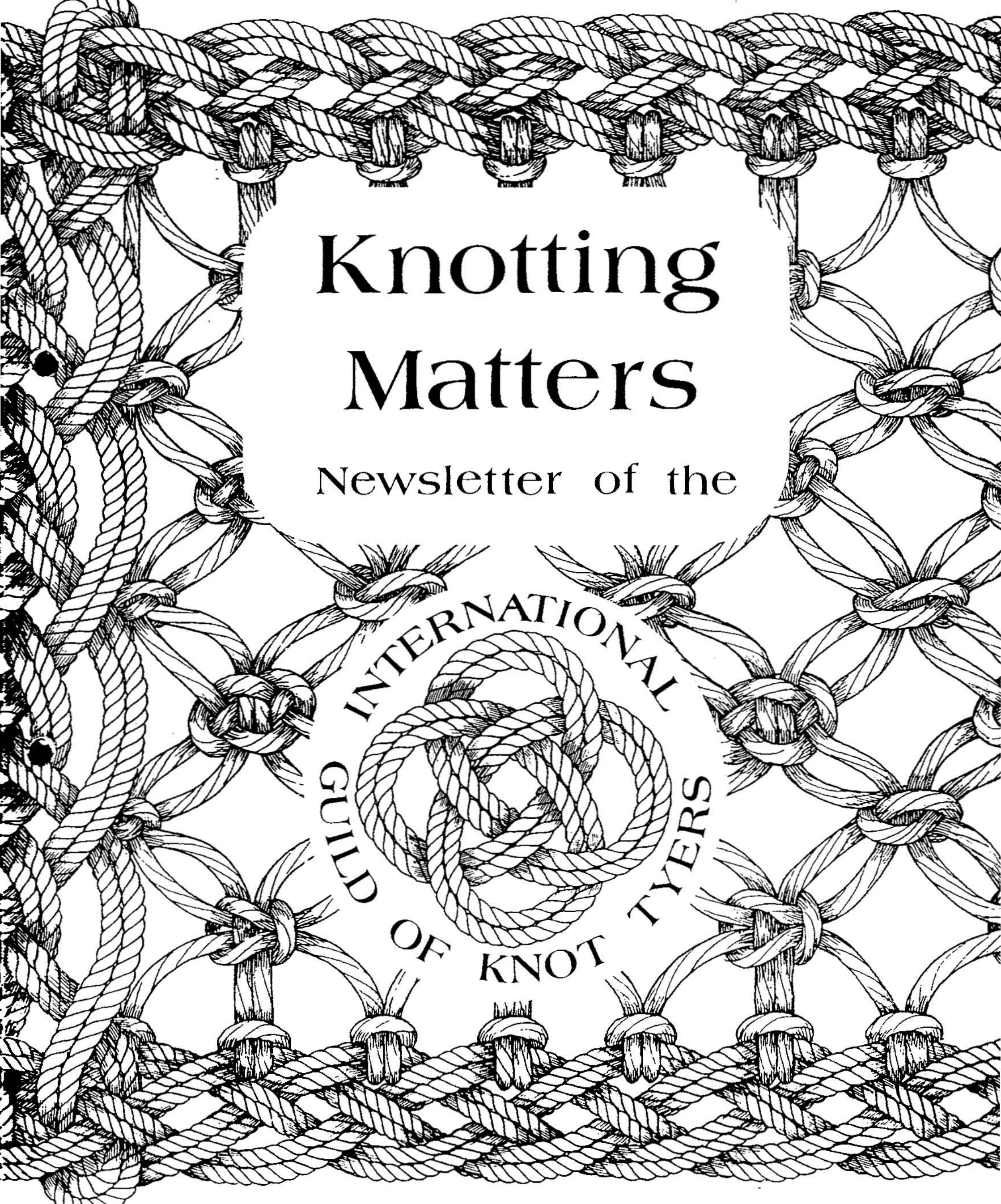

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KNOTTING MATTERS

THE QUARTERLY NEWSLETTER of
THE INTERNATIONAL GUILD OF KNOT TYERS
ISSUE No. 43 1993

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EDITORIAL

When so much time elapses between issues, you must all wonder if the Guild is still functioning, if your copy has gone astray or even think that I have absconded with your articles....but worst of all our poor Secretary is bombarded with letters!
We are still here and functioning - I do however offer my profound apologies for the lateness of this edition and feel you deserve an explanation.
As most of you know KM is (apart from the printing) produced "in house" by YOU the contributers, Des and Liz PAWSON - the distributors, and me the Editor. This keeps costs within reasonable bounds, without having to use professionals and the inherant sponsorship from advertisements - and long may it be so....However over the last six months the contributions have been sparse, apart from the few who appear regularly, and unfortunately I have been away from home far more than usual; and while my work has been both demanding and rewarding for me, I am afraid it has done nothing to help get KM out on time. But retirement looms.......or does it?
Once again, my sincere apologies for the delay with recent editions; you will still get the four issues this year - provided I get the material (Black & White photographs are desperately needed). Deadline for the next edition is 31 October.

Gordon

OBITUARY

Peter James WEBB

Peter died on 27th May 1993, after a short illness.
He had been a member of the Surrey branch for five years. Peter, a civil engineer by profession, joined us to find out more information about knots and to further a need to cover a boat wheel. This he did successfully and went on to get involved in multi-strand coverings, mostly to corkscrews which he bought in junk shops.
A quiet modest man with a good sense of humour, he just mentioned one day that he liked rowing. It was not until after his death that I found out that he rowed for his University (Cambridge) in the Boat Race and then went on to scull for England in the 1962 Commonwealth Games where he was 2nd and then in 1964 to the Tokyo Olympics where he was 7th. We will miss his ability to look at a knotting problem from a different angle, and to make an intelligent well reasoned suggestion as to how we should solve the problem.
Our sympathy goes to his widow Meg and family.

Howard DENYER (Chairman)
Surrey Branch.

From THE SECRETARY'S BLOTTER

As I sit here in front of the word processor, resting the bags under my eyes on the desk, odd thoughts drift through my mind. Some would say that all my thoughts are odd, whilst others are quite surprised that I have any thoughts at all!!

Well that was how I introduced this article in KM42, and, well, really very little has changed.

For those of you who have written to me and have not yet had a reply, don't worry, you will, soon....

Although I do not get involved with organising the AGM, there is a lot of preparatory work which goes into it, what with the twelve pages of A4 to write, getting 600 copies printed, sorted and stuffed in envelopes, and some 1500 stamps licked and sticked!!

I fail to see the attraction of glue sniffing, but I am now a registered glue licker! In fact, I kissed Sylvia, my wife, and we were stuck together for a week, - wonderful, but exhausting!!

The result of all this has been that the normal correspondence has piled up so much on my desk, that I have not been able to find it. The problem is that there is so much of it that I did not know where to start - so I didn't!

Going back to the AGM, it was one of the best attended, with over one hundred members and guests present. I was slightly embarrassed by being the only one to arrive late, which did disrupt the programme a little. I didn't realise that Birmingham was so far from civilisation, (or could it be that East Anglia is?!!).

The main outcome of the AGM was a few minor adjustments to the Constitution, and the election of the new Council. Stuart GRAINGER retired as President, and Glad FINDLEY, and accredited knot tyer, and authoress, was elected as his successor. To mark the occasion, Stuart was presented with a gift of engraved crystal glasses, which I understand work best with 5* brandy. Bruce TURLEY, and Jeff WYATT were the two new faces on the Council.

Charlie SMITH spoke about the research he has been carrying out into the science of Turk's Heads (He tied several thousand in preparation) very interesting, but heavy just after lunch; and Stuart GRAINGER explained how to draw knots, so there should be lots more illustrations in KM in future.

