

Knot



News

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Longliner and Gillnetting Knots

Pieter van de Griend

Alle soorten van visch werden als versche vis gevangen. 't Zij met de lijn en den hoek of haak, die later ook "het want" en "de beug" werd genaamd; 't zij met netten van aller-hande groote of maaksel naargelang men op meer bepaalde wijze, "op deze of gene soort van visch wilde vischen".

Juul Filliaert, 1937.

Prologue

In this second installment we focus on knots used in longlining and gillnetting, two fish-catching techniques with ancient roots. How ancient is hard to tell, but on the North Atlantic this kind of fishing activity has been recorded in official documents since 1425 [5,p20], [16, p7].

As most of my deep-sea fishing experiences stem from the Færoe Islands I will describe some of the methods I have collected on that archipelago and enhance them with references in the global literature and personal finds from elsewhere.

One way of catching fish is by lowering a long rope with baited hooks into the water. Waiting a while before taking it up again in the hope that there were fish down there that cared to swallow the bait and

hook. This passive method of fishing is called **longlining**.

Another way of catching fish involves sinking rectangular net-sections of about one fathom, i.e. 1.80 meter, in height and 100 meters in length to anywhere in the vertical water column above the seabed. Pelagic species will swim against the net, but are unable to go through because the mesh is too small. When they try to back out their gill covers get snagged in the netting, capturing them. This method of fishing is called **gillnetting**.

These descriptions are simplistic, as they ignore many difficulties involved in real-life longlining and gillnetting. The constructs are usually a few miles long, you have to prevent them from dragging and chafing over the ocean bottom and above all you have to be able to find them and heave them back onto the deck again. With many 150 kg halibuts from 200 meters depth, it is not hard to picture that the involved knots must be of specific construction.

Although both fish-catching techniques differ fundamentally they share common functional requirements. The problems with respect to (1) anchors, (2) connectors and (3) buoyage are identical and often solved with the same knots. Moreover, fishermen swap ships like stamp collectors swap stamps. Many fishermen thus try

their hand at different fish catching techniques during their careers. Of course this behavior inter-breeds knotting techniques.

Longlining

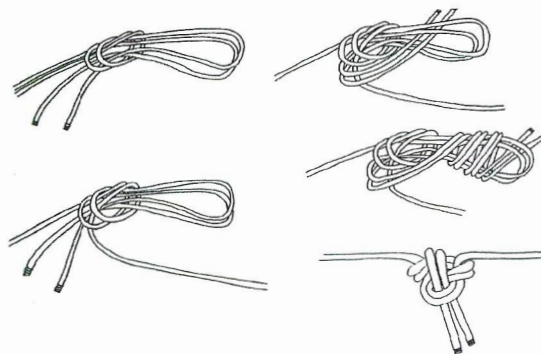
A longline segment can consist of up to 350 fathom lengths of up to 12 mm diameter. They are connected to each other with an elaborate knot construction. Every umpteenth connection is replaced with a different, special knot, to attach buoys and grapnels to the line. The buoys, fitted with radio transmitters enable relocation of the line by the boat. The grapnels have to prevent the line from dragging over the seabed.

Longline connectors

Longlining has been subjected to many technical developments. Throughout time lines have been made of the best of natural fibers, such as hemp. Such lines were of much lesser dimension than the lines made of artificial fibers. Whereas line diameters in use today are typically something ranging between 5 to 12 mm, the old hemp lines were 3 to 5 mm. Whereas a modern line segment can be between 100 and 350 fathoms (i.e. 180 to 630 meters), the old ones were seldom over 100 fathoms. Let's first explain how the old connectors were made.

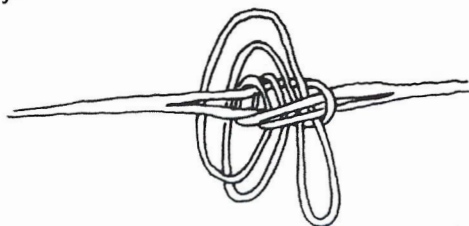
The ends of a line segment were laid up into a Wall Knot to prevent unraveling. To join two line segments, both ends were tied into a Doubled Slip Knot. Next the standing ends (stends) were taken away from each other and the working ends (wends) taken under the knot and tucked through the Slip Knot's loop after zero or more roundturns around that loop.

