

ISSUE 40 SEPTEMBER 1992
ISSN 1959-2881

Knotting Matters

Newsletter of the



INTERNATIONAL
GUILD OF KNOT TYERS

The logo is a circular emblem. The outer ring contains the text "INTERNATIONAL" at the top and "GUILD OF KNOT TYERS" at the bottom, separated by small gaps. In the center of the emblem is a detailed illustration of a reef knot (square knot), also known as a reef knot or reef knot.

KNOTTING MATTERS

THE QUARTERLY NEWSLETTER of THE INTERNATIONAL GUILD OF KNOT TYERS ISSUE No. 40 JULY 1992

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EDITORIAL

Time flies...and, it seems, faster and faster as each deadline for KM hits me and passes. The holiday season is upon us northern hemisphere residents and for those of you that have already had your holidays I hope you enjoyed yourselves, and I am sorry KM was not on your doormat to greet you on return, for those of you yet to go, I am sorry you didn't get to read KM before you went - but have fun anyway. Still travelling, I have spent much of the last few months in North Yorkshire and Lincolnshire but very little time for liesure, though I did get to visit a well known TV farm! My next jaunt takes me a little further afield across the Atlantic, but alas with only a brief stay the other side. I would like to thank all those members who have written to me with articles in the last few months - for those of you who have yet to contribute..I look forward to your articles, as I am running short, particularly of snappy little articles with good diagrams. G.J.P.

HALF YEARLY MEETING

10TH OCTOBER 1992 at CAMBRIDGE.

details to follow

SECRETARY's NOTES

1992/3 MEMBERSHIP LIST.

Finally the membership list for 1992/3 has been published. It's late arrival is due mainly to Nigel being innundated with membership fees. As always, by the time these lists are published, they are out of date, however it was correct as at 1st April 92. Should you spot any error, please let Nigel know - at least HIS telephone number is correct!

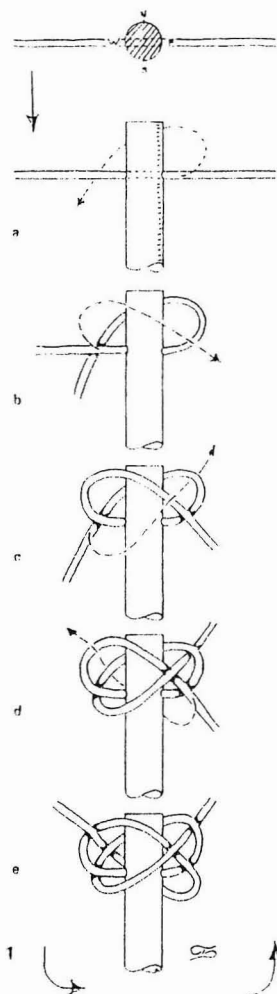
SUBSCRIPTIONS.

Our new Secretary, who is still a little shell shocked with his new post, sends his apologies to all those members he sent a reminder to recently. The result was a heap of cheques bouncing (*I hope not!*) through his letter box from many embarrassed members, who were unaware that they had not paid, and who have asked that reminders go out with the last KM of the year (*See page 1 of every KM and page 2 of KM38*). There were also a number of members who had paid, which helped solve the mystery of whose money he was sitting on. Finally, there were those whose bankers orders that had gone astray due to the closure of the branch of the bank we use. (*It is romoured that Nigel has now gone on holiday to a small republic in South America!*)

TWO LEAD TURK'S HEAD

Jan HOEFNAGEL from Dordrecht writes...

Theo SLIJKERMAN from Nijkerk wrote the following article in the Scouting Magazine of the Netherlands, in which he has a regular column named **KNOPEN** (Knots). It shows a 2 lead Turk's Head and he thinks that it might be of interest for KM.



Take a broomstick, bore a hole through it near the end as shown in the drawing.

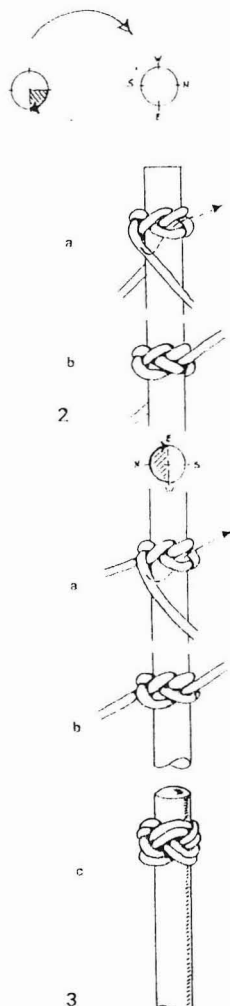
Thread a 4mm line approx 1 meter long through it and follow diagrams 1a-1e.

Turn the stick 90 degrees and follow 2a-2b.

Next turn the stick 180 degrees and follow 3a-3b.

Double the knot or treble it. The result is a knot which does not slide off.

It can be used to support the broom or other tool between two nails on the wall, or to decorate a fid or hammer handle.



ON NETS of "KNOX"

The following article was submitted by Richard HOPKINS as a result of his corresponding with the firm of W and J KNOX, of Kilbirnie, Scotland. An interesting brief written by Bryce Knox, at the request of the Senior Historian, B.C. Fishing History.

Early History. In 1778, Robert KNOX, the son of a farmer, set up a small unit for bleaching linen fabrics. At the time the main agricultural crops in the County of Ayr were oats, potatoes and flax. Robert decided to become a flax spinner, using the local crop and water power from the River Garnock. Soon he was manufacturing sewing thread for the tailoring trade and flax twine for hand-made fish netting. His two sons, William and James, built a large five storied building to house flax machinery in 1840 and the business expanded rapidly from there on.

As specialists in hemp and flax netting twines (which increase in strength when wet) an important export business was developed in Norway (hemp twine for cod gill nets), New Zealand, where an agent was appointed ten years after Captain Cook's discovery, and Canada, for flax gill nets used in Lakes Ontario and Erie. The Clyde provided regular and convenient shipping facilities.

James KNOX had two sons - the elder James (later he received a Knighthood) and Bryce - Grandfather of the author of these notes!

Canada. An important market for flax and hemp netting twines. In 1856, one of the most important customers for Knox Twines and Sewing Threads, called John Leckie, decided to emigrate from Glasgow to Canada. Before leaving he visited Kilbirnie where the brothers William and James Knox agreed to appoint him as agent in Upper Canada.

With his family he left the Clyde in a sailing ship, in which they arrived in Halifax, N.S. Undeterred by slow travel the Leckies made their way east in a bullock cart and settled in what is now Toronto. John soon went to work among the fishing communities on the north shore of Lake Ontario - visiting his customers in a pony cart. The Knox Flax Netting Twine was already well known to the gill net fishermen and the business expanded.

Many years later in the 1920's the Knox Company acquired the Leckie family business - which became John Leckie Limited, the leading ship chandlers with branches from St. Johns, Newfoundland to Edmonston.

British Columbia. With the development of gill netting in B.C., the Knox Company became one of the major suppliers of flax and hemp netting twines for the hand knitting of nets. Business was conducted with the fishing companies on the direct indent basis and the business flourished. In the 1880's James Knox - grandson of

the founder - put into practice the family motto - "MOVEO ET PROFICIOR"; he paid his first visit to B.C. Embarking from the Clyde in a trans-Atlantic paddlesteamer (in which he was required to provide his own knife, fork and spoon) he set out on the long journey, travelling across Canada on the Canadian Pacific Railway. His luggage boasted two huge trunks, one containing his personal effects, the other boxes of Havana cigars for his customers. As he stood on the high ground, which is now Vancouver, he gazed in astonishment at the huge fleet of small gill net boats under sail, fishing offshore. He was made very welcome, not only with hospitality, but with a bulging order book - so much so that Bryce, his younger brother, sent him a telegram to stop booking further business. The factory was fully booked. In 1898 the Knox family merged with their linen thread competitor, William Barbour and Sons, whose factory was situated in Ulster, Ireland. Trading directly with the B.C. fishing companies continued until 1934, when the Knox/Barbour Company established the business of Western Leckie Limited in Vancouver.