I am often asked if I know of members with an interest in a specific area of knot tying, or if there are any who are prepared to demonstrate, or teach knots at fetes, open days etc.. Next time you write to me, or send me a holiday postcard do let me know, and I will keep a record. I had better stop my ramblings now, and answer some more of your letters. Keep tying

Nigel HARDING

FISHING KNOTS

By **Owen K NUTTALL**

In Edgar SINDAR'S letter (KM42) on strength of knots tied in nylon, he says that the GRAPEVINE BEND (Ashley #294) is the easiest tied and strongest bend in monofilament. However, he does not say what line strengths he used, if the joined lines were of equal diameter, or for what kind of fishing he uses the GRAPEVINE BEND.

At the extreme end of monofilament where knotting is concerned, is Strimmer nylon; it is thick, hard, very springy, and difficult to tie, resulting in most conventional knots failing. That is why it is easier to use crimps of the correct size. That said, I use one of my knots, the LINFIT BEND (Fig.1). Any knot in this kind of monofilament has to have long working ends to keep the formation of the knot in shape, and when tightening there is a lot of initial slippage.

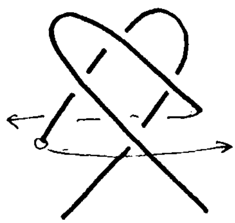
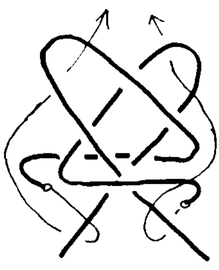


FIG ONE A/



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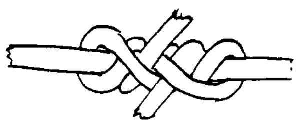


C/

Friends of mine who use a Pole (made of Carbon Fibre, up to fifteen meters in length and costing £2,000 +) to fish in competitions, use a main line as light as 12 ounces breaking strain with a diameter of 0.055 and hook line lengths of 6 ounces breaking strain having a diameter of 0.052 tied to a hook as small as size 26 (oh for the eyes of my youth). The main line is attached to matched elastic at the end of the pole to absorb line shock. Knots used in this kind of fishing are crucial, as even one knot will reduce the line strength by 5 - 35% depending on which knot was used. The GRAPEVINE BEND with a knot strength of 75% reducing to 65% with lines of unequal diameter. The RING KNOT (Ashley #1412) with three to five turns in unequal diameter line has a knot strength of 95% reducing to 85% with lines of equal diameter. The BLOOD KNOT (Ashley #1413) has a knot strength of 85% with lines of equal diameter, and the improved BLOOD KNOT 90% with lines of unequal diameter. If the lighter line is doubled, the number of turns are also unequal. With practice the correct balance can be found. The inward turned BLOOD KNOT 85% has the neatest finish.

The final tied knot strength is somewhat dependent on the knot tyer, as the pull that can be exerted by the average man in nylon, with bare hands in 50lb line, is only about 20lbs. However, to pull the knot to 85% efficiency requires a pull in excess of 30lbs.

My favourite type of fishing is from a boat, preferably 'wrecking'. Over wrecks, knots have a crucial part to play when using a rod matched to 50lb main line, a terminal line of 45 lb and two snoods of 30lb. Joining lines, other than terminal tackle, is rare because a snag on the wreck or reef could result in a break. In the event of such a break the line is examined for further abrasions, cut off, and the terminal part replaced. If too much line is lost then the reel is exchanged for a full one and the first spool refilled. Line is a small price to pay for successful fishing.

A simple Paternoster for 'wrecking' consists of two snoods with muppets and a pirk. (Imitation squid of various colours and sizes fitted over a hook. "Pirk" a bright metal bar or tube of various lengths and weights, with a single or trebble hook attached, depending on fishing conditions). The main line is terminated with a link swivel, attached to which is the terminal line (six feet) with two snoods and a pirk. If the snoods are tied to three-way swivels there would be a total of eleven knots with all their combined weaknesses, but if the three-way swivels are replaced with the RING KNOT - WATER KNOT (95%)

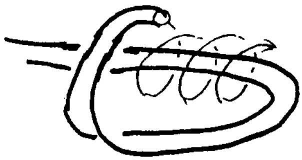
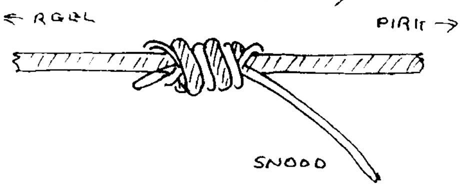


FIG TWO A/



B/

the number of knots is reduced to seven. The hooks and swivels are attached using the POLOMAR KNOT (98%).

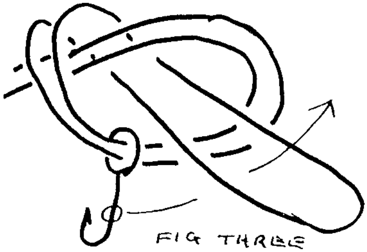
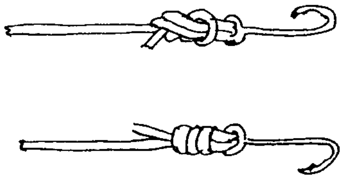


FIG THREE



BOTH FACES OF KNOT

Pre-tied paternosters also make for quick and efficient replacement in the event of a line break, without loosing fishing time.

Knot strengths are very important in the overall balance of 'line strength' to 'weight of fish' you are fishing for.

Tight Lines.

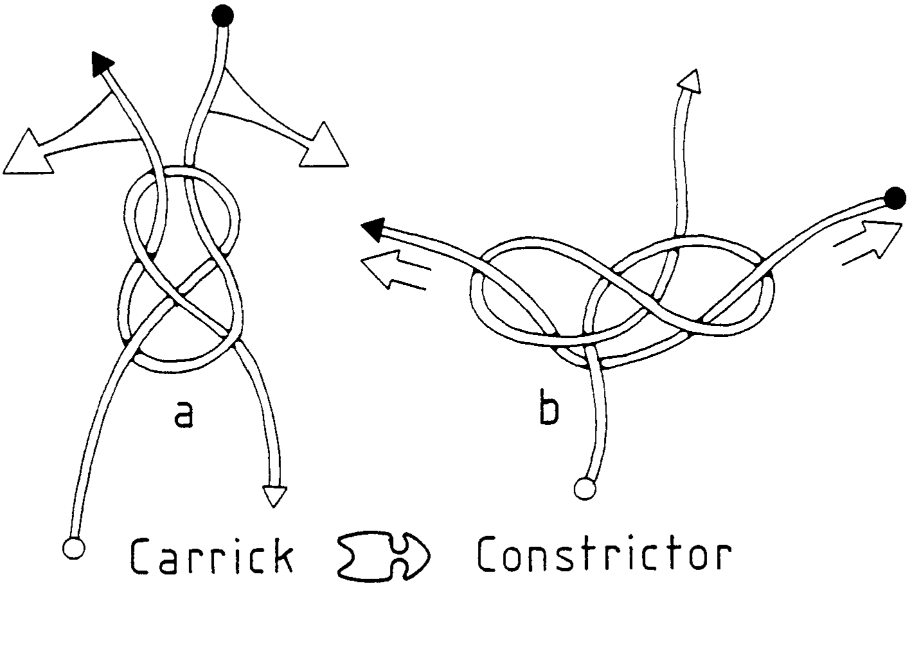
CARRICK to CONSTRICTOR

by **Geoffrey BUDWORTH**

I've said it before but we really do know less than half of all there is to know about knots. New facts turn up all the time. The late Desmond MANDEVILLE'S trambling is treasure trove, and here is just one gem he unearthed.
The Constrictor Knot appears quite contrived. It couldn't have occurred by chance, could it? Well - yes, actually.

Loosely tie a single or half Carrick Bend (fig.a). Then straighten out one or other of the strands, it doesn't matter which. See (fig.b)? A Constrictor Knot appears.

Score one also for John SMITH'S 'Accident, Invention or Observation' hypothesis (KM28 - Jul 1989)



LETTERS

Geoffrey BUDWORTH writes.....

