CHAPTER 3

KNOTS

Introduction

1. The ability to tie the right knot when one is needed is a most useful accomplishment. In adventurous, military, or camping activities, knots are often needed and being able to tie the right one is likely to make your life much more comfortable and in an emergency might even help to save life — eg tying a rope around someone prior to being hauled up a cliff. There are other situations in which your knot tying skill can avoid frustration — eg does the knot you tie in your shoe laces slip? Can you tie a neat knot in your tie? The right knot is one that will not slip or jam under the strains that are put on it and can be easily untied even if the rope swells when wet.

2. There are many knots, most of them designed for a particular purpose, and many of them have several variations. In addition there are different ways of tying most of them; you might be able to begin right-over-left or left-over-right, or pass one rope on top of the other instead of underneath and still end up with the same knot. However, the selection here and the method of tying should cover most of your needs and give you a good introduction to the subject.

Definitions

3. Knots are described in technical language and so it is necessary to learn the language. Fortunately there are not many special words and they are quite clear:

a. *Bend*. Knots used for joining ropes together are called bends.

b. *Hitch*. Knots used for fastening a rope to a spar or any other object are called hitches.

c. *Bight*. A loop tied in a rope is called a bight.

d. *The Running End and The Standing Part.* The end used for tying is called the running end and the part running back to form the main rope is called the standing part.

Rope

4. Rope is made from fibres which are long thin threads of either a vegetable or man-made base. The fibres are teased out, laid together and then twisted together to form a yarn. Several yarns are then twisted together to form a thick strand. Finally, three strands are twisted together to form a rope called a hawser-laid rope. Note that more than three strands can be taken and twisted together to form other rope lays with different names — but you are not likely to use other than hawser-laid. Hawser-laid ropes may be made with either vegetable fibre or nylon fibres.

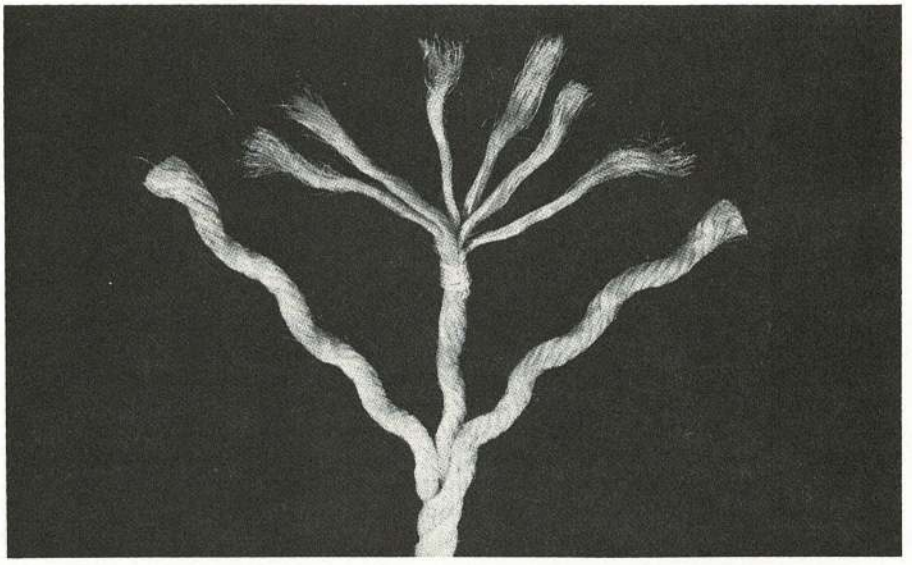

Fig 5 Hawser-Laid Hemp Rope
Fibres are twisted together to form a *yarn.*
Six yarns (in this rope) are twisted together to form a *strand.*
Three strands (in this rope) are twisted together to form a hawser-laid rope. (Remember that a hawser-laid rope can be made of nylon as well as hemp).

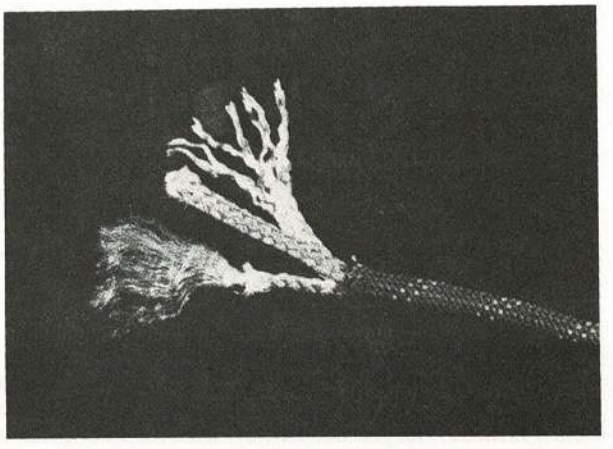

Fig 6 Kernmantel Rope
This rope has a braided sheath, three plaited strands, six lightly twisted yarns, each yarn being made up of fine nylon filaments running the length of the rope.

5. A vegetable fibre hawser-laid rope (Fig 5) is often called a hemp or manila rope because it is made of fibres from Italian hemp or from the abaca plant grown in the Philippines of which the city of Manila is the capital. These fibres are short, between .61 metres (2 feet) and 1.22 metres (4 feet) long, and they have to be spun very tightly into yarns to bind them firmly together so that they hold by friction when the yarn is subjected to strain. The yarns are then twisted together to form a strand about 275 metres (900 feet) long but when three such strands are twisted together to form a rope the length of the rope contracts like a coiled spring and becomes about 220 metres (720 feet) long. Such a rope is light, strong and flexible and it has enough stretch to absorb shocks without breaking, but because of its vegetable nature, it will rot quickly (in spite of being rotproofed) if left or stored damp. In any case it will deteriorate (become weaker) with age. It also contracts, tightens and becomes stiff and difficult to manage when wet or frozen. Thus, although it is a good cheap rope for many domestic circumstances it is unlikely to be used in circumstances where one's life might depend on its strength, eg in mountaineering.

6. A hawser-laid rope made of artificial fibre, such as nylon, is made from very long fibres equal to the total length of the rope. Thus it is stronger than vegetable fibre rope and has more "stretch" capacity without any of the disadvantages except that it, too, becomes weaker with age and should not be expected to last forever. In addition it melts with heat and, being soft, can be damaged more easily — eg a nylon rope run out quickly over a rock edge could be damaged both by the heat of friction and by the roughness of the rock surface. Similarly if one nylon rope runs over another nylon rope at high speed both could melt.