Isak Matras, an elderly very experienced longlinerman from Klaksvík, the Faroese longlining harbor, showed me the bend with the roundturns. He told me that it had been used up to around 1955 when it went out of the commercial longlining scene due to a preference for a method I will describe below.



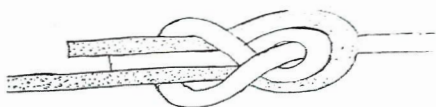
The method without any roundturns was shown to me by Aage Vestergaard from Tórshavn, who still used it during his occasional longlining sprees in the 1980's. He said to have learnt it from his father around 1920. If this method is carefully drawn taut it results in a compact bend. The Klaksvík method is rather difficult to draw taut.

Nowadays line segments have spliced-in eyes of around two feet in length. The longline connector has become a Doubled Sheet Bend, in which the second (redundant) tuck is left slack. This has the effect of toggling the bend and causes it to open relatively easy.



Out on the ocean you can encounter all sorts of superstitions. Many fishermen cannot swim and refuse to wear lifejackets. It is not that they hate (sea) water, they are convinced the best place out on the puddle is your own tub. So, by not being able to swim they will do their utmost to stay onboard. This aversion for water extends quite far. They save on drinking water by not washing themselves during a trip. They claim the soap crackles their tender hands and, moreover, scares off the fish. Likewise the engineers have a good excuse for not touching the longlines. The oil and grease on their hands scares the fish too. Species such as salmon are very sensitive to oil and soap, it

seems. Credibility to this nonsense is also derived from the Double Bastard Weaver Bend [1, #491, #1436, #1438], which has a more enchanting name in the Nordic languages, *Vevkonuknútur*, (Weaver Woman's Bend). It was first shown by Hjalmar Öhrvall in 1908, used for salmon longlining [19, p47]. Superstition has it that the perpendicular protrusion of the common Sheet Bend causes turbulence, which the salmon detects. This can be avoided by tucking the working end as shown below. Explaining why salmon fishermen use this bend.

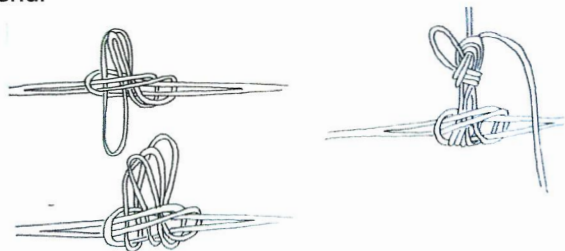


Surprising is the lacking (Double) Fisherman Bend in contemporary longlining. The spliced loops entered the scene to replace ravel-preventing Wall Knots. Fishing technologies with non-raveling media still tend to use the principles found in the (Double) Fisherman Bend.

Buoy and grapnel-related knots

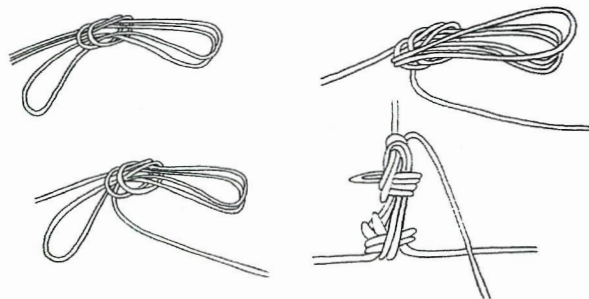
Buoys and grapnels are to be attached to the longline. To do so, one requires loops at regular intervals. This is achieved by constructing the connector knot in a special way. In Faroese this knot is called **Meðaknútur** (Middle Knot).

Make a Slipped Sheet Bend and take the wend under the knot to meet up with the loops formed by the slip. It is important that the wend is taken **under** the knot. Taking it the other way around, the bend will work loose and may become a ravaged tangle with the hooks. The buoy and grapnel are connected to the longline with a single line each of which is attached to the three loops with a Double Sheet Bend.



Usually the *Meðaknútur* described above is made every seventh or so line segment, but for certain species, it may be necessary to lift the line somewhat off the bottom of the ocean. Here buoys are also hitched onto the middle of the line segments. This requires a loop knot on the bight. The way this is done was shown to me by Eivinn Jakobsen from Sørvágar.