You will be pleased to read that Captain **Allan McDOWALL**, one of the Guild's 1982 founders (and a member of the original steering committee), has written from aboard his ship PACIFIC WAVE, headed for Hawaii. He reports narrow escapes from shipwreck and pirates (and a lot of promotion), in the hard oil tankship game.
He goes on to tell a splendid bit of knotlore.

Alan McDOWALL writes...
Some of the most pleasurable times I have had knotting have not been looking at other people's knots, but learning to do them. Some people have a marvellous gift for making the difficult easy, and some of our knots are very difficult to learn from a book. Such a person was the late Mrs Spencer, wife of Colonel Spencer who wrote 'Knots, Splices and Fancy Work'.
I first met them, Col. Spencer and his wife, as a little boy sailing a very old and leaky dinghy in a creek in the Isle of Wight. The heavens opened and the boat began to fill up with rainwater. During the squall, a very large gin-palacy German schooner went aground on the oyster beds, so my brothers and mother and I sailed over to the skipper to inform him of this.
We were greeted with a roar of rage; "Do you think I'm doing this for fun?" Well, for our fun, yes, most certainly hugely entertaining, as other people's regattas always are.
Having missed causing the poor man's death by apoplexy by a whisker, we then realized how cold and wet we were. And Mrs Spencer, seeing us all bedraggled, invited us all on the boat to get warm and dry, never having met us before. I do not remember how the conversation got round to it, but I had been trying to work out for myself just how to make a Monkey's Fist, and Mrs Spencer showed me, just once. A most satisfying afternoon all round.
What a good knot a Monkey's fist is for a young beginner - nice and big, and not too difficult to make. And you can do all sorts of destructive things with it afterwards.

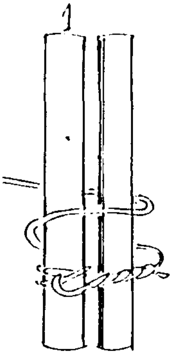
oooOOOooo

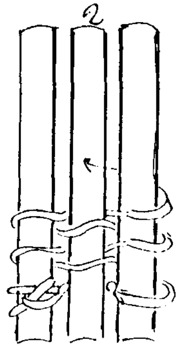
Members from 1986-7 might like to re-read Allan's series of articles on long Turk's Heads in KM 14, 15, 16, 17 & 18. Perhaps our Editor will reprint them, one by one in future issues, for more recent arrivals. *By Ed..Noted*

LASHINGS

Part 2

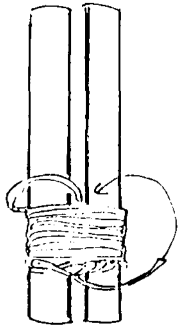
By B.A. WALSH

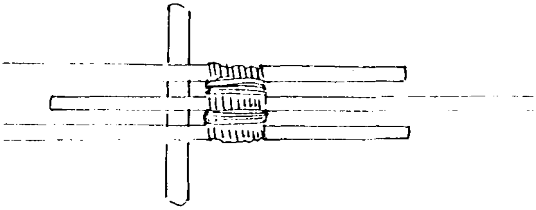


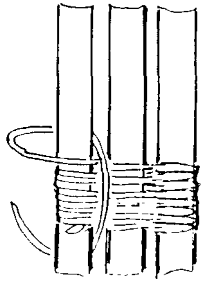


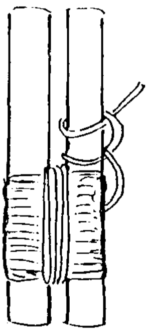
SHEARLASHING 1

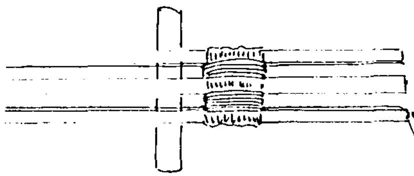
As used to lash spars together so that they can be opened out as for an "A" frame - Sheerlegs or a Tripod.
Start with a CLOVE HITCH or a TIMBER HITCH , go round both (or three) spars - not too tightly. Frap between spars and finish with a clove hitch around one spar. Lashings may be made with racking turns as in 2.
To make it easier to lash, lift/and support ends of spars
Lay spars 2 and 1 or 3 in a line

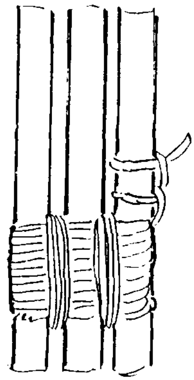


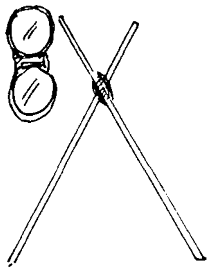


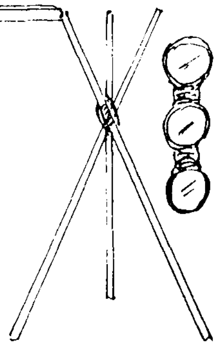




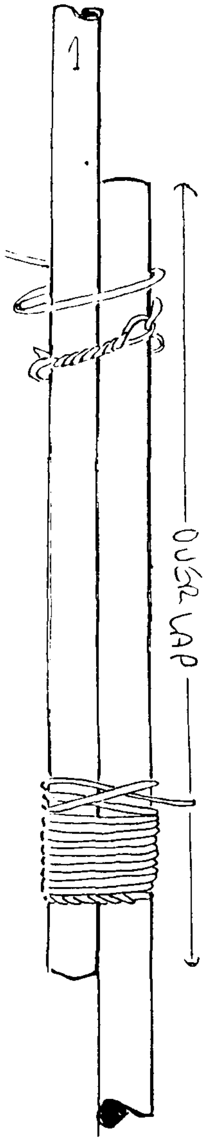








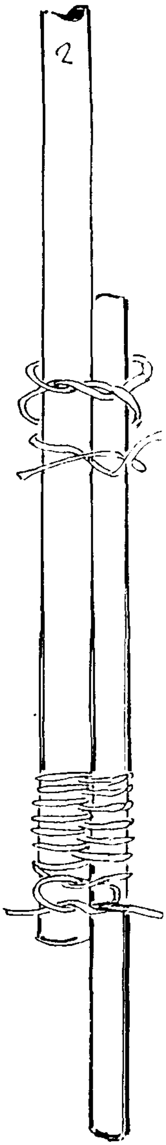
SHEARLASHING 2

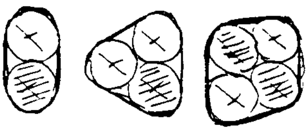


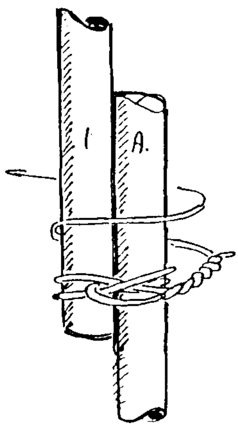
To join 2 or more spars, as in 1 together in a lengthwise direction (or to strengthen a sprung spar) -
Start with a TIMBER HITCH or a CLOVE HITCH, around both spars, and lay on 7-8 lashing turns. Finish with a CLOVE HITCH around both spars - use wooden wedges knocked in from the top of the lashing to tighten. Always allow a good overlap.

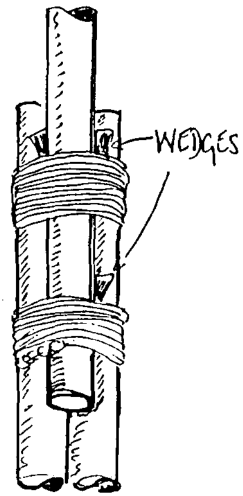
WEST COUNTRY SHEAR

As in 2, middle rope around spars and tie an OVERHAND knot. Take krope ends to back of spars and tie another overhand knot, - repeat 7/8 times - finish with a REEF KNOT.
MAKE LASHINGS AS TIGHT AS POSSIBLE.