Double Knot Netting. Around 1900 machines became available for the manufacture of fishing nets. These were semi-automatic assisted by men or women who were required to manipulate wooden pedals with their bare feet. The machines were known as "Scotch" machines and were designed - with bobbin and shuttle - to produce herring drift nets, and only single knot

netting could be made.

Bryce Knox was steeped in the manufacturing side of the business, and with foresight conceived the idea of providing double knot flax netting for the powerful biological urge of the Fraser River salmon. His friend, an engineer in Paris, called Monsieur de Serreville, was working on the design of just such a machine, which was given the friendly name of "Bonamie". This was a fully automatic machine on which the production was painfully slow - about three rows of netting per minute, or one and a half meshes. The net was knitted in panels from a single "cheese" as opposed to bobbin and shuttle) from either grey (natural) twine dyed in three shades of green - dark, medium or light. Ponderously it tied double (English) knots, and the panels were wound on to large circular wooden beams - again at three rows per minute. The double selvaige was attached to the top and bottom of the panel, the single twine "cheese" being replaced manually by one containing double twine. On removal from the wooden circular beam the panels were stretched, to ensure tight knots, and joined to the required length. A typical specification was:- 40's linen lea, 4, 5 or 6 ply x 500 fathoms long x 50 meshes deep, double selvaige dyed medium green.

The finished net was rolled, wrapped in hessian and shipped to B.C. where it was mounted in the netting lofts.

The first machine-made double knot flax gill nets were supplied in the

early 20's and for years only double knot nets were acceptable in B.C.

With their Barbour partners, the Knox family became equipped with more "bonamie" machines than all the other netting manufacturers in the World put together. This was not their only advantage. The eldest son of Bryce Knox was called James (father of the author) who was an expert on the raw material, i.e. flax. Before the revolution he twice visited Russia and set up a flax buying organisation under a Scotsman called "Jock" Honston. The flax was shipped from Riga to Dundee and thence to Kilbirnie. During both World Wars James was responsible to the Government for the promotion of flax growing in the U.K. and New Zealand. Apart from Ireland, the traditional flax growing countries had become battlefields. With his expertise the correct quality for netting twines was made available, and with a vertical manufacturing operation - from raw material to the finished double knot net - the Company enjoyed a near monopoly for many years. It was very much part of the B.C. Industry, and William (James' younger brother) was a regular visitor to B.C. and was followed by the author after World War II.

Two major revolutions have taken place in the field of fish net manufacture:

1. The change from hand knit netting to machine knit netting in c.1900.
2. The change from natural fibre to synthetic fibre in c.1952.

In 1952 the author paid his first visit to B.C. to find a post-war shortage of flax double knot nets, and the Knox/Barbour companies were supplying 75% of the market. He received orders for nets totalling 200,000lbs. In 1952 the Knox/Barbour Companies again provided about 75% of requirements with an increase in the total weight of netting to 235,000 lbs., as a new fishing regulation permitted sockeye nets to be 60 meshes deep instead of 50 meshes. In 1952 the author took orders for 200 nylon nets with the following specifications: Nylon 210 denier 5 x 3 (15 ply) x 420 fathoms long x 50 meshes deep. Selvage of spun nylon dyed medium green.

With the application of heat, single knot gill nets could be manufactured from nylon at speed on bobbin and shuttle machines with which all net makers throughout the World were equipped. No longer was there a use for "Bonamie" and no longer was the skill of flax buying required. Competition from all and sundry forced the closure of Western Leckie Limited in 1960.

In spite of these W and J Knox is still in business, enjoying an important market for nets used at fish farms, synthetic carpet yarns and work clothing.

For 209 years the Company has worked without a break and without a strike.

No mean record!

Bryce. K. Knox.

HEAVING MALLET & HEAVING BOARDS

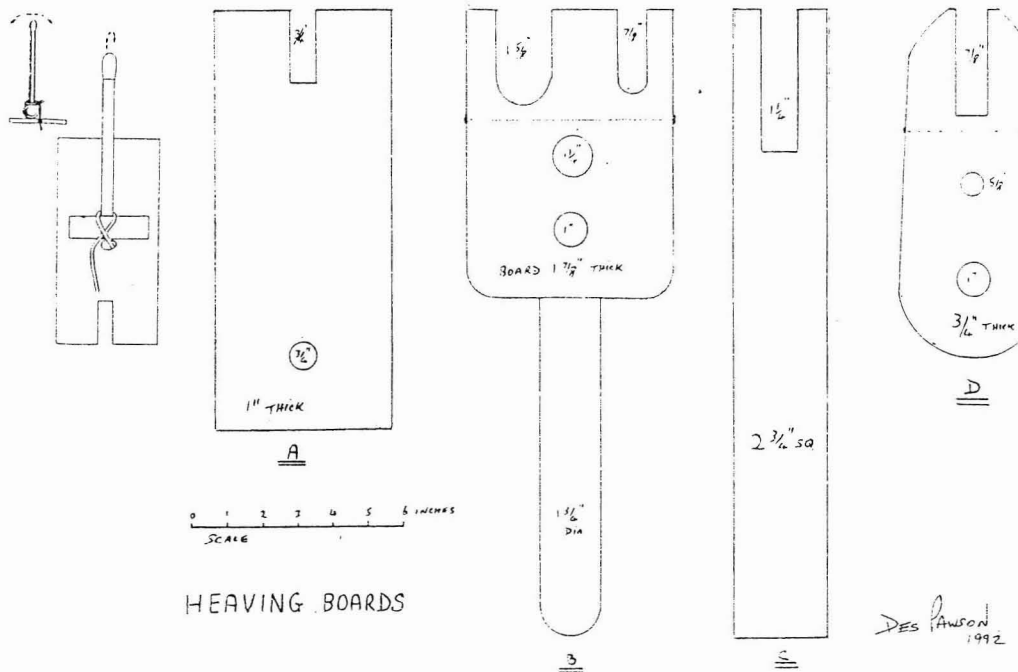
by Des PAWSON

When applying a seizing or tightening a splice or cringle, in fact when you need to add a good final heave, then the tool to use is a HEAVING MALLET. Hitch it up and heave away.

This tool performs even better used in conjunction with a HEAVING BOARD. This tool takes many forms and names (even in English). Here are a few that I have seen.

A. As supplied by W SMITH in a Sailmakers Kit. B. From H.M. Dockyard Portsmouth where it is known as a BATTLEDORE. C. A type I believe originates from H.M. Dockyard Devonport known as a DOLLY. D. A sailmakers.

It is curious that Battledor and Dolly are old words for a tool used in the wash tub to beat and stir the washing. I would be interested to know of any other forms or names. For more details of Heaving Mallets and their use see "The Riggers Apprentice" by Brion TOSS \$19.95.



LETTERS

10th BIRTHDAY PRESENTS.

On behalf of the council I would like to thank those members who have taken the trouble to make and give small examples of their work as a 10th birthday present.

I would like to remind people who have not yet found time that the idea is for a small piece from all to make up one or more small boxes that could be circulated round the world.... so we are only looking for a small (but as good as you can make it) item. I would also make a plea as to a possible source of help in finding a firm who may help in the circulation of these exhibitions.

We are 10 years old, lets make our mark.

DES PAWSON.

Chairman.