7. In Europe another kind of rope is popular and, now that we are in the Common Market, you may come across it from time to time. It is called Kernmantel rope (Fig 6). This type could be twisted or it could have a very large number of filaments running more or less straight down the length of the rope. In either case the inner core of filaments is contained in a braided sheath — thus it is sometimes called "core-and-sheath" rope, which is what its German name means. When the filaments are twisted into yarns they are not twisted as tightly as vegetable fibre; the yarns are plaited into strands and the three strands are laid straight together. The Kernmantel rope is very strong; the outside cover gives some protection against damage when running out over a rough surface, and it has comparative freedom from twisting, but it can be springy and knots tied in it can tend to work loose. Also, it can be damaged or even broken inside its braided cover and a cursory inspection of its outside surface would not reveal this dangerous state. Thus, when this type of rope is used it is usual to keep a log in which the use to which it has been put is recorded so that any incident likely to cause internal damage can be made known to any other user.

8. Whenever a hawser-laid rope is cut, its yarns and strands will untwist and quickly make an untidy mess unless they are contained and kept tight. In hemp ropes these ends must be whipped (Fig 7) or be kept tight with a piece of tape wrapped firmly around the strands; in nylon ropes advantage can be taken of the fact that nylon melts when hot, simply heat the end until the nylon melts and thus seals itself (Fig 8). Wear gloves and smooth the hot end with your fingers so that the end will run smoothly through knots or over pulleys; if there are lumps of nylon remaining the end will not run freely. Sometimes a shop will cut nylon rope with a special knife heated by electricity so that it automatically seals the end during the cut.

(AL4, Sep 78)

Whipping the Ends of Cut Rope

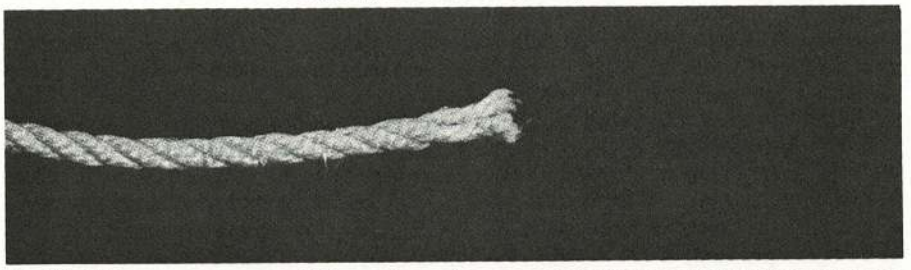

Fig 7A Whenever a hawser-laid rope is cut its yarns and strands will untwist and quickly make an untidy mess unless contained and kept tight. This is done by whipping. Follow Figs 7B–7E.

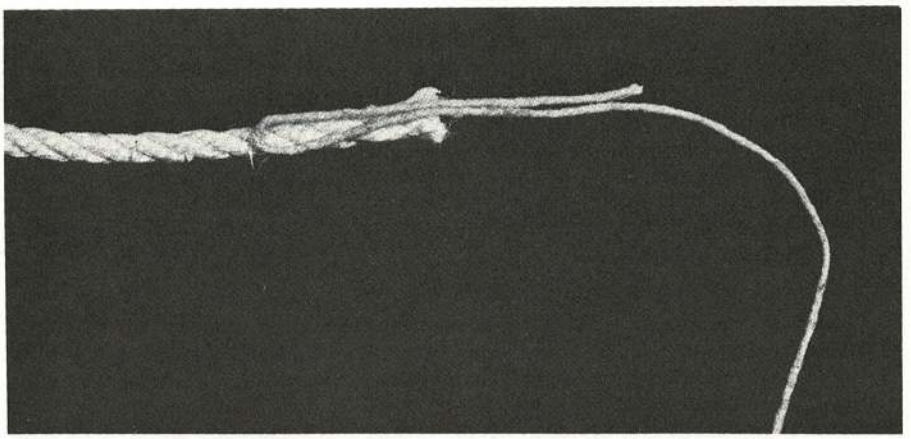

Fig 7B Double the whipping and lay it along the rope. (This whipping cord is too large — for clarity; in practice use a thin, strong cord).

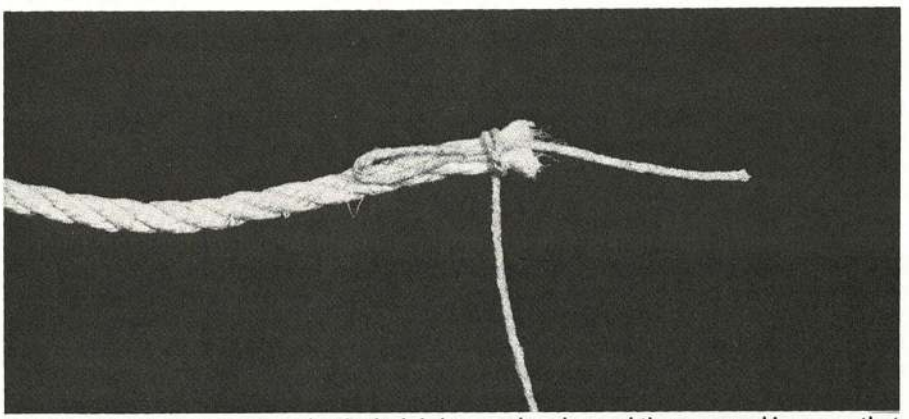

Fig 7C Take the long end and twist it tightly round and round the rope making sure that one "turn" does not ride over another.

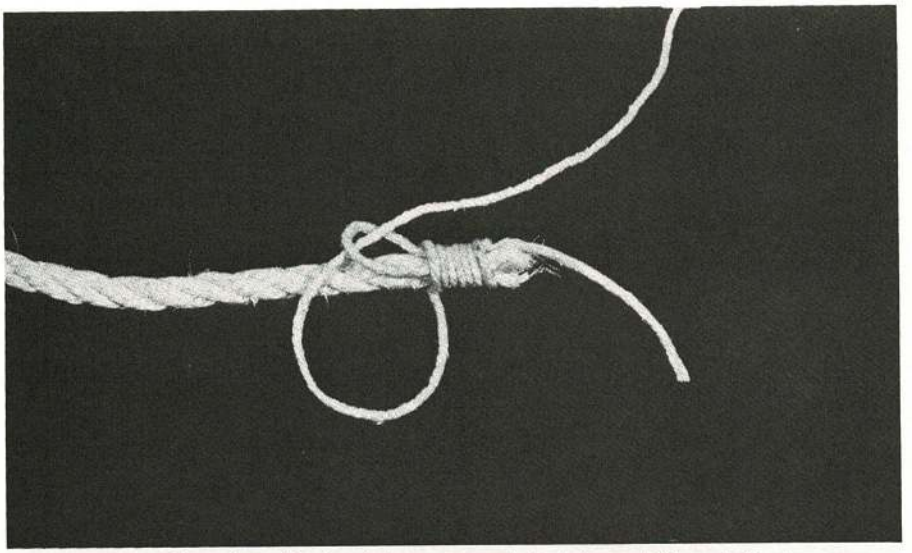

Fig 7D When the whipping is long enough feed the end through the loop.