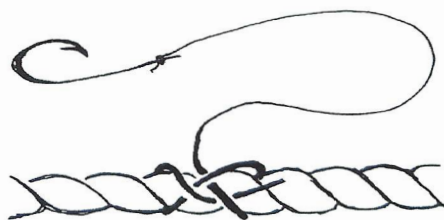
First make a Doubled Slip Knot on the bight, part the stands, away from each other, and take the single loop from under the knot up over to meet with the other two. Now we also have three loops on the bight to which the buoys and grapnels can be attached.



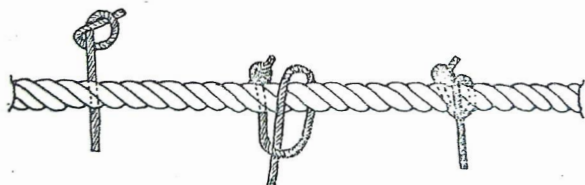
The Doubled Slip Knot is a much used knot in longlining. Another example of its use is the tying up of both ends of a ready-baited longline segment [15, p27]. During a visit to the Tokyo fish harbor in 2003 I seen many instances of the Doubled Slip Knots just described.

Snood-related knots

The **snood** is the little piece of twine with a hook. Longline snoods bring forth two problems. How to attach the twine to the longline and how to attach the twine to the hook? In the olden days the first problem was solved with a Groundline Hitch [1,p49, #277]. This is a truly neat hitch. Note how it exploits the lay of the rope to anchor itself.



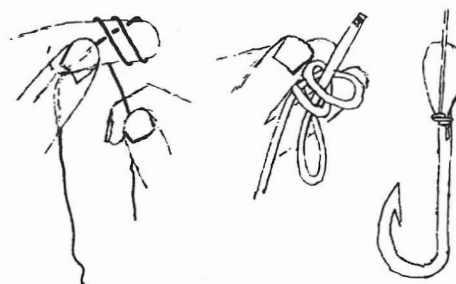
This attachment developed into a more secure construction. The snood is taken, with hook and all, through the strands of the ground rope and Half Hitched into place [3, p177], [10, p120], [15, p24].



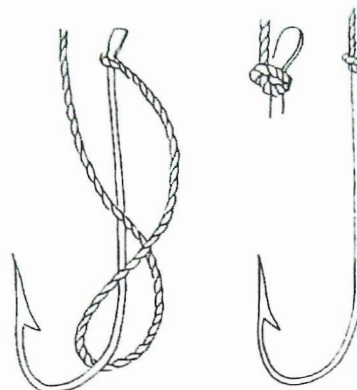
There exist many variations to this theme. Below is one from Klaksvík, shown to me by Johan Sølvehøj in 1988. Youngsters often bait longlines after school hours to make some pocket-money. In Tvørøyr, on the island of Suðuroy, I once observed three boys in an "egningarskúra" (baiting-shed) using three different hitches.



How to attach the twine to the hook depends on whether or not you have an eyeless hook [9], [15]. Many methods are to be found, ranging from Double Overhand Knots to elaborate Blood Knots.



The following method without eye is also used for attaching hooks with eye [10, p120, fig.14], [11]. The 2-strand twine is forced around the flat end of the hook, secured with a Half Hitch. Hooks with eyes have the twine attached with a Lark's Head.



Gillnetting Knots

A gillnet-section is basically a simple object. It consists of a long strip of netting, reinforced along the rims with ropes. The bottom rim, the footrope, is weighted. The top rim, the head rope, is equipped with floats to vertically position the net in the water column. Such sections are connected to each other to cover immense stretches of sea. On deck gillnet sections are stored in large baskets. Sometimes it is coiled in its entirety on a drum, but that protracts inevitable repair time. The sections, however, have to be connected by means of knots.