OPEN SESAME

Bend & Loop

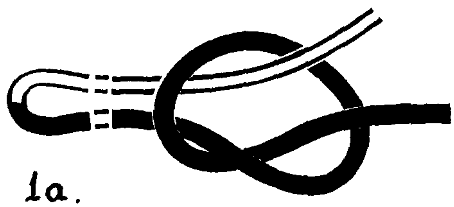
By **Harry ASHER**

Illustrated by John MACK

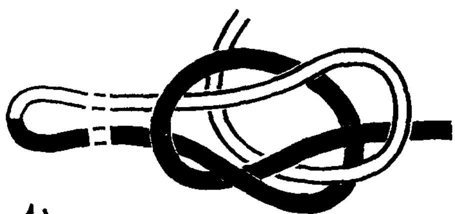
The bend, which I hope is new, has been developed from the Starting Position: RR, UP SAME, as described in References 1 and 2. Thus in Fig .1a both dark and light turns are Right handed, hence RR . Also the short end of the light rope passes UP through the turn of the dark loop. Hence UP in the formula. Finally the dark and the short ends lie at the bottom of the assembly, and are therefore at the SAME level. Ignore this theoretical part if you wish, and simply follow the Figures.

To tie the knot, first, without making any further tucks simply rearrange Fig.1a to make Fig.1b. Note the two spaces marked by a dot. To complete the knot (Fig.1c) pass the dark and the light short ends through the dotted spaces as shown. Then pull up. Fig 1d shows the finished knot. The special feature is that it can be broken by pulling the two short ends apart firmly, when the two component overhand knots will slide apart a sufficient distance to loosen the knot effectively.

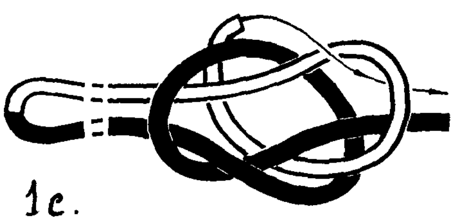
Figs 2 a,b & c show a method of making the corresponding loop.



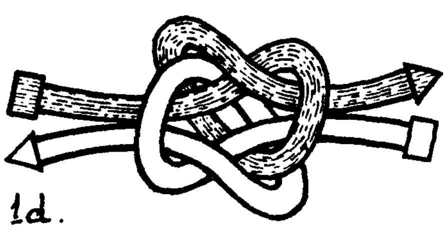
1a.



1b.



1c.

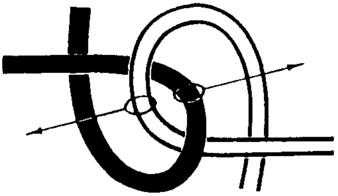


1d.

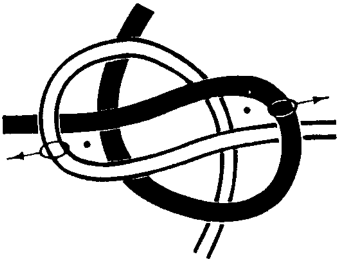
References:

1. A New System of Knotting, by Harry ASHER - Guild Publication.

2. The Alternative Knot Book, by Harry ASHER - Adlard Coles Nautical, London, 1989.



2a.



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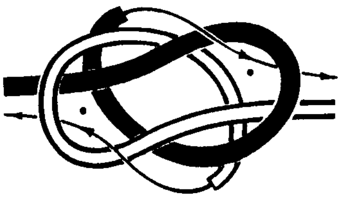


2c.

DID YOU KNOW?

TOP quality Persian silk rugs can have anything up to 1,000,000 knots per square yard.

oooOOOooo

A HONDA is not just a car or motorbike - it is also the name for the special knot used to tie a lassoo.

From The DAILY MIRROR.

LETTERS

Vaughan JONES writes....

First of all I must apologize for my tardiness in writing. For a long time now I have wanted to acknowledge the honour of having first been chosen as patron of the New Zealand chapter of the I.G.K.T and then elected Honorary Vice President of the Guild. I thought that an appropriate way to thank the members of the Guild for these hookworms, and the beautiful knot-boards and certificates I have received, was to write an article explaining the mathematicians approach to knot theory. One of the reasons for my slowness has been a certain sense of embarrassment at my inability to tie real knots. I have been slowly working on remedying that deficiency with the help of this excellent journal.

Before beginning let me take this opportunity to ask the members of the Guild a question that is no doubt trivial but has been bothering me for a long time. Is there a simple knot for closing a loop around an object which shortens the loop, thereby tightening its grip on the object, as the knot is tied. I have asked several friends but have not had a good answer.

Here is my article, at long last, which I hope will be comprehensible to all, even those with minimal mathematical background.

MATHEMATICAL KNOTS

By **Dr Vaughan JONES F.R.S**

To a knot tyer, a knot is a configuration of rope, string or any other cord. A particular knot may be of interest for many reasons. It may serve to join cords of the same or different kinds. Different knots will be more useful for different purposes. This is the practical, dare I say banal side of knot-tying, but the exceptional interest of the members of this guild in knotting is not solely due to the usefulness of the knot. There is a considerable pleasure to be derived from the act of competently tying a knot - the more perfect the knot itself, the more pleasure. The process is completed by the contemplation of the finished product which may in some cases be considered a work of art.

The mathematician working on knots has similar motivations. Knots are both useful to other branches of mathematics and of interest for their own sake. Pure mathematics deals with the abstract rather than the concrete, so the concept of "knot" becomes that of a pure, infinitely thin curve in space, just as a mathematical "straight line" is an abstraction of a real straight line drawn with a ruler or marked with taut rope. The curve defining a knot is to be considered indefinitely flexible, so that all questions of tension, friction, torsion or springiness are irrelevant. In the simplest case the knot will be a simple *closed* curve which never crosses itself, as depicted in figure 1. The curve is to be closed because, as we all know, if there are free ends we could in principle untie the knot by threading a free end back through the rest, however complicated this "rest" may be. The idea of doing something "in principle" is very important. The mathematician considers two knots to be *the same* if they could, in principle, be deformed by stretching, pulling, rotating, moving around - *but never cutting the string* - from one into another. Thus the two knots below are in fact the same by a procedure of stretching and pulling that is obvious to the human visual cortex.

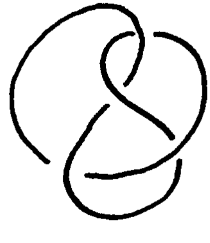


Fig.1

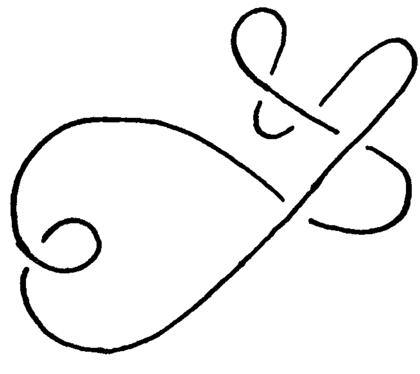


Fig.2.

The most simple of all closed curves, shown on the right of figure 2, is actually a knot according to our definition but has little claim to knottedness. It is known in the trade as the "unknot". Thus figure 2 gives two different pictures of the unknot. Although knots are interesting in other branches of mathematics, and nowadays physics as well, the knot-theorist likes them for much the same reasons as the knot tyer. It is gratifying to be able to draw a knot fluently, and pictures of them can be quite beautiful. The calculation of mathematical objects associated with them can give considerable satisfaction.

I have already set the stage for the primary question of interest to the knot-theorist: given two knots, decide when they are *the same* in the sense described above. It is not always an easy task - even just to show that a knot is not the same as the unknot - how can one be *absolutely* sure that with a little more effort and twisting, turning and pulling, one could not have removed the knot from figure 1.

What I want to describe in this communication is one quite useful method for telling knots apart. It is by no means the "best" or the final answer but it happens to be the method I discovered (in 1984) and which led ultimately to my contact with the Guild. The method is a "polynomial invariant". I must explain both words.