Bryan HATTO from Surrey, writes:

In reply to the letter from Jan HOEFNAGEL in KM39 with reference to damage to nylon rope. I write these notes with some explanations cross referencing various fibres to illustrate the various elements involved in the technology of cordage manufacture, testing and usage.....*(By Ed..The remainder of the letter is so interesting and full of valuable data that I have used it as a full feature article in its own right...see page.18)*

In answer to Jan HOEFNAGEL's question - Although it would seem inadvisable to make a judgement on the content of his letter I believe the fact that he said the rope was five years old is interesting. It had been hard laid over a steel cable and the fibres were under tensile stress in a position on the boat of some considerable likelihood of abrasion, all point to the problem. The description of the damage does seem to be one of stress fatigue in which case the damage to the individual fibres might appear to the eye as a cut surface across the section. I would think that a boat fender should not be made with fibre under unnecessary stress as the likely mechanical damage caused by abrasion would cause the fibres to sheer under tension. I won't comment on his repair procedure only to say it is probable that he has done a lot more harm than good to the fender! The long term effects of heat, of the nature described, on Nylon fibres could prove to be a disaster! Another effect which could have caused the failure would be localised severe abrasion causing heat build-up and fibre melt. Without an in-depth survey one can only speculate.

Bryan S Hatto.

Senior Mechanical Engineer. Silver Birches, Rowhills, Heath End, FARNHAM, Surrey GU9 9AU

Des PAWSON from Ipswich writes...

A few notes, comments and replies to various items in KM38.

Magnus/Rolling Hitch: Firstly am I correct that there was a miss-type and 1753 should read 1735? (*By Ed.. Yes*)

I have been told that 1735 (i.e. with double crossed turns) was used to set up the standard rigging on the small Norwegian sailing/rowing boats. The second crossing putting in the tension. These boats are direct descendants of the Viking Ships, examples of rope-work found on the Oseberg ship show the Vikings had a good knowledge of knots and splices, I think it is reasonable to believe that the rolling hitch was used by the Vikings. Also on holiday in Sweden I saw 1736 used far more than in the UK for making fast, and on one occasion making fast wire standing rigging to a small thwart in the bows (right angle pull) So I wonder was Magnus a Viking?

“History of the Constrictor Knot”

I can confirm that the text is the same in all the editions I have, going back to 1870. I also remember an excited phone call from Pieter Van de Griend MAKING the same point a couple of years ago.

NEW MEMBERS

WELCOME TO THE GUILD

M J BROWNE - Co. Kerry, Eire
D M MARLOW - Cornwall, UK
J L STEGGLES - London, UK
D SAMPIER - Victoria, Australia
M J B JONES - Dorset, UK
S KEEBLE - Dyfed, UK
T R W JENKYN-JONES - Hong Kong
S T WAITE - Kent, UK
M SIMMONS - London, UK
G HAMILTON - Suffolk, UK
P A NICHOLS - Warwickshire, UK
C & I PARKER - Devon, UK
S H MANNING - Maine, USA
B W HILL - West Sussex, UK
C WATSON - Gloucester, UK
B JARRETT - Kent, UK
L PRITCHARD - Islington, NI
A MANN - Yorkshire, UK
M MACHADO - Oregon, USA
M HODGSON - Essex, UK
D HOFFSUMMER - Farsta, Sweden
A CAMPELL - Merseyside, UK
D E BONNER - Hampshire, UK

QUOTATION:“....yet there can be no doubt that cables may be of great use, as expedients, for constructing military bridges... and the applications already made of it should not be lost, though they may now remain long in disuse.”

AN ESSAY ON THE PRINCIPLES AND CONSTRUCTION OF MILITARY BRIDGES AND THE PASSAGE OF RIVERS IN MILITARY OPERATIONS by
Douglas (Pre 1832)

OBITUARIES

Desmond MANDEVILLE (1910-1992)

IGKT Founder Member.

The Guild has lost one of its keener minds. Desmond Mandeville graduated from Cambridge with a double First in Natural Sciences. He became an organic chemist, employed abroad by the Ministry of Overseas Development, and later a civil servant. Retired at 60, he went on to be in turn Secretary to the Council for the Care of Churches, and then the Artworkers Guild. Other scholarly Guild members admired Desmond's inspiration, mastery of detail and lucid explanations.

His unique knot work was to map related bends. Ashley's statement that a single tuck changed one knot into another led Desmond to observe that knots, a mere tuck apart, could have extremely different characters. The reliable Sheet Bend, he pointed out, is cousin to the worthless Thief Knot and the temperamental Tumbling Thief.

He invented and refined Trambles (short for Tucker-Rambles). In these puzzle games, tuck by tuck, interconnected bend after bend can be explored. Trambles is a clever new way to teach and comprehend knotting.

Desmond was a gentle, courteous,

unselfish man, enthusiastic and effective in all he did, who enjoyed good health and seemed ten years younger than his real age.

He had fun with words. 'stand' and 'wend' (used by some of us for standing and working ends) were terms coined by him. He called Ashley's WHATNOT (#2579) the "Jinx". It was a Jeckell-&-Hyde knot, he said, because one form was stable and the other very unstable. Each one of his many knot variants was given a rare name, such as Kilkenny, Querry or Latin Lassoo. These were displayed in the 'Alphabet' which, more than mere whimsy, is a neat academic creation. He justified his new knot names thus:

A nameless knot's a foolish thing-
Merely a muddle in a piece of string!
In Geoffrey's Rag* it makes me rage
To see a squiggle on the page,
Without a name, I care no cuss,
For your fine Knots Anonymous
Since any bend that's worth a try
Should have a name, like you or I.
A waste of time, a knotman's shame
Is every knot without a name.

(Yet worse than those that haven't
any, Some knots there be that have
too many.)

Rest in peace, Desmond.

G.B.

Neil HOOD.

During the too few years I have corresponded with Australian Neil Hood I learned he was a person with a genuine fascination with knots. He joined the IGKT in 1986 and wrote several articles on the splicing of multi-strand rope for Knotting Matters. They cleverly originated from his engulfing interest in braiding the latter caused him to become enthusiastic for and to join the New Zealand based New Theory Braiding Group from its inception. Even though he claimed to be a bit old fashioned by not using any computer, he certainly did not stay behind. He privately published impressive pamphlets on many aspects of braiding resulting from his collaborations across several continents. Neil and his wife Fay were about to move from Kalgoorlie to Victoria where he was going to take things easier, when his sudden death on April 23rd took him away from our midst.

Pieter Van de Griend

Denmark.

DATES FOR THE DIARY

10th October 1992

IGKT HALF YEARLY MEETING

Venu: HARRIS SUITE, CAMBRIDGE
UNITED FOOTBALL CLUB, ABBEY
STADIUM, NEWMARKET ROAD,
CAMBRIDGE.

Good parking facilities in the "Directors" car park....More details will accompany this issue of KM.

29/31 Aug 92: NAVY DAYS Portsmouth; Hampshire branch & more - see us on the "Pussers Rum" stand - whereelszzzzzzzee!

14 Sept 92: Surrey Branch Meeting.

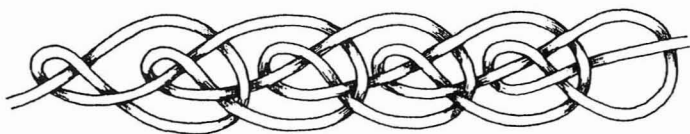
28 Nov 92: East Anglian Branch Meeting at Ipswich. Brian Walsh will be giving a demonstration.

ESSEX BRANCH DIARY:

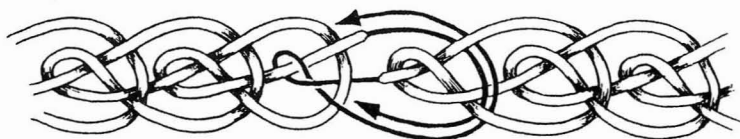
30/31 Aug: Havering Show and Layer Marney Tower Medieval Country Show. **5 Sep:** Orsett Show. **6 Sep:** East Essex Hunt Country Fair. **12/13 Sep:** Marsh Farm Country Weekend. **29 Sep:** Hallingbury Mill. **26 Sep:** Essex Steam Rally and Craft Fair. **18 Oct 92: Workshop at Museum.** (The art of 'tattooing' by Europa DAWSON). **24 Oct:** Craft Fair Coopers



*Repeat as often as necessary
to form chain long enough for*



the ends to meet around the circumference.