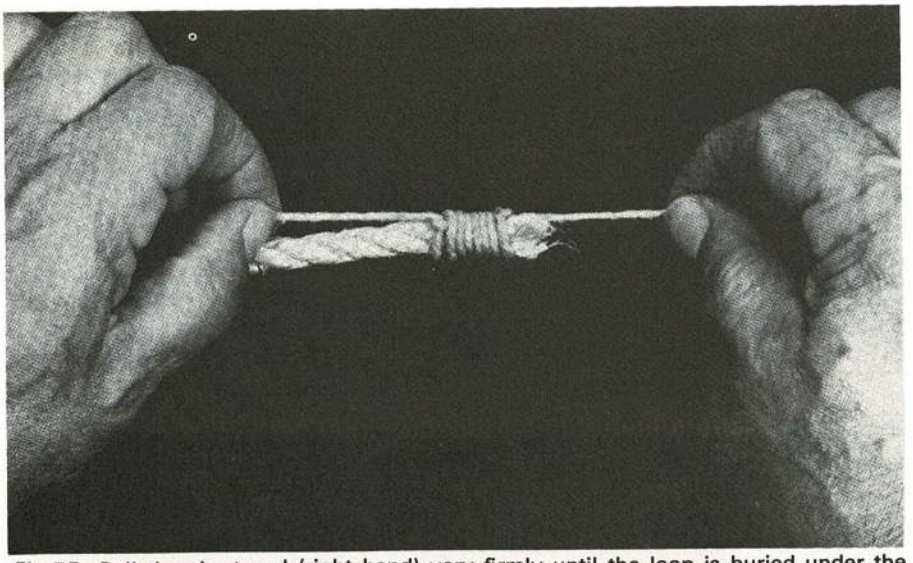

Fig 7E Pull the short end (right hand) very firmly until the loop is buried under the whipping. Then cut off both ends close to the whipping. (This whipping is left loose so that you can follow the sequence more easily. In practice, when bound tightly and the loop is pulled underneath it will hold very well).

Sealing the End of Nylon Rope

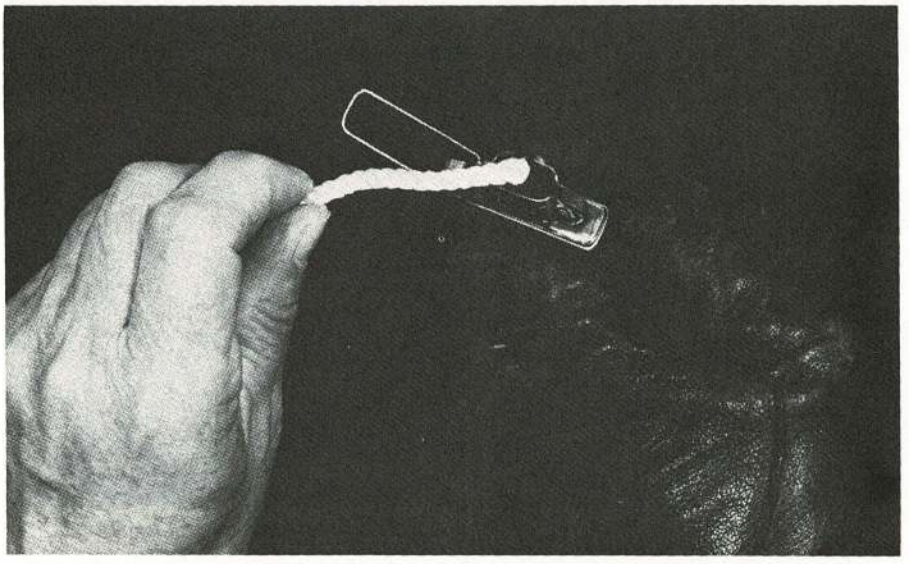

Fig 8A To seal the end of hawser-laid nylon rope simply heat the end until the nylon melts.

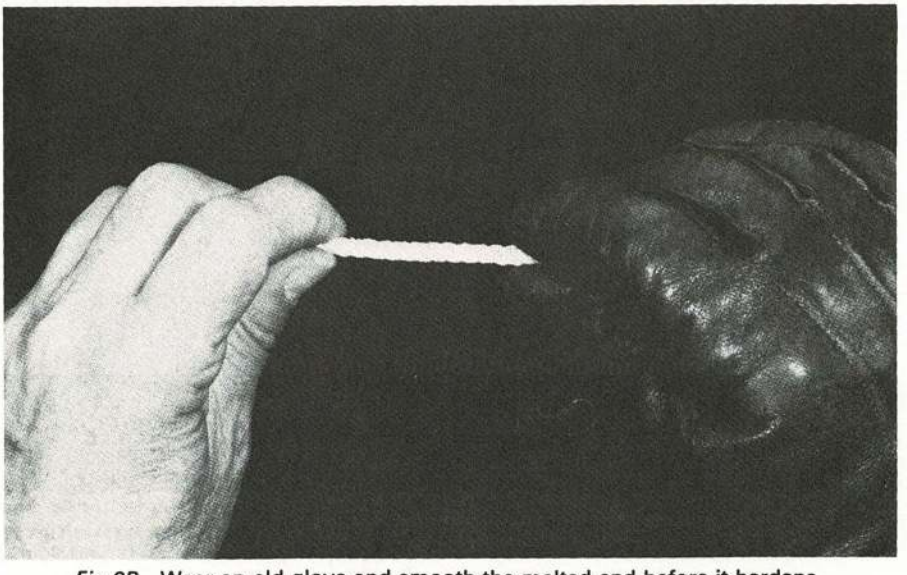

Fig 8B Wear an old glove and smooth the melted end before it hardens.

(AL4, Sep 78)

9. A hawser-laid rope does not take kindly to being bent or twisted in the opposite direction to the twisting of its strands. Thus to coil a rope (Fig 9) coil it with the twist; and when tying knots make loops or bights "with the twist" whenever possible.