Almost all of you have probably learned about polynomials at some stage, but no doubt many of you have forgotten. A polynomial involves a variable, commonly called x, and is simply a sum of powers of x multiplied by numbers. Thus

$11x^3+4x^2-3x++8$

is a polynomial in the variable x. Perhaps you recall the general quadratic polynomial ax^2+bx+c. One learns after a few months of algebra that the values of x for which $ax^2+bx+c = 0$ are $x = (-b\pm\sqrt{b^2-4ac})/2a$ but the variable x does not have to have any special meaning. It's just a variable. One could for instance put x equal to 2 in the above polynomial and obtain the value 106. But x is capable of being any other number. In case you were finding the going too easy, we will have to extend what we mean by "polynomial" slightly by allowing also *negative* powers of x, i.e. powers of $1/x$. Thus we call $\frac{1}{x^2} - \frac{1}{x} + 1 + 2x^2$ a polynomial.

So much for polynomials. An *invariant* of a knot is something that can be calculated from a picture (or other representation) of a knot but which does not depend on the picture. Thus two knots that are "the same" in the sense I described earlier, must have the same invariant. A very simple example is the "linking number" between two curves. Given two closed curves as below, one may orient them with arrows as below, one counts the

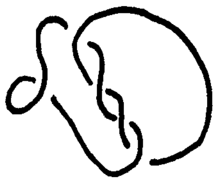
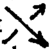
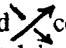


Fig 3

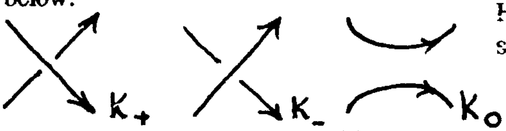
crossings between different strings with signs according to the convention that  counts +1 and  counts -1. It can be shown that the total is an invariant -- doesn't change under any distortion provided the strings are not cut. Dividing by 2 for good measure one gets the "linking number" of the two curves. In the picture the linking number is minus two.

Now I can explain how to calculate the polynomial invariant $J_K(t)$ where K is a knot and t is the variable in the polynomial (preferred for historical reasons over "x"). We will orient our knots (as for the linking number) by giving a preferred direction of travel around the string. If there is more than one string, each one is oriented separately. Here is the scheme defining $J_K(t)$

Property 1 *$J_K(t)$ is an invariant* (so one may push all knots around as much as one likes during the calculation).

Property 2 *The polynomial $J(t)$ for the unknot is 1.* (The orientation does not matter for the unknot since rotation <  > one gets 

Property 3 If K_+, K_- and K_0 are knots having pictures which are identical except near one crossing where they look as below:



then the polynomials are related by

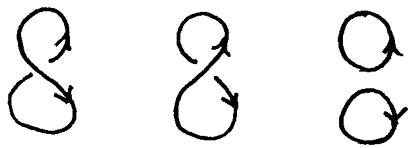
$$\frac{1}{t} J_{K_+}(t) - t J_{K_-}(t) = (\sqrt{t} - \frac{1}{\sqrt{t}}) J_{K_0}(t) .$$

The kind of equation involved in property three was first emphasized by British mathematician John Conway and he dubbed it a "skein" relation, and K_+, K_-, K_0 are called a "skein triple".

The power of Property 3 is that one may always apply it, *independently of what lies beyond the crossing in question* provided of course that what lies beyond the crossing in question is the same for K_+, K_- and K_0

Let me first calculate the polynomial for two disjoint unknots. They can obviously be arranged in the position

Then one may consider the skein triple



Now K_+ and K_- are clearly unknots so one has, by property 2, $J_{K^+} = J_{K^-} = 1$. so using property 3 one has

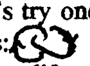
$$\frac{1}{t} \cdot 1 - t \cdot 1 = (\sqrt{t} - \frac{1}{\sqrt{t}}) J_{K_0} .$$

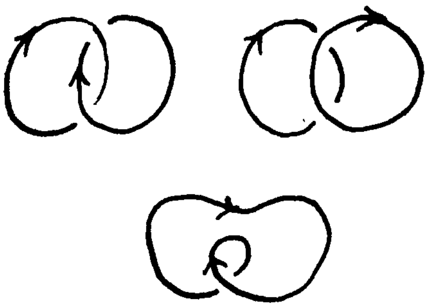
Here K_0 is two disjoint unknots, so after some simple algebra we find

$$\boxed{J_{(\bigcirc\bigcirc)}(t) = -(\sqrt{t} + \frac{1}{\sqrt{t}}) .}$$

The general scheme is no more difficult:

given a picture of a knot whos polynomial one wishes to compute, find a crossing which, if changed, will simplify the knot. Consider the skein triple formed by first changing the crossing in question and then removing it. The original knot now figures in a skein triple with two others, one of which is simpler by the choice of the changed crossing, the other of which is simpler by virtue of having one less crossing. Either way the other two knots in the skein triple are simpler so will already be calculated in a scheme that builds all knots up from scratch. Substituting in the skein formula one has the desired polynomial.

So let's try one, the simplest knot with two strings: . Changing either crossing will simplify so let us choose the top one. The corresponding skein triple appears below.



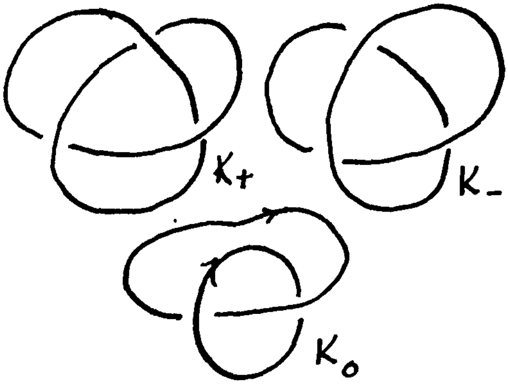
We have already calculated $J_{K-}(t)$, it is $-(\sqrt{t}+\frac{1}{\sqrt{t}})$ and K_0 is an unknot $J_{K0} = 1$. Substituting in the skein formula we obtain

$$\frac{1}{t}J \qquad -t(-(\sqrt{t}+\frac{1}{\sqrt{t}})) = -(\sqrt{t}-\frac{1}{\sqrt{t}})\cdot 1 \ .$$

A very little algebra gives

$$\boxed{J \qquad = -\sqrt{t}(1+t^2) \ .}$$

We are now in a position to calculate J for the (right-handed) trefoil:. All the crossings are the same so choose any of them. The skein tripple is shown below



Now K_- is an unknot and K_0 is the knot we just calculated. So by the skein formula:

$$\frac{1}{t}J_{K_+} - t.1 = -(\sqrt{t}-\frac{1}{\sqrt{t}})(-\sqrt{t}(1+t^2)) \ .$$

I'll spare you the algebra - one gets

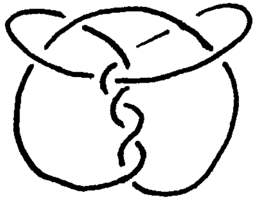
$$\boxed{J \qquad = t + t^3 - t^4 \ .}$$

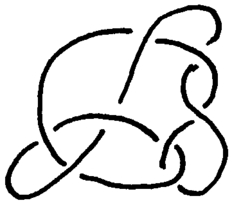
It is easy to see that going from a knot to its mirror image changes the polynomial by sending t to $1/t$ so that the polynomial for the left handed trefoil is $1/t+1/t3-1/t4$. Since this polynomial is different from $t+t3-t4$ we may conclude that the right and left handed trefoils, besides being different from the unknot, are different from each other and no amount of stretching, bending or pulling can convert one to the other.