*Link the ends and double the lead in either
direction or in both.*

© 8 91

4.



Decorative Chain Grommet VI.

"SMART ROPE"

John WOOSSEY writes.....

It may be of interest to members to learn that a rope has been developed by Peter GARDNER at Strathclyde University which 'bruises' when you subject it to stresses near it's breaking strain. It was designed principally to warn rock climbers that the rope may be approaching it's breaking point.

Rock climbers use ropes in a variety of colours and for this reason the bruise manifests itself by turning black when subjected to excessive strain. It is claimed that the rope may also change colour to reveal it's history by indicating that it has become unsafe after a period of use. When the colour change takes place, it is a permanent one.

This technology complements a proposed European Safety Directive which suggests that manufacturers should advise when products should be discarded as unsafe and replaced.

There is little more information available at this time as patents have been applied for and research continues at Strathclyde University with the help of Mr David WOTHERSPOON, Director of Cairngorm climbing rope.,

One other suggested use for this "smart rope", is for shopping bag handles which would bruise prior to breaking to give the carrier a pre-warning that the week's groceries were about to end up on the floor.

HINTS & TIPS

By Ken YALDEN

While rummaging through the knot tying toolbox of our Editor recently, I discovered a strong and practical adhesive tape. On investigation I found it to be 'strapping tape' made by SCOTCH™, in the U.S.A. Available in the U.K. from stationers and DIY stores, it costs about £1.25 a roll. The tape is reinforced with continuous filaments giving it the necessary properties to make a secure temporary whip-

ing in small and medium size line. While tenacious, the tape is less like fly-paper than most other tapes, and the parallel filaments add an authentic, rope look to finished work. Well worth a try.

(By Ed, This is a typical example of "Why didn't I write that" - Ask yourself that question and WRITE TO ME - Please)

GUILD SUPPLIES

I.G.K.T PRICE LIST (1992)

ITEM	WEIGHT	PRICE
THE KNOT BOOK Geoffrey Budworth	95gms	£1.99 each
LASHINGS Percy Blandford	55gms	£2.50 each
BREASTPLATE DESIGNS Brian Field	65gms	£2.50 each
TURKSHEADS THE TRADITIONAL WAY Eric Franklin	110gms	£1.50 each
KNOTCRAFT Stuart Grainger	130gms	£3.25 each*
ROPEFOLK Stuart Grainger	30gms	£1.30 each*
TURKSHEAD ALTERNATIVES Stuart Grainger	30gms	£1.20 each*

**AN INTRODUCTION TO KNOT TYING
SOME SPLICES AND LANYARD KNOTS**

Stuart Grainger

Available as a set
while stocks last
at a special price
of £2.00 per set.

* Indicates 33.3% discount available on orders worth
£30 at retail prices. Subject to availability of stock.

Weights are stated as a guide in calculating POSTAGE.

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Stoneham Aspal,
STOWMARKET

Suffolk IP14 6DR

Tel: 0449-711121

I.G.K.T PRICE LIST (1992)

POSTCARDS, Set of 8 instructional
(Brown on Cream) 35gms £1.50 (Set)

POSTCARDS, Set of 8 single strand
Ornamental Knots
(White on Blue) 35gms £1.50 (Set)

TIES, Silk (Dark blue, white knot
motifs) 30gms £6.50 each

TIES, Bow, Silk (As above) £7.80 each

BADGES, (Guild logo) 5gms
ENAMEL BROOCH TYPE £1.80 each

CLOTH BLAZER TYPE £1.00 each

CAR STICKER (Soft Plastic) £1.00 each

3" PRESSED PRINTED METAL £0.30 each

CHRISTMAS CARDS "A Star & A Crown" £3.00 for 10
(with envelopes)

T-SHIRT 145gms
Size - XXL £7.45 each
Size - XL £6.95 each
Size - L £6.95 each
Size - M £6.95 each

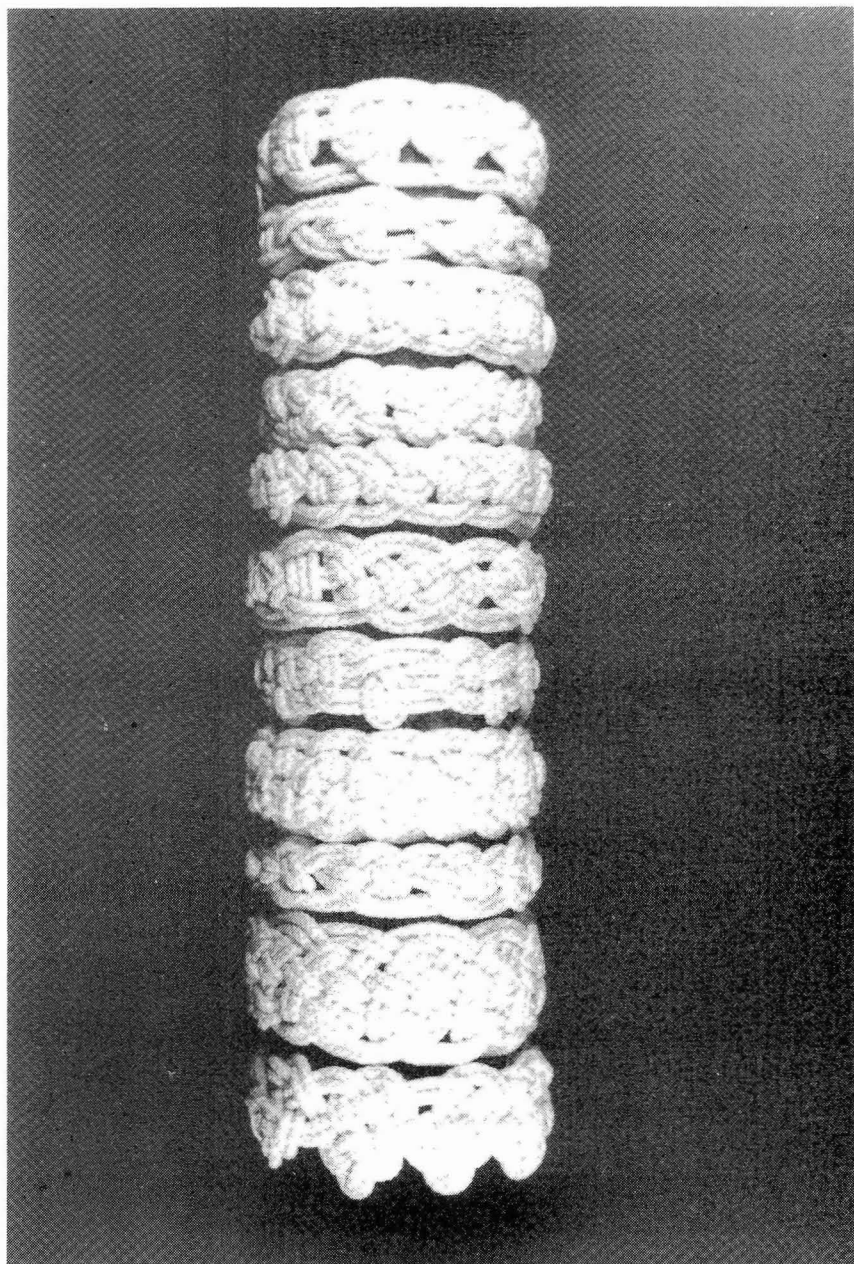
MUGS

I.G.K.T. 10th ANNIVERSARY COMMEMORATIVE MUG
(Dark Blue graphics on white china)
£3.00 each
(+ postage)