10. Be careful when referring to the size of a rope. Hemp ropes are usually referred to by their circumference but nylon ropes are referred to by their diameter and sometimes by a number. Nylon rope sizes are:

No 1 Nylon 5 mm diameter
No 2 Nylon 7 mm diameter
No 3 Nylon 10 mm diameter
No 4 Nylon 11 mm diameter

You would need a 35 mm (circumference) hemp rope to get one the same size as a 11 mm (diameter) nylon rope.

To Coil A Rope

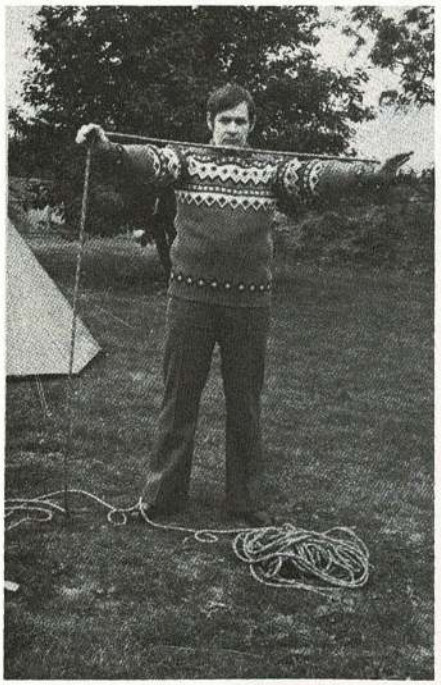

Fig 9A Start measuring off about 1 metre of rope.

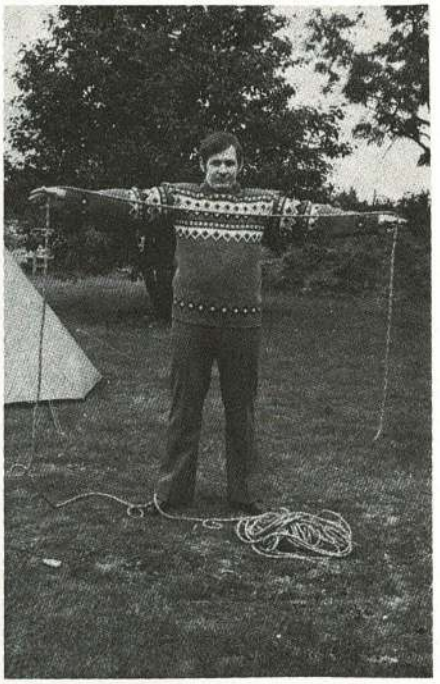

Fig 9B Let the 1 metre hang then measure off a length of rope equal to your full arm stretch.

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Fig 9C Coil it against the hanging end (*with* the natural twist of the rope, NOT against it).

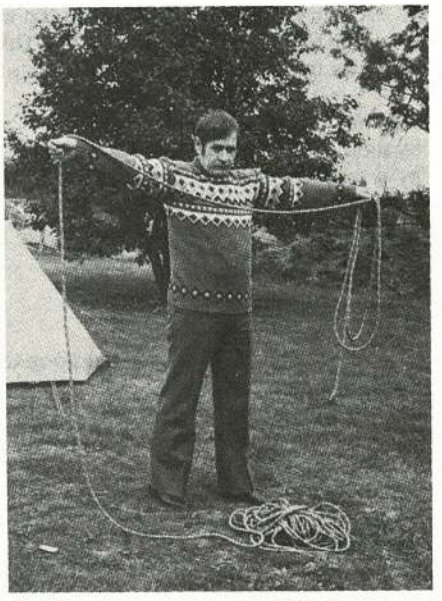

Fig 9D Keep measuring off your full arm stretch and coiling . . .

Fig 9E . . . until you get near the end.

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Fig 9F Then form a loop in the final piece of rope and lay it along the coil (as for a whipping).

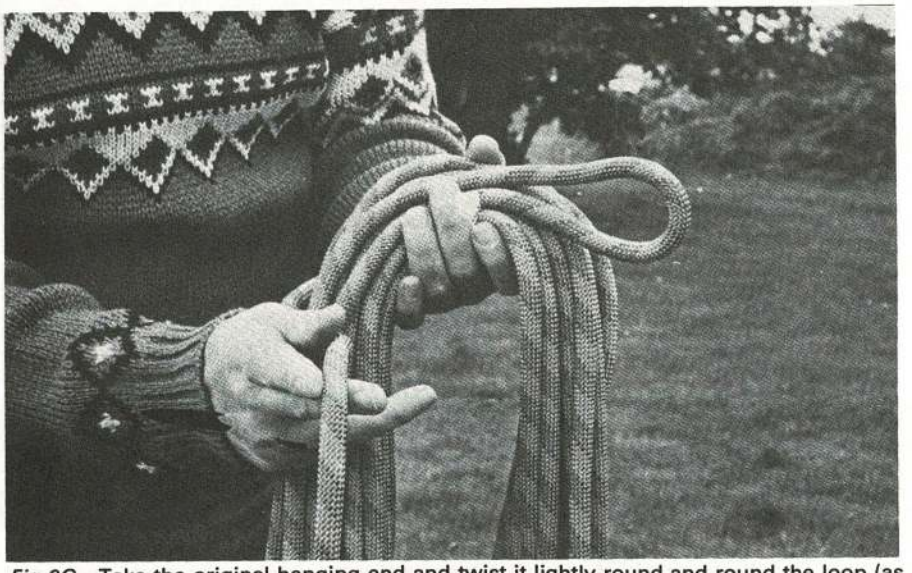

Fig 9G Take the original hanging end and twist it lightly round and round the loop (as for a whipping) . . .

Fig 9H . . . and then pass it through the loop.