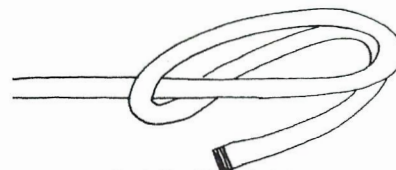
Gillnet connectors

The bend traditionally used on the North Atlantic for connecting gillnet segments is the Full Carrick Bend [1, p263, #1439]. It made quite a reputation for itself

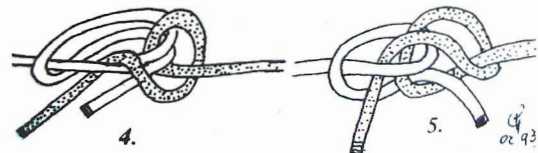
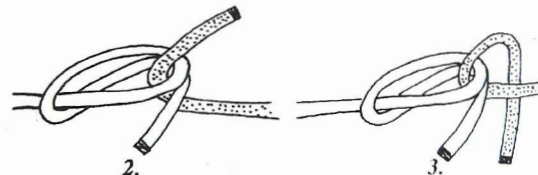
in the Greenland fishery over the past 400 years. For this reason it is still known as "*Grønlandstik*" in many of the Nordic languages [6, p67, pl.28, fig.8], [12, p39, fig.51], [19]. Though not everybody follows, as Ashley notes [1, #1440]. In 1923 Corn  t did not know of any (Swedish) name [2, p22, fig.39] and in 1936 Paulsen [14, p31, fig.63] shows a Single Carrick Bend. Not as grave as Olsen in his *Fisherman's Seamanship* though. He names the Carrick Bend a Granny [13, p19]. Strange part is that Olsen gives no Granny! Fishermen just do not seem to care. They are only interested in the pragmatic aspects of their knotted structures. Fancy knot names are wasted on them.

Anyway, the bend is also related to the inhabitants of the Vestmannaeyjar Islands, to the South West off Iceland. They are said to be notorious gillnetters. Following up on this Icelandic connection, Gu  na Þorsteinsson from the National Fishery Research Institute in Reykjavik, wrote to tell me about the use of this knot in the Icelandic fishery scene [18]. Although often appearing in print, it is frequently wrongly drawn [4,p137], [17,p69]. The Backhanded Hitch section usually gives some a clue as to which knot is intended to be illustrated. Many fishermen have shown me this majestic bend, mentioning names like "*netahn  tur*, *g  rnakn  tur*", which translates into net-knot.

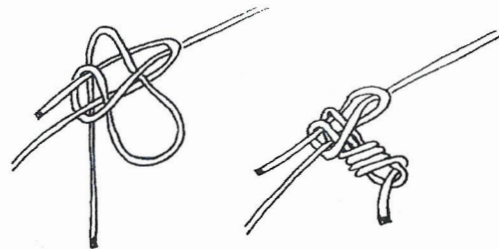
Why did the Carrick Bend get such acclaim? Opening frozen knots in the harsh Greenlandic climate often requires a gentle nudge with a sledge hammer. The Carrick Bend's easy loops allow for easy opening. Fishermen have a specific way of tying the Carrick Bend. Their method involves 2 men and produces the Carrick Bend in ready-to-use form [7]. This eliminates the need to put in little seizings to prevent the knot from capsizing into its preferred, natural state.



1. A Backhanded Hitch Section.

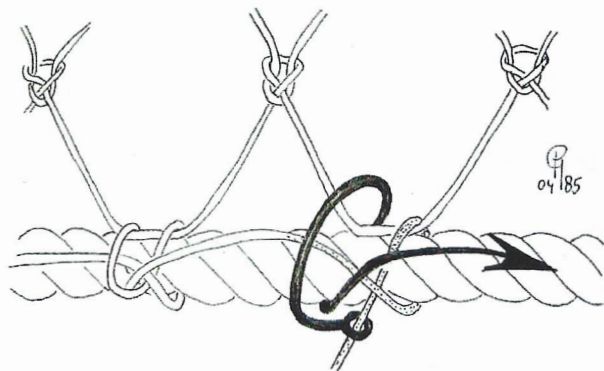


The Carrick Bend is not in widespread usage among gillnetters, though. The hot summer of 1991, gillnetting on the Baltic Sea, I learnt that the connectors were Slipped (Double) Sheet Bends with any number of turns [3, p177], [8], [9].