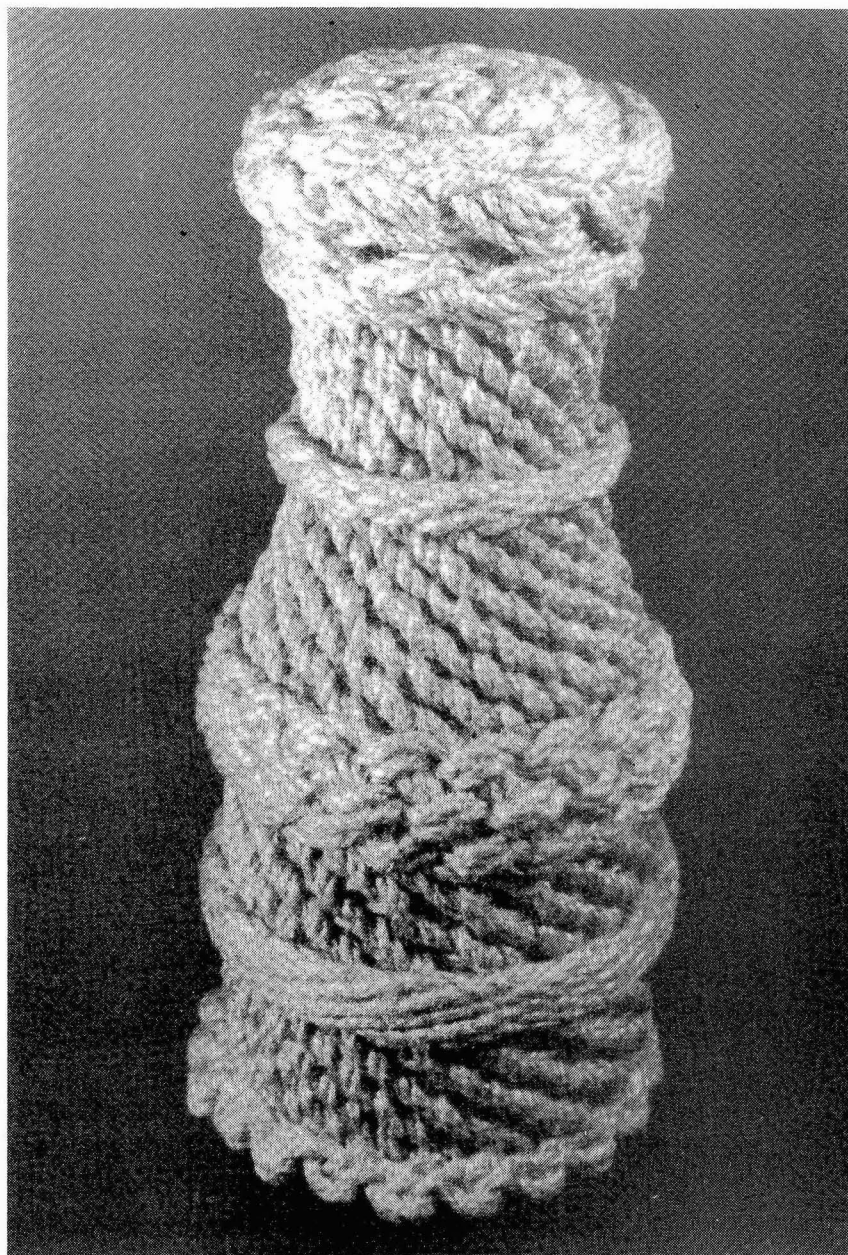
SUPPLIES SECRETARY

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Stoneham Aspel
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Suffolk IP14 6DF Tel: 0449-711121



A Californian (Paul Masson) wine jar, filled with sand and covered with Crown Sennit and lanyard knots in 4mm hemp line, by **Stuart GRAINGER**.
Used as a door stop.



DECORATIVE CHAIN GROMMETS

Eleven of Stuart GRAINGER's Decorative Chain Grommets tied in 4.5mm glacie picture cord.

TECHNOLOGY of FIBRES

By Bryan S HATTO

The following notes contain some explanations cross referencing various fibres to illustrate the various elements involved in the technology of cordage manufacture, testing and usage.

Fibres of interest to the cordage industry have for years been classified according to their origin, i.e. animal, vegetable or mineral. With the introduction of synthetic fibres, another class has been added, termed man-made fibres.

Plant fibres, which have for many years been accepted as the main source from which cordage was made include:

SEED HAIRS - The hairs of the seed pods. These hairs are naturally short and single-celled. Cotton is the best example.

BAST FIBRES - Which come from the inner bark of stems or the main stalks of reed-like plants, these fibres are long and multiple-celled.

LEAF FIBRES - Which come from the tip to base of the pulpy tissues of leaf stems or the leaves themselves. The fibres are long in consequence and are also multi-celled.

PALM AND MISCELLANEOUS FIBRES - are derived from segments of leaves, stems, nut husks such as the coconut and are woody in nature and

are somewhat limited for use in cordage. The synthetic range of fibres (Man-Made Fibres) fall into other class designations some of which are as follows:-

CELLULOSE BASE FIBRES - Acetate and Viscose

GLASS FIBRES - Fused inorganic oxides

METAL FIBRES - Metallic elements and Alloys

POLYACRYLIC FIBRES - Nylon and Perlon

POLYAMIDE FIBRES - Nylon and Perlon

POLYESTER FIBRES - Dacron and Terylene

POLYVINYL FIBRES - Pe-Ce, Rhovyl, Saran, Vinylidene Chloride, Vinyon, Vinyon.

Other Class of fibres come from **NATURAL MINERALS** - Asbestos

PHYSICAL PROPERTIES OF CORDAGE FIBRES -

There are many characteristics of primary consideration when considering the physical properties of materials used for cordage -

TENSILE STRENGTH - Considered to be the most important property - tested by pulling the fibres apart

slowly until the fibres rupture.

STRETCH or ELONGATION is an inevitable result of the pulling action and certain fibres stretch more than others, because of their structural make-up. Glass Fibre will have only stretched 2 to 4 percent at the rupture point, but Nylon fibre will stretch approximately 20 percent. Henequen fibre, (a leaf fibre obtained from the plant *Agave fourcroydes*) will stretch about twice as much as Abaca (Also known as Manila, a fibre from the leaf stem of the plant *Musa textilis*).

ELASTICITY (Recovery from Stretch)
In normal use, cordage fibres like any other materials used in tension are stressed and relaxed alternately. Rubber is a good example of a material capable of being stretched and returning to its original length as the force is released. All materials have this property to some extent, but they all have a limit (known as the elastic limit) beyond which the material no longer demonstrates this property and cannot regain its original length. A fibre loaded even considerably below the breaking point, will **STRETCH** and **CREEP**. Upon release of the load it will contract rapidly at first and then **CREEP** slowly towards its original length. **TIME** is the factor in the fibres ability to recover from being stretched. In practice most fibres of interest to the cordage technologist are imperfectly elastic (never contracting to the original dimension), particularly after repeat loadings.

BENDING ABILITY - In the processing of the fibres into a twisted structure to form cordage, deformation by bending is a property of major interest. The coarser the fibre, the stiffer it becomes and the less able it will be to withstand bending stresses without undergoing damage due to fibre fracture. The bending ability of a fibre is determined by fibre thickness, cross sectional area and its shape and degree of bonding between the fibre cells. Bending stresses are first introduced during the preparation of the fibres prior to spinning and can result in a loss of strength equal to 25 percent at this stage. During the Spinning process the fibres are not only bent but also twisted to conform to the spiral pattern of the yarn. The importance of fibre stiffness as a limiting factor during this stage of production is well recognised. Within the rope, the fibre stiffness exerts its influence upon the rope performance - handling, holding and knotting. Studies on flexing endurance which can measure the ability of fibres to withstand bending stress among others have demonstrated the superior performance of hard fibres over the soft fibres.

ABRASION RESISTANCE - The moment the fibres are first scraped from the plant tissue to the time it is used as cordage the fibre is subject to considerable abrasion, i.e. surface friction. In the actual usage of fibre in cordage, abrasion becomes a matter of great concern. Stresses in service occur with movements of fibre against fibre, fibre against foreign particles

and fibre against rough or sharp edges. All these movements rub and tear at the surface of the fibre. Hard fibres, as a class, are more resistant to abrasion than the soft fibres. Man-made fibres, such as Nylon are superior to all plant fibres in this respect. The importance of added lubrication applied to the fibres in order to minimise this effect cannot be underestimated.