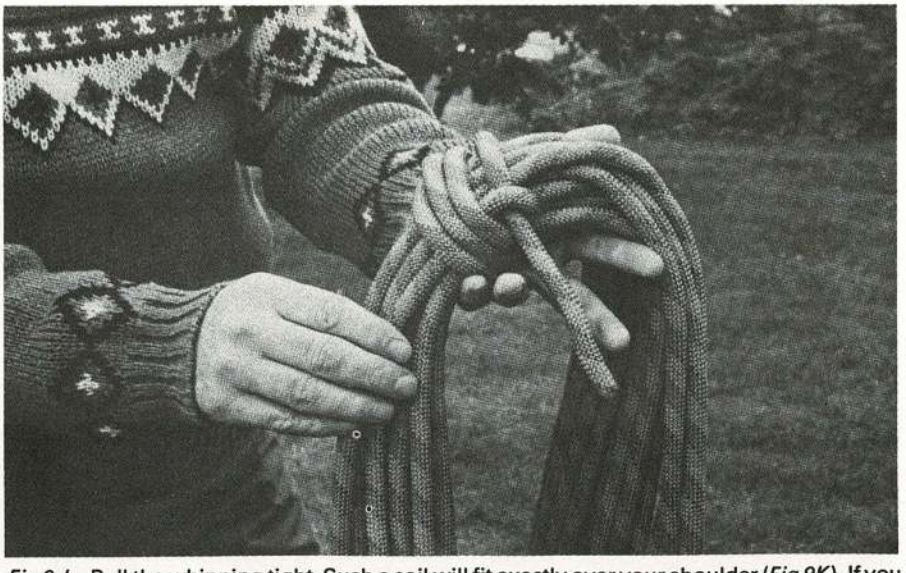

Fig 9J Pull the whipping tight. Such a coil will fit exactly over your shoulder (*Fig 9K*). If you drop it you can pick it up by the whipping (*Fig 9L*) and shake it out into a coil again, *Fig 9M.*

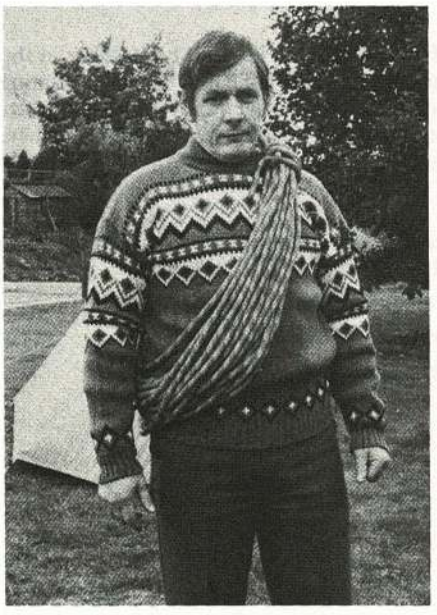

Fig 9K

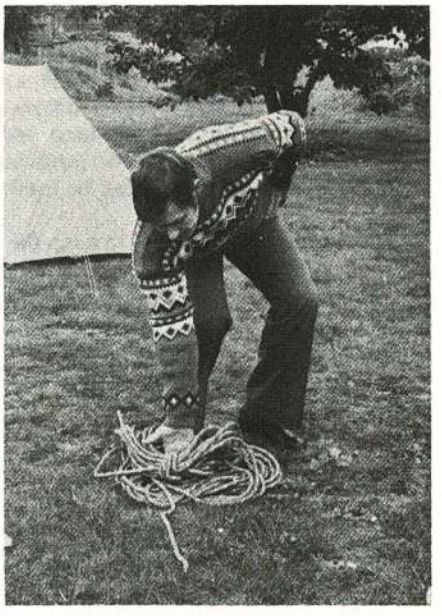

Fig 9L

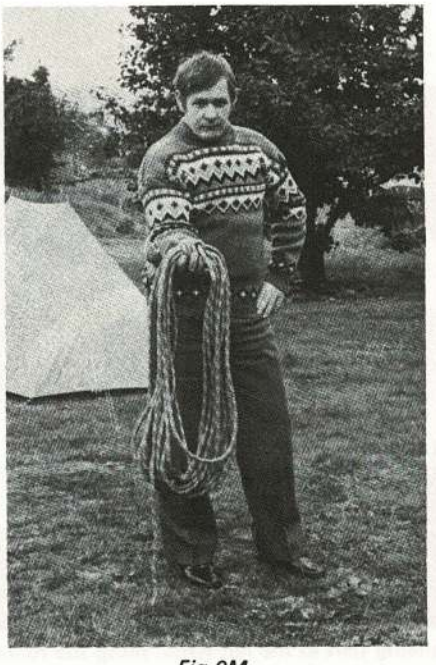

Fig 9M

The Overhand Knot

11. The overhand is a simple basic knot (Fig 10) that can be used by itself or in the tying of other knots. To make it, hold the standing part in the left hand, bring the running end back under the standing part to form a loop and then pass the running end back over the standing part through the loop and pull tight; the pulling tight process can be adjusted so that the knot can be positioned exactly where required. When pulled tight near the end of the rope it can be used:

a. Instead of whipping, to keep the end of a rope from unravelling, although this would not be a very shipshape method.

b. To provide a handhold on a halter or on a bell rope etc.

c. To prevent the end of a rope running through a pulley.

d. To prevent a sewing thread from pulling through cloth.

Overhand Knot

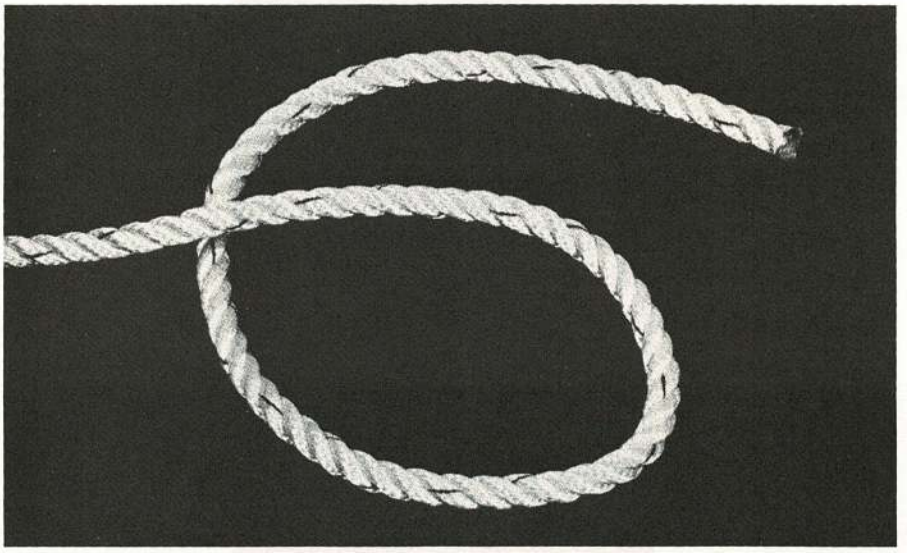

Fig 10A **Hold the standing part in the left hand, bring the running end back under the standing part to form a loop.**