An exercise: Show that:

$$\boxed{J \qquad = 1/t^2 - 1/t + 1 - t + t^2 \ .}$$

In fact this invariant *J(t)* is quite good at telling knots apart but not infallible. For instance the two knots below have the same *J(t)*

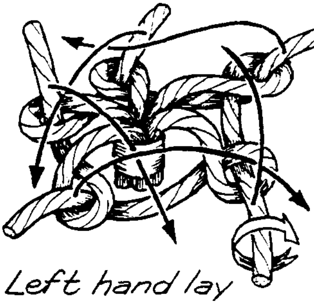




Although *J(t)* does not always tell you precisely what knot you have, it is still unknown whether it always detects knottedness, i.e. whether there is a genuine knot which has the same *J(t)* as the unknot. This question has been open for almost ten years and has defied many attempts at solution.

But why has this rather elementary polynomial caused so much interest in the mathematical community? Ironically, one reason is the very fact that is so elementary. I don't know to what extent I have succeeded in communicating the polynomial to you bit I assure you it is exceedingly rare in mathematics to deal with a topic for which it would be worth the attempt to explain what is going on to an audience of non-specialists. All the elementary things have usually been discovered centuries ago. What happened with this polynomial is the following: There was already a polynomial invariant of knots discovered by the American mathematician Alexander in the 1920's and until 1984 it had been supposed that this Alexander polynomial was the only such elementary polynomial invariant. So strong was the dogma that several eminent mathematicians from Alexander on came within a trice of discovering *J(t)* without finding it. But in the 1980's the time of the new polynomial had come and if I had not found it in 1984 it would surely have been discovered within a few years by people working on other topics, though just as surely not from within knot theory. I was working on von Neumann algebras, a topic that certainly fits in the category of topics I would not dare try to explain in an article like this. The knot polynomial was part of a vast web of interconnections between hitherto unconnected branches of mathematics and physics and contains among other things a polynomial invariant having two variables and generalizing simultaneously the Alexander polynomial and *J(t)*. The whole topic is very much in its infancy as no-one really knows how to use all these new invariants. One of the difficulties is that there is no adequate understanding of the meaning of that variable "*t*". The best shot comes from physics where it turns out to be essentially Planck's constant from quantum mechanics!! Unfortunately this has not so far helped us learn how to handle the new theory very effectively and I for one am sure that many magnificent discoveries await us in which an essential role will be played by knots - the very objects that this Guild is all about.

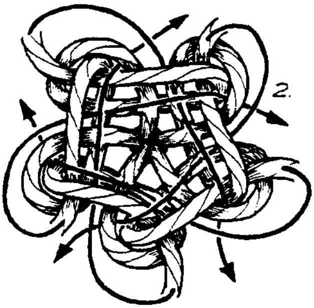
1\. The Start



Left hand lay

Right hand lay

A Star Knot can be tied left or right handed, depending upon the lay of the line. Interlocked half-hitches are followed by a reversed Crown. Then tuck the ends inward



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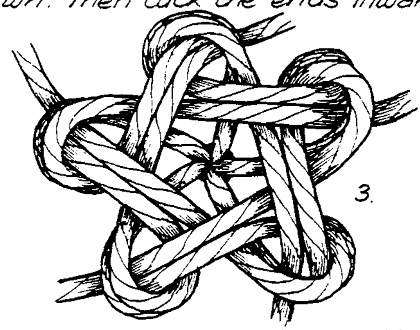
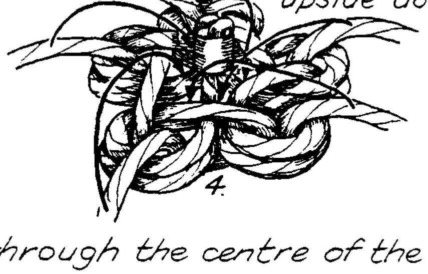


3.

back beneath the Crown and down through the half-hitch in the neighbouring strand. Turn the knot upside down and tuck each strand



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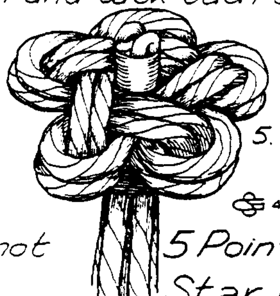

5.

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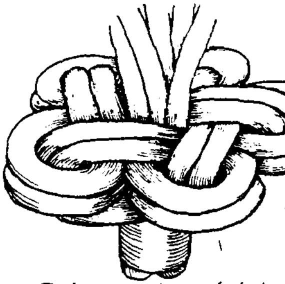
through the centre of the knot as shown in Fig 4 above.

5 Pointed Star Knot.



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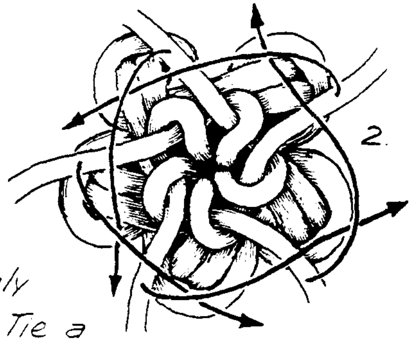
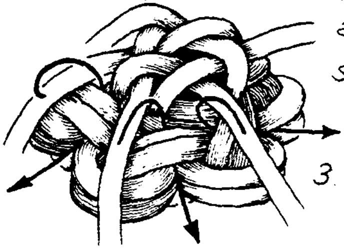


2.

The Star should be tied evenly and firmly but not tightly. Tie a Wall above, followed by a Crown, then tuck the strands above the Wall and out through the sides of the Star between upper and lower half-hitches.



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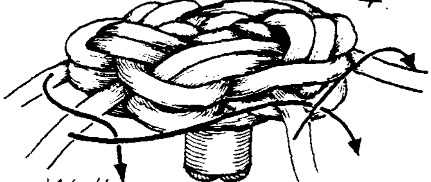
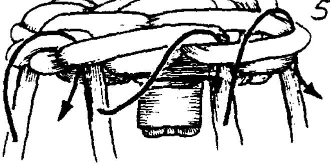


4.

Tie a Crown encircling the Star and tuck again to make a Matthew Walker.



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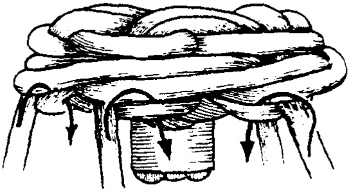
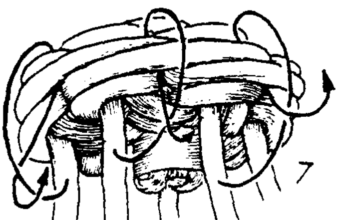


6.

Tuck each strand down through the lower half-hitch below it, then tie a Cow Hitch (Lark's Head) around two strands of the Matthew Walker between nodes.



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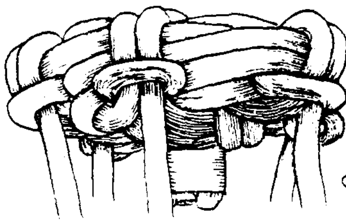
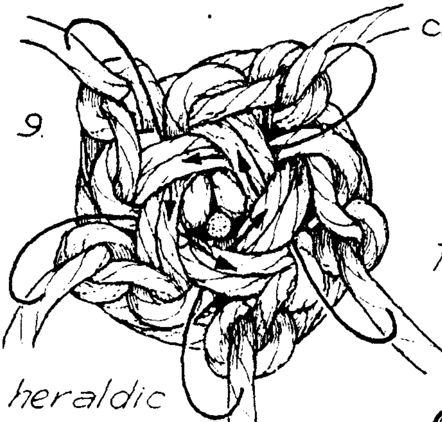


8

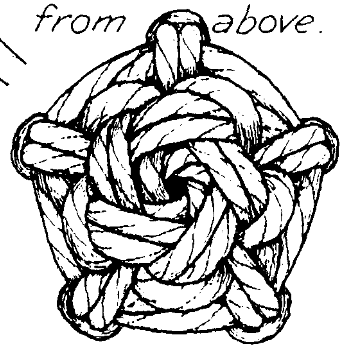
Development of the Tudor Rose Knot.

Finally tuck all ends inward and cut off close to the stem.