EFFECTS OF MOISTURE - When Plant Fibre becomes extremely dry it is brittle, and in this state will spin and twist into low strength products. The cordage technologist recognises that the physical properties of the fibres are affected by the moisture content (**REGAIN** is the term used to signify the percentage moisture content based upon the bone dry fibre weight). The **REGAIN** is related to the **RELATIVE HUMIDITY** and the **TEMPERATURE** to which the fibre is exposed. The absorption of moisture by fibres is believed to occur in two stages. 1. The vapour penetrates the individual fibre structure and becomes an integral part of the molecular structure and 2. The water is mechanically held, filling all the voids existing between the cells. The first stage is the most directly related to the changes in fibre properties. As **NATURAL CORDAGE** absorbs moisture there is a pronounced **INCREASE IN STRENGTH UNTIL SATURATION IS APPROACHED**. Testing has shown that moisture-free **JUTE** (a fibre obtained from the stems of *Corchorus capsularis* or *Corchorus olitorius*) increases in strength from 3.5 to 5.1 pounds, as the humidity

increased from 0 to 70%. A slight **DECREASE** takes place beyond 70%. Completely wet, the strength **DECREASES** to 3.6 pounds approximately. Man-made fibres do not behave in this manner. Nylon, Orlon and Terylene, for example **BECOME WEAKER AS HUMIDITY INCREASES**. There is a complex mechanism whereby moisture affects the fibre properties. Basically water ingress into the molecular fibre structure increases the volume which takes the form of fibre swelling, with the resulting change in physical properties. This swelling is much greater in cross section than in the length of the fibre. Once the fibre is converted into cordage with its twisted structures the interstices between fibres provide the conditions for more water retention so that fully saturated yarn will absorb more water than the individual fibres themselves. **JUTE** fibre, as an example, under standard conditions will have a **REGAIN** of some 13%, if fully saturated the **REGAIN** will be some 33%. A **JUTE** rope fully saturated will show a **REGAIN** of some 60%. Natural Cordage Fibres, as well as swelling show a general increase in length and reduce in strength when fully saturated. It is interesting to note that **COTTON** (fibre obtained from the seed hairs of *Gossypium*) and **RAMIE** (Bast fibre obtained from the plant *Boehmeria nivea* both show an **PRO- NOUNCED INCREASE IN STRENGTH WHEN WET**. Man-made fibres, such as Nylon, Orlon and Terylene are affected in a similar

manner, although to a somewhat lesser extent.

ENVIRONMENTAL STABILITY - Cordage like other materials are subject to deterioration. Certain factors act directly - the presence of corrosive substances or solvents. Alkalies should also be regarded as deleterious to the strength and life of all cordage fibres. Another pronounced factor is associated with microbiological invasion. Moisture and warmth will accelerate deterioration of the fibre structure. Even when specific factors are not involved there is a general aging deterioration associated with **OXIDATION** or **HYDRATION** in storage or service environment. In general the cooler and drier the storage environment the slower the fibre deterioration.

Both natural and Man-made fibres are subject to weather degradation. In the process of weathering the oriented long chain fibre molecules are oxidised and broken apart into smaller component units. Ultra-violet irradiation is the primary cause, the irradiation preparing the way for the oxygen in the atmosphere to attack the fibres. This action is accelerated further by the presence of water. The size of the cordage and surface area are further contributing factors.

TEST FOR LOSS OF BREAKING STRAIN - Tests have shown the following strength loss taken for 1.5 inch circumference ropes in subtropical weather conditions:-Fine fibre will deteriorate at a faster rate than a course fibre.

PERCENTAGE LOSS IN BREAKING STRAIN.

	After -	6 months	18 months
ABACA (Manila)		32.6%	55.1%
NYLON (Multifilament 210 denier)		30.1%	63.4%
(Monofilament 200 denier)		16.5%	49.4%
(Spun Nylon)		71.0%	87.2%

PERCENTAGE LOSS IN FLEXING DURABILITY.

	After -	6 months	18 months
ABACA (Manila)		52.2%	73.3%
NYLON (Multifilament 210 denier)		less than 20%	more than 89%
(Monofilament 200 denier)		less than 67%	more than 79%
(Spun Nylon)		less than 93%	more than 99%

PERCENTAGE CHANGE IN BREAKING ELONGATION.

	After -	6 months	18 months
ABACA (Manila)		66% gain	9.7% gain
NYLON (Multifilament 210 denier)		8.2% loss	28.0% loss
(Monofilament 200 denier)		16.5% loss	21.7% loss
(Spun Nylon)		37.2% loss	57.7% loss

This data and other studies have shown Nylon will deteriorate at a faster rate than Manila or other natural fibre ropes. However, the initial advantages of Nylon over Manila in flexing as well as strength are so great that despite the more rapid rate of deterioration, Nylon retains its advantage.

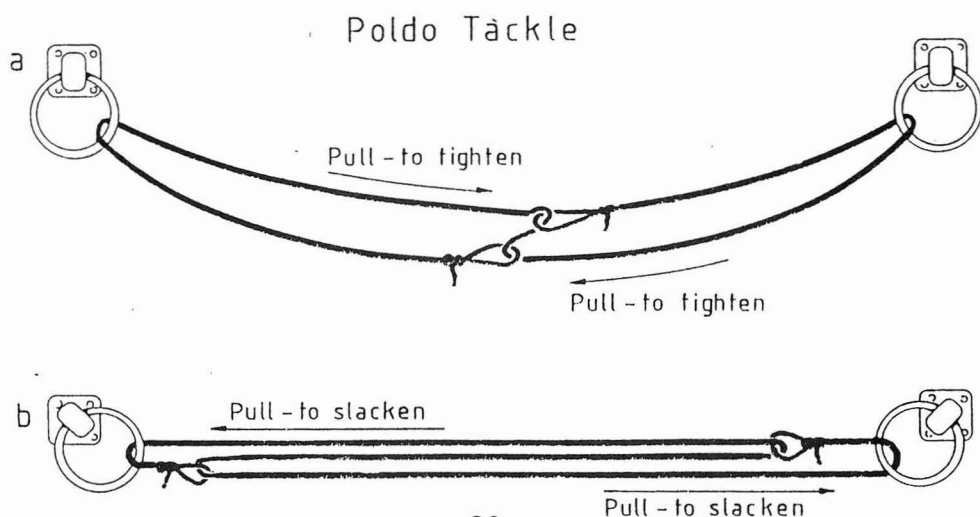
POLDO TACKLE

by 'Fidspike'

Now then - rope and rigging buffs - where does this come from?

I found it in the Century Guide to Knots, by Itallians Mario Bigon and Guido Regazzoni, published in 1981 (1983 in G.B.), but I haven't seen it anywhere else. Did they invent it?

It's ingenious pull-tight/pull-loose contrivance. And it works. So, what can I use it for?



AROUND THE REGIONS

SURREY:

From the Surrey Branch comes the following news,

“GET KNOTTED”

Guildford District Scouts were told to “GET KNOTTED” by the Surrey Branch when Howard Denyer, their Chairman, presented a training knot board, for use in the District H.Q., to Colin Ritchie, District Commissioner for Guildford West.

The board, in four sections, was made as the result of a donation from Twickenham Round Table. Howard had given the Round Table an after dinner speech about knotting and was asked to nominate his favourite charity to benefit from a donation. He nominated the Scouts and then set about looking for a project in which the Knot Tyers could give help with Scouting. The branch therefore decided that a training knot board would be last winter's project.

The four sections of the board are Bends, Hitches, Climbing and other knots. There are 28 knots shown in easy stages, some commonly used in Scouting while others are new variations.

In Colin's acceptance speech he thanked The Guild and The Round Table for making the board possible and said he normally left knotting to the experts but on this special occasion demonstra-

ted how to tie a “Sheet Bend” using the new board.