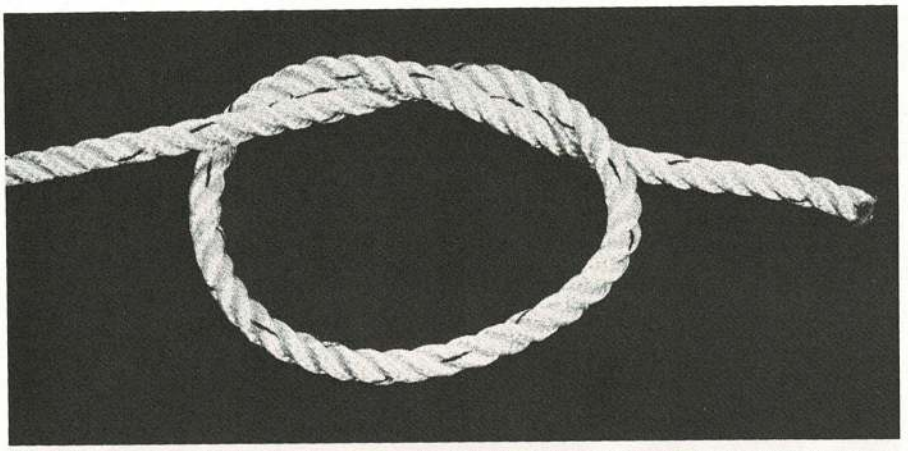

Fig 10B Pass the running end back over the standing part and through the loop so formed.

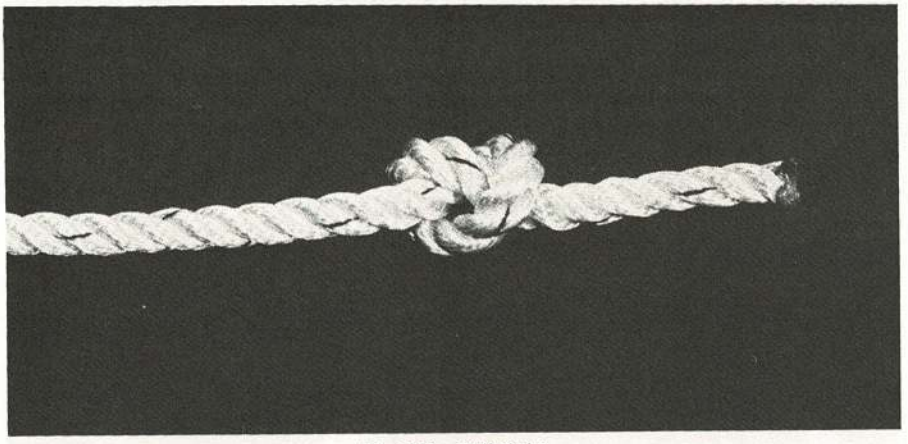

Fig 10C Pull tight.

12. If an overhand knot is tied around its own standing part, Fig 11, a useful slip knot is formed. A slip knot can be pulled tight against anything enclosed by it, such as a parcel or a hitching rail. An interesting variation of it is the slip knot halter tie which is used to tie a horse or other animal to a hitching pole or ring, Fig 12. Simply pass the running end of the halter around the hitching pole (or through the ring), bring plenty of rope back and tie an overhand knot around the standing part, but instead of pulling it through, leave the running end doubled — in the form of a bow. If the animal jerks or pulls against this knot the knot will tighten because of its slip knot's properties — but your jerk on the running end will instantly free it.

13. We will see later how the overhand knot is used to form other knots, notably the fisherman's bend for joining two ropes.

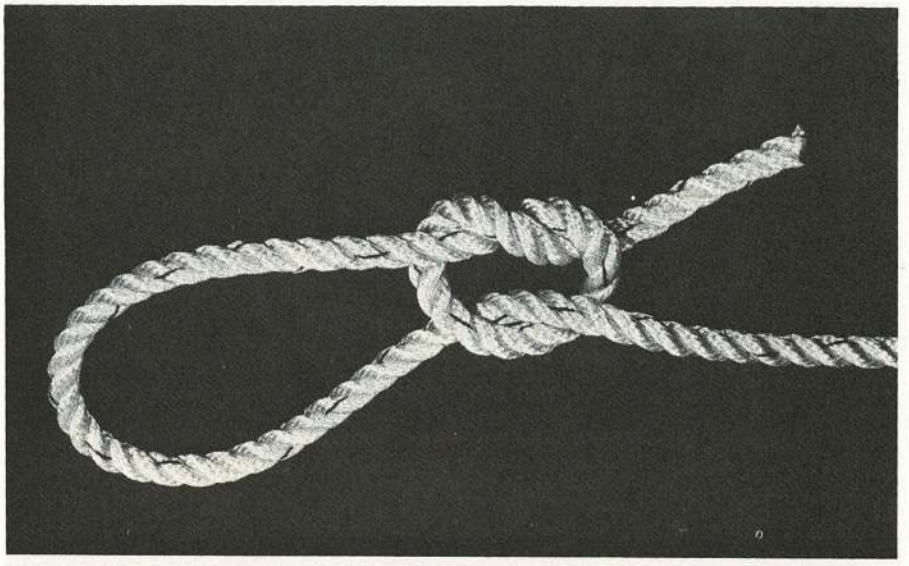

Fig 11 Overhand Slip Knot
An overhand knot tied around its own standing part forms a most useful slip knot. In this example imagine that the loop was around a parcel — you could then pull the slip knot tight to hold the rope firmly round the parcel.

Overhand Slip Knot Halter Tie

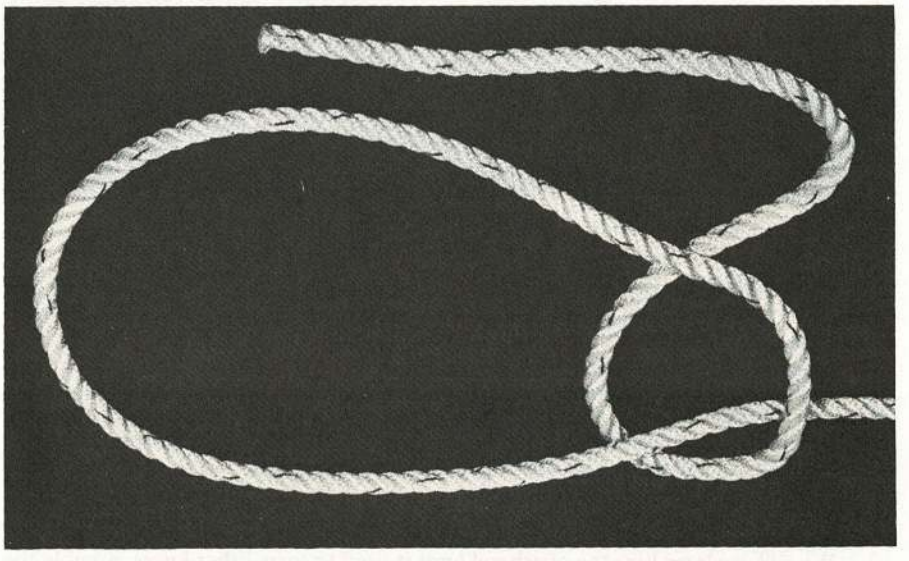

Fig 12A Begin the overhand slip knot but double the running end before you bring it over and through (as you tie a bow in your shoelaces).