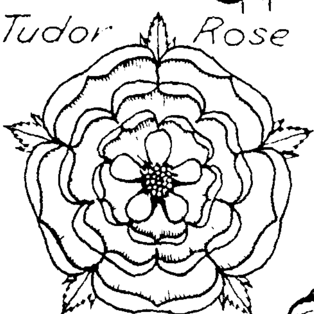
9.

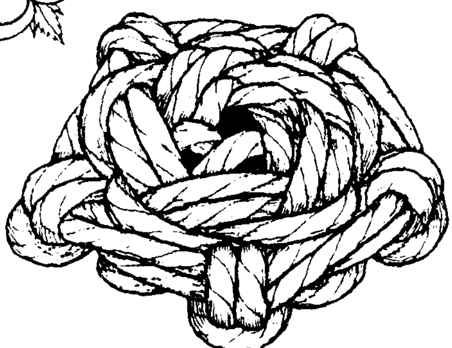


The finished knot from above.



A heraldic Tudor Rose





The Tudor Rose Knot.

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HINTS & TIPS

FIDS & AWLS

From **Jan HOEFNAGEL.**

Fids and awls can be made cheaply from animal bones, such as a marrow-bone from a cow. The bone can be sawn into long strips with a common hacksaw. The strips can then be formed on a grindingwheel to the size you want them. Bore two holes in the ends to fasten the rope. Belay the end of your fid and finish off with a nice Turk's Head. The curve in the bone is sometimes very helpful. And don't forget the missus, she will get a nice broth when the bone is boiled down. That is two hints with one blow!

oooOOOooo

TURK'S HEAD - FORMER

From **Peter PASCOE**

Trying in vain to find a 4 inch diameter wooden pole to build a square Turk's Head on, as recommended by Ashley #1324, I discovered that a partly used toilet roll served the purpose admirably - in lieu - as it were! Which brings me to the following proverb for knotters:

Oh! what a tangled web we weave, when sennets we first try to reeve!

By Ed - Guess why I took up Woodturning!

NOTICES

THE BRAID SOCIETY

From **Jennie PARRY.**

THE BRAID SOCIETY is holding its Inaugural Meeting on SATURDAY 30th OCTOBER 1993 at 56A Ayers Street, Borough, LONDON, SE1 1EU, from 11 - 4.30. By ticket only, (£5), for full details & ticket send SAE to Daphne Crisp, 39 Borrowdale Drive, NORWICH, Norfolk. NR1 4LY

oooOOOooo

U.S.A. MEETING

You will have read **LuAnne KOZMA**'s letter in KM42, asking if members were interested in a meeting somewhere in North America, possibly in Michigan during the time her exhibition of Maritime Knots and fancywork from the Great Lakes region.

The details are still to be worked out but I can now tell you that the planned dates are 21st and 22nd May 1994, probably in Detroit on 21st and Lansing on 22nd.

WATCH THIS SPACE!

Ed....

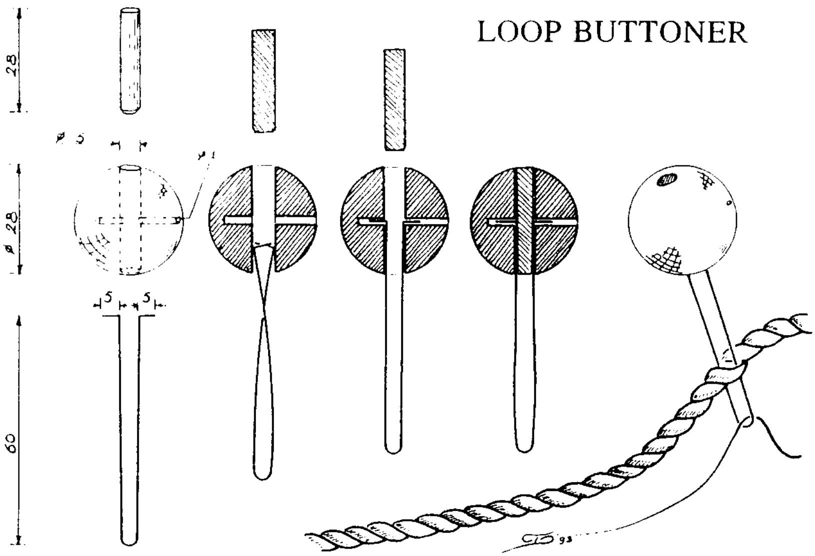
LuAnne's Address

Assistant Curator of Folk Arts, Michigan Traditional Arts Program, 23837 West LeBost, Novi, Michigan, USA 48375.

TOOL TIP

By Theo Slijkerman

LOOP BUTTONER



Easy to make from:

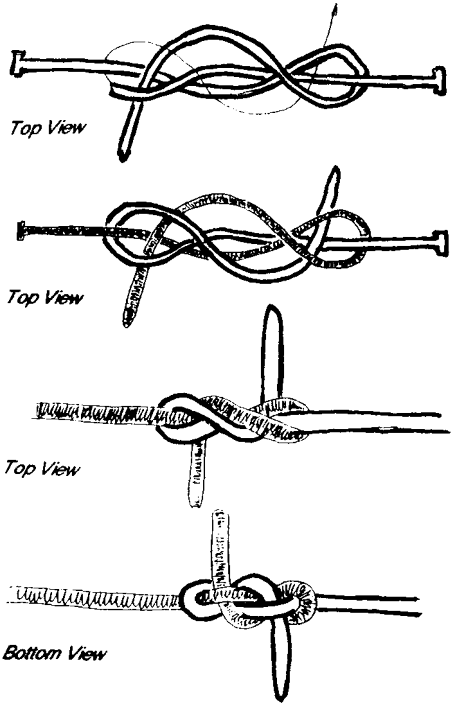
-	wooden (beech) bead	ø 28 mm
-	piece of ironwire	ø 1 mm
-	wooden plug	ø 5 mm

SYMMETRIC HAWSER BEND

Jack REINMANN from Ohio USA writes....

I would like to submit two bends to the IGKT for assessment and for possible publication in the quarterly journal. But first some background.

Brion Toss, in his book ''The Riggers Apprentice,'' recommended the Ashley Hawser Bend. I looked up the Hawser Bend (#1450) in my copy of Ashley's book, and found that I had made an earlier notation showing how to alter the final tuck and make the knot symmetrical. I called this the Symmetrical Hawser Bend I recalled that Dr. Harry Asher, in his book ''The Alternative Knot Book,'' singled out two key principles that he learned at the inaugural meeting of the IGKT in London. Of the second principle, he said .....''...if a knot is symmetrical, it is likely to be a good one. A mathematician [at the meeting] went further and said: ''If it's not symmetrical, I throw it away!'' That advice encouraged me to give more attention to SHB #1. Ashley said of his Hawser Bend....''there is no other well-known and easily untied bends suitable for large material. The present original bend is compact, has excellent lead, and is not difficult to untie. By raising the upper loop the knot is easily loosened.



SYMMETRIC HAWSER BEND #1

It turns out that my SHB #1 has all the advantages cited by Ashley, plus some additional ones. Ashley's Hawser Bend has an easily lifted loop at only one end, but the SHB #1 has that same easily lifted loop at both ends. Furthermore, its symmetry pleases the eye and aids in visualizing, remembering,, and tying the knot. And finally, it ties as easily as Ashley's because the two knots are identical except for the final tuck.