Martin Perrett (representing Twickenham Round Table) replied that he had just spent the weekend helping some handicapped Scouts at Walton Firs camp site and now knows how the training board will help the Scouters in this interesting passtime.

The presentation took place at the Knot Tyers June meeting which was in the form of a Bar-B-Q evening.

The Surrey Branch meeting dates for the next year are:

14 Sep 92 - 9 Nov 92 - 7 Dec 92
(Christmas Social) - 8 Feb 93 - 12 Apr 93 and 14 Jun 93.

Chairman is Howard Denyer - 19 Broad Street, Guildford, Surrey. Tel: 0483-36401.

Secretary is Peter Goldstone - 23 St. John's Rise, Woking, Surrey GU21 1PN. Tel: 0483 763054.

Meetings are held at the Guildford Scout Centre and unless otherwise advised start at 2000.

LETTERS

Richard HOPKINS from Bristol writes...

Re the 'Toggle Rope' challenge (KM39)

Apart from at least 20 basic and obvious uses - too obvious to list - the toggle rope could be used:

To knock down apples or conkers, in place of a live snake in reptile handling lessons for the nervous, as a weapon - a la martial arts (flailing technique), as backscratcher, coiled up as a pillow, as a fashion accessory, as a camping towel rail, or as a quirt or horse whip. The whippings might be below the eye splices in order to keep the main rope together and prevent the ends from working loose when not under tension. Similarly if the ends of the splice are not tucked in - their disappearance would give visual and tactile warning of the failure of the splice. I do not believe that the eyesplice had quite as large a loop as in the illustration - an eye of about 8 inches deep at most and a toggle of the same length.

Don't get your fingers caught in the loop or between the toggle and loop. If the eye is large then it could be fitted over the toggle in larkshead fashion rather than just looped over the toggle. If several are joined for climbing purposes, put both feet on the toggle (one on each side) to apply pressure evenly.

Most illustrations I have seen show the rope centred at the back of the neck, brought forward on each side of the neck, passed under the armpits and "toggled" near the rear right hip. They remain in place because of the other items of kit carried. This kit tends to obscure the view of the ends of the splices so I don't know if the description given is typical.

A further explanation for the whipping is that the eye splices had started to unwind and the whipping was put on to tighten the main rope and prevent further damage.

BRAIDING SOCIETY

Interest in braiding has greatly increased in recent years, and there is now a need for more communication between those interested in this skill, and it is proposed that a Braiding Society be established.

The Aim of the body is to evolve channels of communication and to promote interaction between those interested in the subject.

If you wish to receive further information and/or wish to be involved, please send a foolscap SAE to:

Edna GIBSON, 70 Furzehatt Road, Plymstock, Plymouth, Devon. PL9

TOM BOWLING & THE GUNNER'S KNOT

Lester COPESTAKE writes...

I feel quite overwhelmed by the response to my note in KM38/10. Kind letters came from so many distinguished guild members: Geoffrey Budworth, Floris Hin, Harry Asher, Pieter Van de Griend, the late Desmond Mandeville, and finally a letter, on p.6 of KM39 from Sten Johanssen. Three points arise.

Firstly, it seems that I was not the first to notice the description of the Gunner's knot on p8 of Tom Bowling's book of knots, and equate it with the Constrictor knot. Prior credit must go to Pieter van de Griend who, in early April 1992, sent me a long letter enclosing a copy of his note of Oct 1986 to S.J. who quoted it in KM39/p6.

Secondly, in the same long letter Pieter set out eight arguments about the identity of the Gunner's Knot! Six of them favour the Constrictor like all but one of my correspondents. Only two are for the Strangle Knot favoured by Sten Johansson.

Thirdly, and here I am in entire agreement with Sten Johansson, the guild should try to find out more about the elusive Tom Bowling.

I feel the anonymous author of the 1866 'Book of Knots' is undervalued and deserves a new investigation.

I can add a little to Sten Johansson's hints in KM39/p6; my copy of the fifth (1890) edition of the 1866 'Book of Knots' is undated and carries no mention of Tom Bowling. However three names are printed in the book. Here are the details:

a. The publishers name on the title page is David Bogue of 3 St Martin's Place, London. (UK).

b. The dedication on the next page names H.R.H. Alfred, Duke of Edinburgh, Capt. R.N. who was the 2nd son of Queen Victoria. He died in 1900 so the "gracious permission" for the dedication must have been for an earlier edition.

c. Vincent Brooks. lith. This is the lithographers signature that appears in the bottom right corner of two of the sheets of knot drawings.

Another clue, (Noticed by Ashley) is a hint of a French Connection in some knot names. e.g. 'Larks Head', now the usual English name for the Ring Hitch, is clearly from the french, 'Tete d' Alouette'.

Another idea came first from Desmond Mandeville. He had written to me quoting page 60 of his old and treasured copy of 'Knots Ties and Splices' by J. Tom Burgess.

J Tom Burgesse's words were; "when the ends are knotted the builders knot becomes the Gunner's Knot". Desmond told me that though there was no illustration, he thought this a clear description of the constrictor. He remarked on the echo of Tom Bowling and guessed a date around 1880 for Burgess' book. (Pieter had also sent me rather similar observations).

Desmonds letter went on to discuss how the Gunner's Knot might have been used and ended; "Here goes for the artillery manuals!"

Meantime I had borrowed a copy of a book on Naval Gunnery called "Guns at Sea" by one Peter Padfield. The attached picture is taken from Page 113 of Padfield's book. It illustrates flannel cartridge bags of around 1755. All are clearly tied with string. Could this be the real Gunner's Knot?

I sent the picture (fig 1) to Desmond who telephoned back in a few days in some excitement. He had been to 'the museum' (at Greenwich?) where he had found a case of old cartridge bags and persuaded the curator to open it. The bags did seem to be tied with Constrictor Knots! Could we discuss it at the guild A.G.M. on 25th April. Sadly, at the A.G.M. we learned of the illness which led to his death not many weeks later. I had not known Desmond Man deville so very long, but I have written all this as an appreciation of a great man among those who study knots.

I hope that members will be able to follow up the clues he has left and at the same time pursue Sten Johansson's

idea for new studies of Tom Bowling, and the Gunner's Knot; perhaps as a sort of memorial.



APPENDIX 1

Fig 1 shows part of the picture I sent to D.M.. It is copied from page 113 of one Peter Padfield's book called "Guns at Sea" published, 1973, by Hugh Evelyn. 9 Fitzroy Square, London W9P 5AH.

It seems Flannel Cartridge Bags containing pre-weighed charges, came in with Anson's innovations around 1755, for use with tin primer tubes which pierced the flannel;. No need to untie the bag knot then nor later, for all exploded.

APPENDIX 2.

Here are two sets of rules. Try to follow them exactly, string in hand. Both will, I believe, produce a constrictor knot.

Tie a cord round a broomstick, while carefully following the text:

- a. of Tom B's and
- b. of Cyrus Day's 1949 book "The Art of Knotting and Splicing" (3ed.p.116) Cyrus Day says:

The constrictor consists of "a half knot under an exterior turn". His picture (139c) certainly shows a con-

stricter. Tom B's words are:

"The cords being simply knotted before being brought out from under the loop which crosses them."

One of the half dozen knots described by Tom B. as a 'simple knot' (fig34/1;p.6) is the first half of a reef knot tied round a spar. This had to be the same as Cyrus Day's half knot, (figs 15b & 22a) which, he says (p.42), is tied with two ends as a binder knot, (as if for a reef) The strangle knot (CD fig 140a) differs and is tied with one end.

Which of the six knots called 'a simple knot' did Tom B mean? Well which did Shelley?

He was both yachtsman and poet...

Here mother tie my girdle for me,
and bind up this hair in a simple
knot; Ay that does well And yours I see
is coming down."

I have quoted Shelley 'with a smile' as a relief from textual criticism, which is always risky. The words are my favourite piece of knotting verse and are from a poem (1819) called 'The Cenci'.