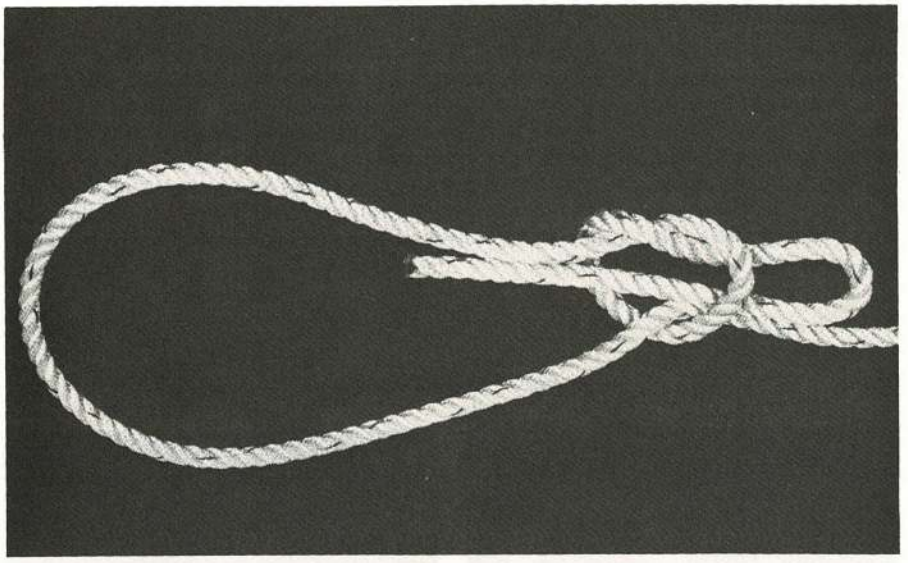

Fig 12B

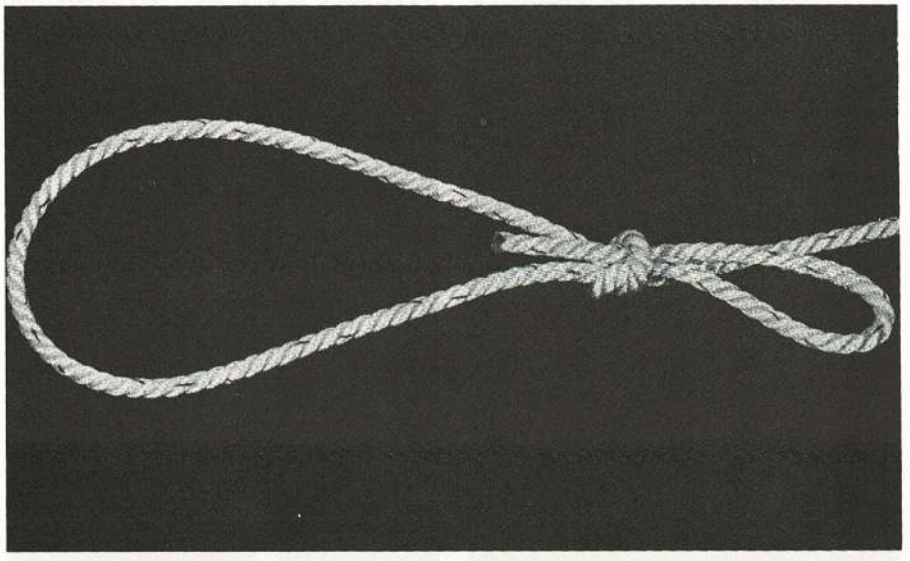

Fig 12C Running end doubled and passed through to complete the overhand knot. Pull tight. If the loop in the rope was around a hitching pole or through a hitching ring to tether an animal, any jerk on it by the animal will simply pull the knot tighter—yet the knot can be released instantly if you pull the running end.

The Figure of Eight Knot

14. A figure of eight knot serves many of the uses of the overhand knot when tied in a single rope and many of the uses of the bowline (*see* later) when tied in a doubled rope. One of its main advantages is that it is unlikely to slip or work loose in soft springy types of rope such as nylon or Kernmantel. Thus it is a very important knot. It is made by taking the running end back over the standing part to form a loop, and then around underneath to form a second loop finally passing it back over and down through the first loop, Fig 13. When tied in a double rope a bight (loop) is formed which can be adjusted to any size required. Fig 14 shows a bight formed at the end of a rope; Fig 15 shows one formed along the length of a rope.

Figure of Eight Knot

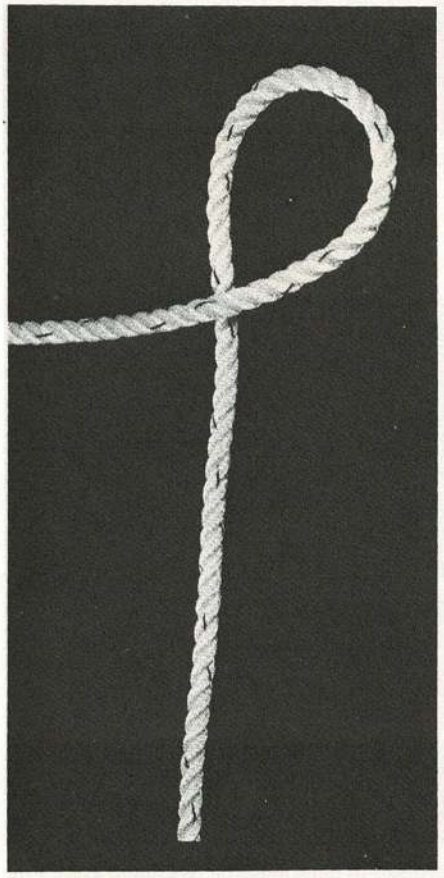

Fig 13A Take the running end back over the standing part to form a loop . . .