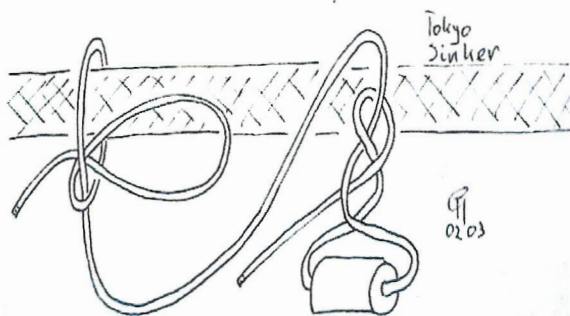
Footrope-related knots

Very often the structures hitching the netting onto ground- and footrope are identical. In Icelandic and F  roese the most common hitch is called "*s   ukn  tur*", which means "sideknot". In the next installment of this series we will see more of this type of structure.



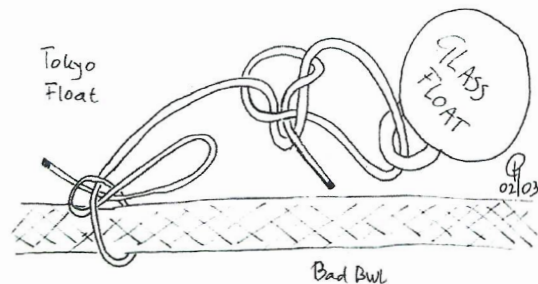
There are many variations in the hitch-repertoires used for attaching netting to rope.

On a boat moored along the Shinagawa quayside, in Japan, I noticed the following two knotted structures. The first is used to hitch cylindrical lead sinkers to the ground rope. FAO mentions these structures' usage by Hokkaido crab fisherman in the North of Japan [3, p111].

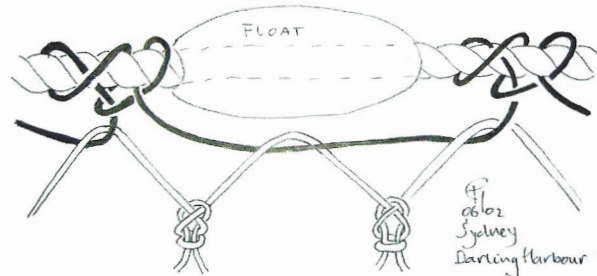


Headrope-related knots

In our next installment we shall be discussing the knots used to attach netting onto ropes in more detail. For now I want to mention two samples. The first is from the Japanese boat mentioned in the previous section. Here a "Bad Bowline" and Slipped Half Hitch are used to attach the glass float to the head rope.



In the Australian National Maritime Museum I chanced to study a display with some old shark gillnets in 2002. The meshing consisted of Double Sheet Bends and was attached to the head- and footrope with an alternating mix of Clove Hitches and Capsized Rolling Hitches.



Epilogue

We have seen how gillnetting and longlining fishermen employ simple, yet extremely effective and secure, knots. They construct fish-catching objects which can be many miles long. The efficiency of these devices should not be underestimated. Usage of synthetics in this field has created some veritable natural hazards. If left unattended, or lost, these objects remain drifting and operational till growth causes them to sink to the seabed. By that time many an unfortunate fish, dolphin or turtle may have suffered a terrible death. This is saddening, yet frequent, news mostly from environmentalists battling gillnetters operating the Pacific and Mediterranean waters.

Our next installment in this small series of industrial fishermen knots will be concerned with knotted structures used by trawlermen and their netting activities.

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Stiphout April 2005

IGKT- Pacific Americas Branch AGM 2005

by Roy Chapman

This year the AGM was held over the July 4th weekend, to correspond with the Festival at the Center for Wooden Boats in Seattle, Washington. This is a wonderful venue, on the water at Lake Union, within sight of the Space Needle. Our AGM chairperson, Dennis Armstrong, did a great job getting us a prime indoor location, plenty of stage time and a secure overnight storage. He also got a good location for our meeting and dinner, within walking distance of the show site. The Tall Ships were in Tacoma at the same time so the CWB did not have the anticipated crowd, I have been told over 10,000 visitors attended in the past.

Patrick Ducey kicked off the weekend with a tour of one of the mega-yacht factories. After all that we all met at CWB and set up our 8 tables. Patrick set up his wonderful display of complex Turk's Head Knots: cruciform, chalice, goblet and a chess set, as well as the tools and templates that he has developed.