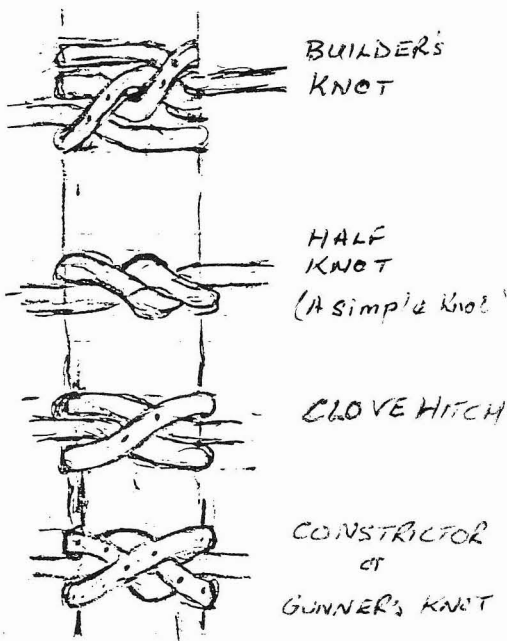
Thus refreshed here is a brief analysis of Clifford Ashley's claim to have invented the Constrictor.

Tom B's description of the Gunner's Knot fits knot #1249 on page 225 of the Ashley Book of Knots which is Ashley's Constrictor. Here he describes how it was evolved and gives it a 'star' meaning "best for its purpose", but did not give it the

'Whale' symbol meaning 'probably original'. A score of other uses are scattered on other pages. Only three rate a 'whale' and for these the 'probably original' is clearly for the use rather than the knot structure. I expect Ashley did think it out for himself, as I know others have done since and doubtless many others had done earlier. But he didn't press a claim in his book and in any case the point is not important for the reason Sten Johansson gave in his letter of Feb 1983 (KM3/13,14).

"A knot cannot be invented, just discovered"

I would add, "we don't so much learn knots; we learn from them".



PERSONALITY PIECE

Vaughan JONES.

Extract from an article written for Newsletter No.1 of the Dept of Mathematics and Statistics, University of Auckland, February 1992, by **Mr G TEE.** *(By Ed. I Regret that space precludes the whole article being reproduced here - I can provide copies if required)*

Vaughan Frederick Randall Jones was born on December 31st 1952, at Gisborne. He attended Auckland Grammar School from 1966 to 1969, winning many prizes in sciences and in languages, and being very active in sports and in music. He then studied mathematics at the University of Auckland, where he gained a Gillies Scholarship, a Fletcher Industries Bursary and a Senior Prize in Pure Mathematics. He graduated M.Sc. (1st Class Honours in Mathematics) in May 1974, and in that same month he presented his first research paper at the 1974 Mathematics Colloquium, held in this Department. The Swiss Embassy arranged for a scholarship to enable him to study at the University of Geneva, where he graduated in 1979 as Docteur es Sciences at the Ecole de Mathématiques.

Vaughan started work for his thesis on the topic on John von Neumann's version of quantum mechanics, but he soon found (as other mathematicians have done) that the special algebras which von Neumann had invented for

that purpose form an interesting branch of mathematics in their own right. Accordingly, he wrote his thesis (in French) on von Neumann algebras. He held a succession of appointments at UCLA and at the University of Pennsylvania from 1979 to 1985, since when he has been based at the University of California - Berkley.

Since 1985 Vaughan has been a member of a major research team at Berkley, investigating applications of mathematics to biology. He is now one of the most widely sought-after mathematicians, with a very busy schedule of engagements around the world.

In March 1990 Vaughan was elected FRS at the age of 37, which is exceptionally early (even for a mathematician). At ICM90, held at Kyoto in August 1990, the winners of the Field's Medals since 1986 were announced, including Vaughan Jones and Ed Witten. Some USA newspapers proclaimed that "Two American mathematicians win Fields Medals" - to which Vaughan responded by delivering his Plenary Address at ICM90 on his researches, wearing All Black costume! The four Fields Medallists, together with the winner of the Nevanlinna Medal, then had an audience with the Emperor and Empress of Japan.

Vaughan is Patron of the New Zealand Chapter of the IGKT and has also accepted our invitation to become an Honorary Vice President of the IGKT.



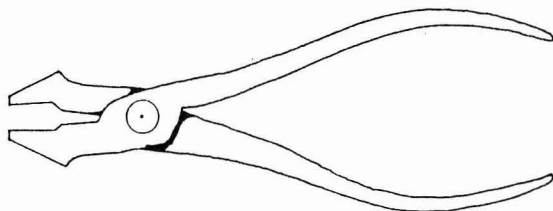
Dr. Vaughan JONES (left) at a presentation ceremony in New Zealand. Vaughan was presented with the Plaque and knotboard "to our Patron, from the NZ Chapter of the IGKT". Vaughan presented **John TURNER** (right) with a 'T' Shirt bearing a special knot and the first few terms of the Jones' polynomial knot

TOOL TIPS

By Geoffrey BUDWORTH

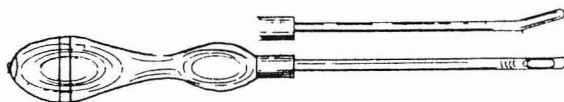
TOO TIP No. 5.

Wide angle pliers, with the jaws filed smooth, are stronger than fingers for kneading small fancy knots into shape. Pound larger knots with a wooden mallet until they bed down neatly



TOOL TIP No. 6

A leather football lacing tool is made for pushing, twisting and tugging reluctant laces through tight eyelets. It works equally well when burying fancy work ends.



By Ed. This is but one variant of lacing tools, which are now getting rarer - look out for the all metal type with two finger loops in the centre of the shaft, a brilliant tool with hundreds of rope-working uses.

BOOK REVIEW

A FRESH APPROACH TO KNOTTING AND ROPE-WORK

Publisher: Charles WARNER, Yanderra, N.S.W. Australia.

Printer: The Book Printer, Victoria, Australia.

ISBN No.: 0 9592036 3 X

Author: Charles WARNER.

Price: Aus\$14.50 (Inc Postage).
UK 5.95 (From Footrope Knots).

Size: A5 format (136x212) 272 pages.

-----oooOOOooo-----

Not just another book on knots, this softback compendium is certainly a fresh approach, but without being controversial; containing some 1500 diagrams of around 500 knots in its 272 pages, making it an ideal 'knotters' companion, Crammed with information (including some of the more recently published) the book is arranged in a logical sequence according to the 'structure' of each knot.

The author, and illustrator, Charles WARNER, is a member of the International Guild of Knot Tyers, and has been studying knots for some 60 years as well as teaching them for 50, backed by considerable practical application experience in a wide variety of outdoor sports, handicrafts and domestic con-

trivances for just as many years.

The Preface is written in a friendly and explanatory manner, followed by a chapter on the 'plan' of the book, which MUST be read and thoroughly understood if the reader is to get the best from the content of the chapters to follow. The illustrations are hand drawn but concise and clear.

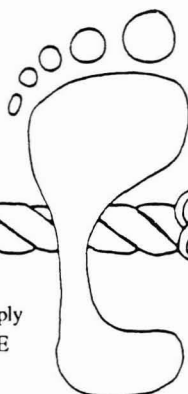
Each of the six parts which follow cover: 'Getting Ready' - covering rope manufacture, care and preparation as well as general knot definitions, strength and security, teaching knots and how knots are arranged. Knots with a distributed nip occupy part two as knots with a concentrated nip share part three. Part four concerns itself with designer knots, including the search for different knots. Part five is devoted to field engineering and covers subjects like surveying, practical geometry, lashing, anchorages and tackles. Finally Part six 'finding things' covers a summary of applications and knots for particular materials, basic functions, special functions, particular occupations and fancy work. Then almost as a PS Charles has slipped in a final page on 'Cats Cradles' - so nobody has been missed out!

A very good index divided into two parts; illustrations and concepts is followed by the final page in the book devoted to the IGKT. G.J.P.

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