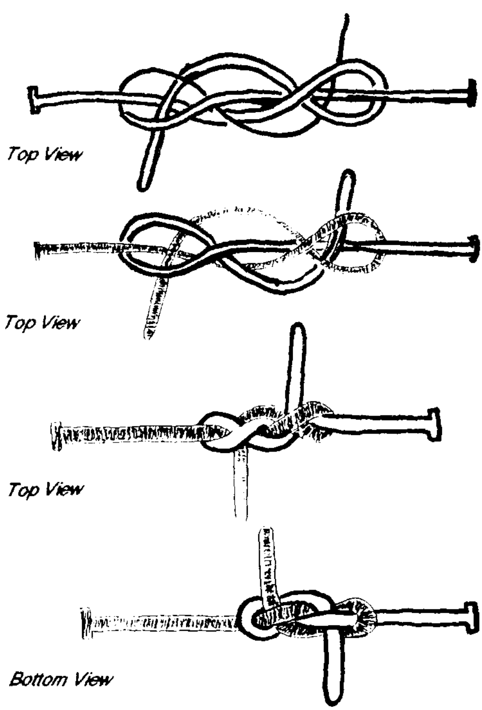
After some more tinkering with SHB #1, I discovered SHB #2. In the longer run, I think this second bend will prove more useful than the first.

It is important to understand the differences between the two knots. I have enclosed a sketch of each knot on the same sheet of paper (see sketch 6) so that you can compare them directly. You will notice and essential difference between SHB #1 and SHB#2; The outside loops of SHB #2 form single hitches (Ashley's #49, Day's #10), with the working end of each loop nipped under its own standing part. In contrast, the outside loops of SHB #1 do not form single hitches; rather, the working end goes over the standing part - and by itself, this structure is not secure.

In both knots, as the working ends exit the knot they get nipped under their standing parts. While this exit nip contributes to knot security and helps to hold the knot together, it is not as strong as the single hitch nip in SHB #2.

The single hitch structure is the key part of such time-tested knots as the sheet bend and the bowline, and I regard it as one sign of a promising knot..

I think that either SHB #1 or SHB #2 is suitable for joining ropes similar in size, material, and construction. But SHB #2 is the superior knot for joining dissimilar ropes. For example, with each knot, I tried the extreme case of joining a 3/16 inch diameter smooth braided dacron rope to a 1/2 inch diameter three-strand nylon rope.



SYMMETRIC HAWSER BEND #2

For the SHB #1 (and Ashley's Hawser Bend as well), the 3/16 inch rope slipped right out of the knot when any load was applied. But for SHB #2, carefully drawn up,, the single hitch firmly held the 3/16 inch rope, and the knot did not slip. (Of course, I'm not recommending joining knots of such extreme dissimilarities.)

I have come to the conclusion that the SHB #2 is on a par with other good bends. It seems trustworthy for joining dissimilar ropes, and it has the added advantages that it leads fairer than most bends and it distorts minimally under load. But before these conclusions can be accepted, it must be thoroughly tested.

VIDEO REVIEW

KNOTCRAFT
Basic Practical Knots

By **Stuart GRAINGER** (1993)

Bowline - clove hitch - sheepshank - round turn & two half hitches - reef (or square) knot - sheet bend - double sheet bend - timber hitch - and rolling hitch.

The 12-minute video shows how to tie these nine handy knots, using animated computer graphics, then human hands, then animation once more. A commentary gives their uses. Simply turn on the tape and leave learners in front of the screen with some cord in their hands.

(A flashing skull & crossbones, and some firm words, warn NOT to use the reef knot as a bend.)

This video cassette is a multiplex effort by craftsman Stuart GRAINGER, who software-painted the animations, operated the camera, demonstrated the knots, wrote and spoke the voice-over, played the background accordion music (identify at least 10 traditional British folk songs), and edited the master tape. The sound track was kindly recorded by Solid State Logic of Kidlington, Oxford.

Price £8.50p (postage extra - approx weight 250 grams) from the I.G.K.T. Supplies Secretary at 3 Walnut Tree Meadow, Stonham Aspal, Stowmarket, Suffolk IP14 6DF. Available in NTSC or PAL formats for U.S.A. or U.K. (Please specify)

Profits donated by Stuart to the Guild

G.B.

DATES for the DIARY

OCTOBER '93

9th - IGKT HALF YEARLY MEETING at the Motor Boat Musieum, Pitsea, Essex.

30th - THE BRAID SOCIETY Inaugural Meeting, 11 - 4.30, London.

1994

7th MAY '94 - **IGKT A.G.M.** - Nottingham

21/22nd MAY '94 - **U.S.A. MEETING** of IGKT Members - Detroit/Lansing.

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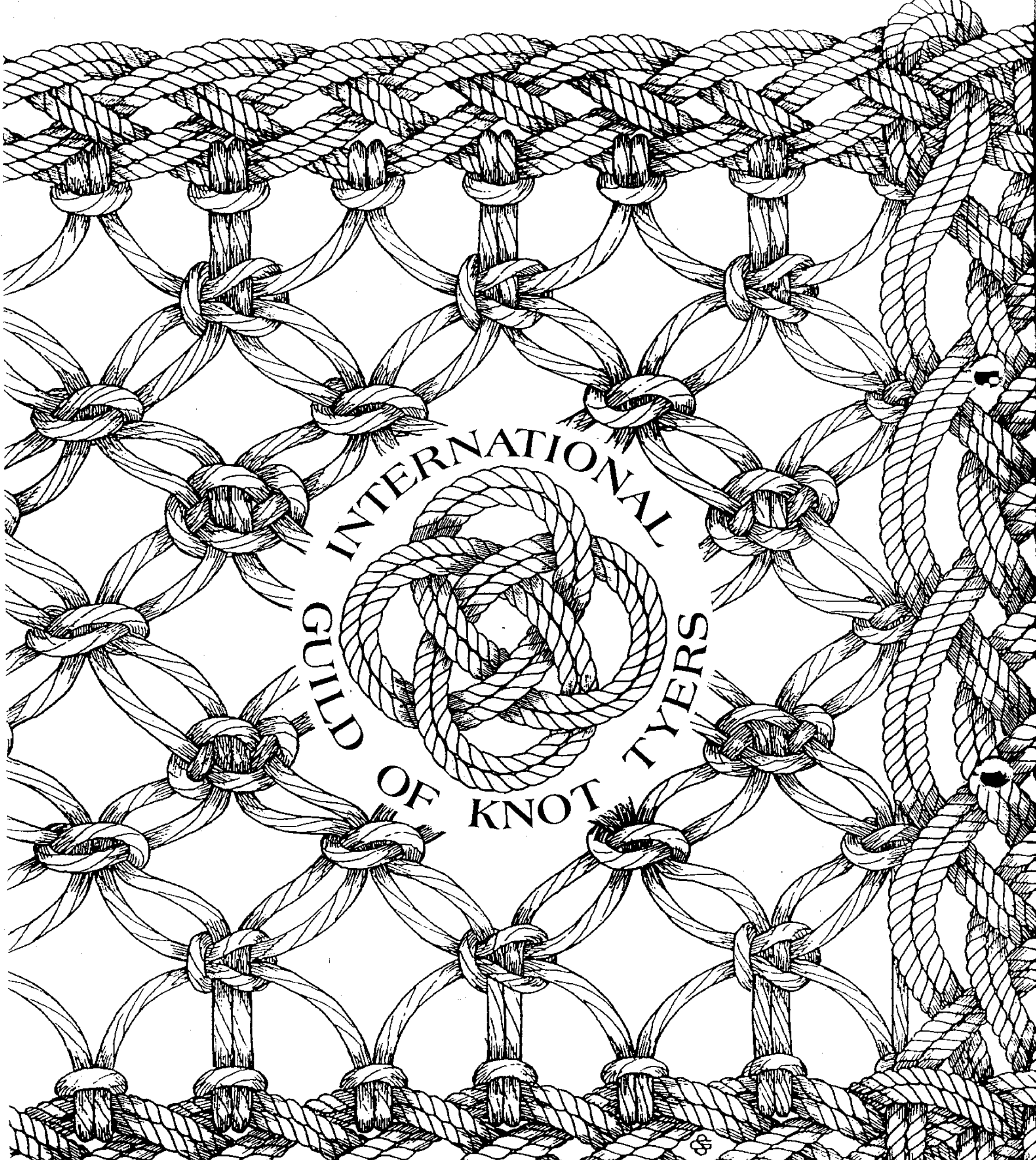
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