Dennis brought the products of "The Knotted Line" – fenders, mats, bell ropes, becketts and other masterful work. Carol Wang set up her working display of Chinese Knotting. Lindsey Philpott and Kim Moore brought many display items from the PAB collection, as much as the airlines would permit.



Roy Chapman & Pat Ducey

Bob and Sue Bosch donated hundreds of gallons of bottled water pre-packaged in IGKT-PAB logo labeled 20 oz bottles. They (and Karin Bosch) attended our "on stage" displays and did some touring of the Puget Sound Area. New

member, Brian Broadmoor, spent the day with us working on the mathematical implications of spherical knots as well as joining us at dinner. Maggie Machado set up her displays of the whole range of split ply braiding, mats, Turk's Heads and her fixed display frames of the wide variety of fancy knot work that is at her command. She was working under "torn timing", for (as a surprise) her family had taken this opportunity to gather from many places to celebrate Maggie and Doug's 40th Wedding Anniversary! Now, I ask you, given a family gathering for a "big deal" in your life or spending time with knotters... well, our Maggie once again treaded the needle and spent time doing both.

Your President dragged a few hundred pounds of display knots and teaching aids and piled them in his usual disarray on two tables. Although the CWB prepared a printed schedule, the visitors seemed to shun all of the demonstrations. Not only were our presentations almost unattended but the presentations by sailmakers, bronze founders, net makers, varnishing and woodcarvers were often presented to an audience of one (or worse).



Splicing Demonstration

The total opposite was true at our tables. This was where we could catch them one by one: "What knots do you tie?" "So what keeps your shoes from falling off?" "Are there no knots in your world?" Many just want to move on but some will stay to talk about knots. Isn't that why we do what we do these shows? I never got to see the rest of the show and I learned to

eat standing up, tying knots one handed while balancing a plate of food.

One bittersweet part of the event was the memorial gift of Clint Funk's Training Table by his son Steve. I had a brass plaque engraved to affix to the table. With all the bustling about at set up we were not able to pick up the table, but when we opened the doors on Saturday AM, there was the table, thoughtfully delivered by Steve in the night. The table will get many years of good use and the plaque will let people know how it came to be with us.

Patrick put a cap on Saturday evening with an excellent salmon BBQ at his home with his wife, Kathy, making us all feel like part of an extended family.

Monday was another full day with Dennis and me holding out until they locked the doors... and fireworks too!

In summary I'll say that we recruited some new members, taught hundreds of people new skills or refreshed their old ones, handled the AGM business in one hour and, thanks to some very generous donations, put money in the IGKT-PAB treasury. Chairpersons have been appointed for AGMs in 2006 and 2007 both events will be in new locations so other members will have the opportunity to attend without the need of extensive travel. Look for San Francisco in '06 and (perhaps) Vancouver, BC in '07.

**Tall Ships Challenge
Pacific Coast 2005
Port of Los Angeles (San Pedro)
by Jimmy Ray Williams**

The Port of Los Angeles hosted the Tall Ships Challenge on August 11th through the 14th. I had the good fortune to be on hand all four days.

From about 8:00 AM until 1:00 PM each day I was a volunteer worker with the Los Angeles Maritime Institute (LAMI). As such, on Thursday I had a good view of the Parade of Sail into the main channel and was able to get some pretty good pictures of the Tall Ships as they sailed in. There were about a dozen or so in the parade and a couple of others joined the festival later in the weekend.

The Los Angeles Fire Department's *Fireboat 2* led the Parade of Sail with most of her water cannon firing full blast.

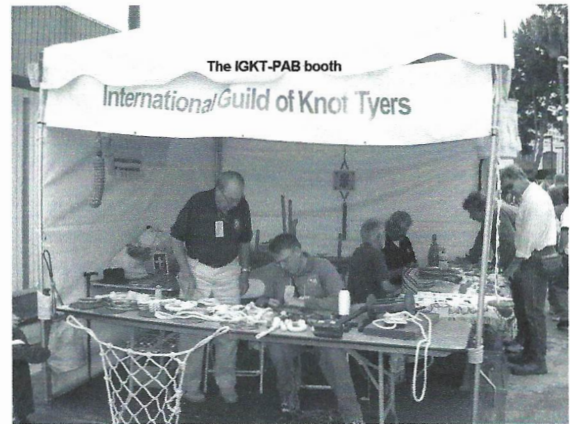


The first tall ship was the *Exy Johnson*, one of LAMI's tall ships used by their Topsail Youth Program. (I've been lucky enough to do some sail training on her a few times.)

The largest of the tall ships was the *Cuhuhtemoc* at two hundred seventy feet.

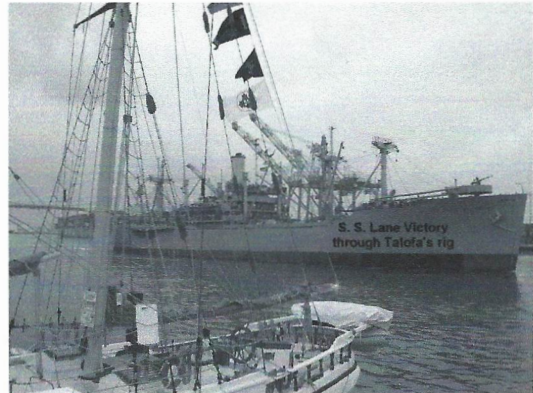


Then at approximately 1:00PM, I would join other IGKT-PAB members at our display booth.



Joe Soanes Darrell Ausherman
Tom Mortell Lindsey Philpott

Joe and Tom were there all day, every day. Also present a couple of days were Terry Sebolt, his wife and 17-month-old son.



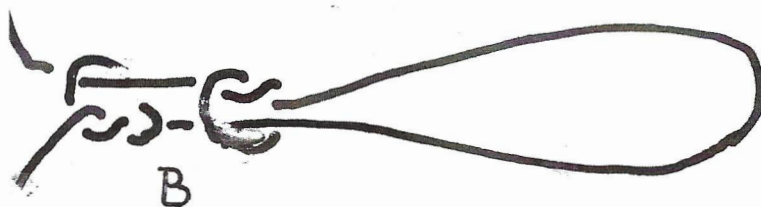
We had many visitors with many questions and between all of us I think we actually answered most of them. Sunday was the busiest day with too many folks to even attempt to count.



The Fisherman Knot

by Percy Blandford

The article "On Fisherman's Knots" in the July 2005 KN is a welcome exhaustive coverage of the subject, but it set me thinking about what is generally understood if the name *Fisherman Knot* is mentioned in England. This is a knot (A) used by rod fisherman on rivers and lakes for repairing the fine smooth line they use. It goes back a long way in angling history and is simple and effective.



Knots used by climbers could be a matter of life or death. European climbers carried out research into the knots they needed. The knots they had used for traditional natural fiber hairy ropes were not safe on the smooth synthetic ropes they are using now. They improved some traditional knots with extra turns or locking

tucks, but when it came to joining ropes they discarded traditional knots and settled for the Fisherman Knot, although it had previously only been thought of in relation to fine fishing lines.

When Lt. General Robert Baden Powell, the hero of the siege of Mafeking in the Boer War, wrote the book "Scouting for Boys" in bi-weekly parts in 1907, he listed tenderfoot knots for beginners. All but one continued when the worldwide Boy Scout movement developed from his writings. The one discarded was the *Middleman Knot* (B). This has a resemblance to the Fisherman Knot and he probably thought boys would be intrigued by the ingenious method of tying it.

It is intended as a way to put a loop in a rope without using the ends, as when an additional climber is to put a rope around his waist when there are already climbers looped at the ends, or if help is to be given by a shoulder pull when hauling a load.

There is a problem. If the load comes one way, all is well. If it comes the other way the parts of the knot could slide and the loop get smaller, which might not be appreciated by the person whose waist it is around!

The best use of a Middleman's Knot today is probably when you want to impress an audience with your skill as a knot tyer. Lay out enough rope (C) and where the limit is to come cross the parts (D). Turn the end of the loop back over the crossing (E). Reach through the crossing and pull the end of the loop through the space. That is all. The knot is formed. Your audience is impressed!