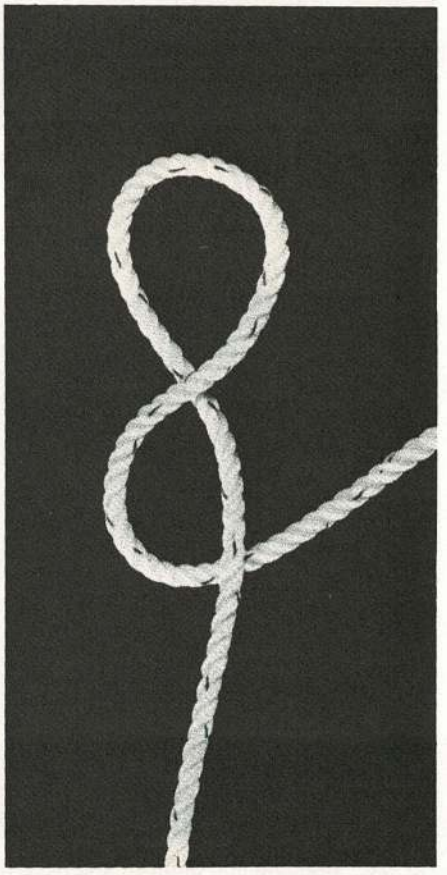

Fig 13B . . .then around underneath to form a second loop . . .

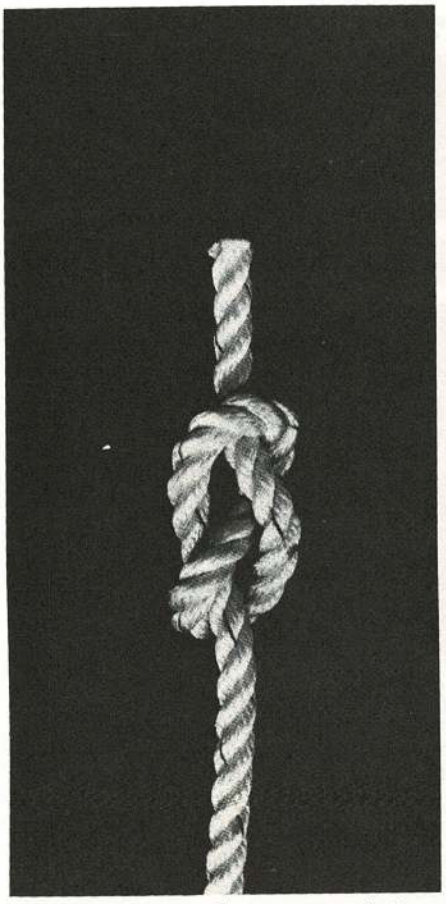

Fig 13C . . . then back over and down through the first loop . . .

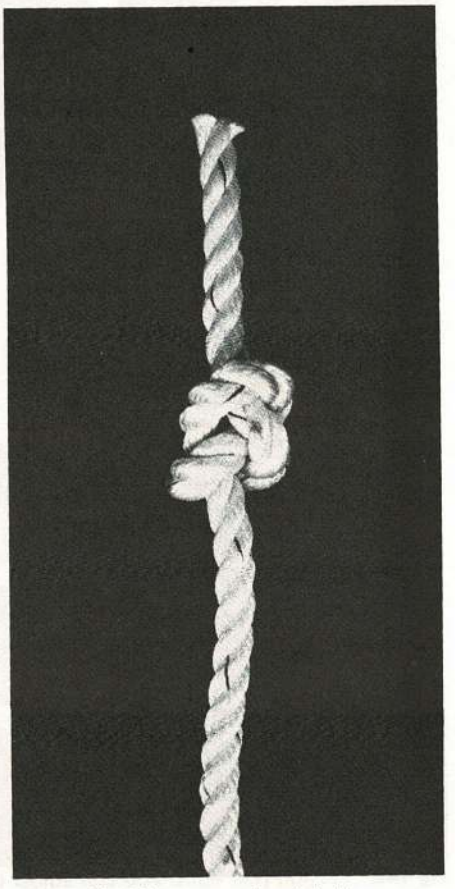

Fig 13D . . . and pull tight.

Figure of Eight Knot Forming a Bight in the End of a Rope

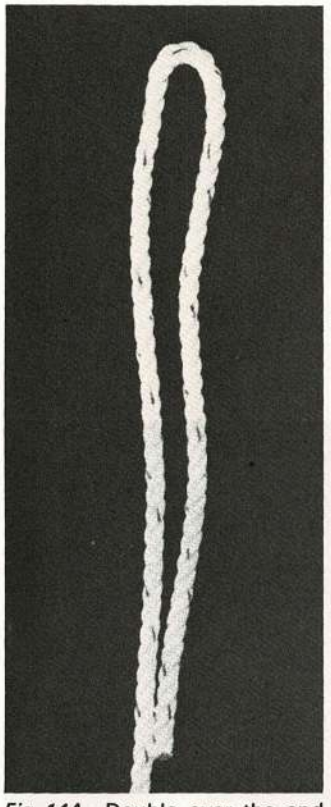

Fig 14A Double over the end of the rope . . .

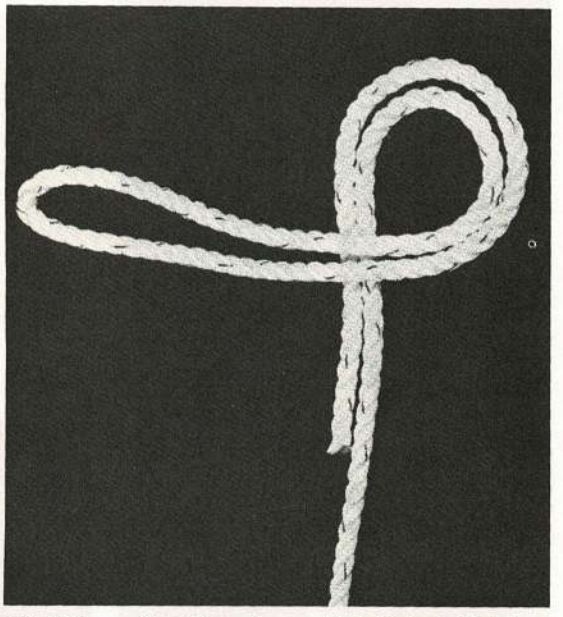

Fig 14B . . . then tie a figure of eight knot. This is a picture of the first move. To complete the knot take the double end round underneath to form the second loop, then back over and down through the first loop . . .

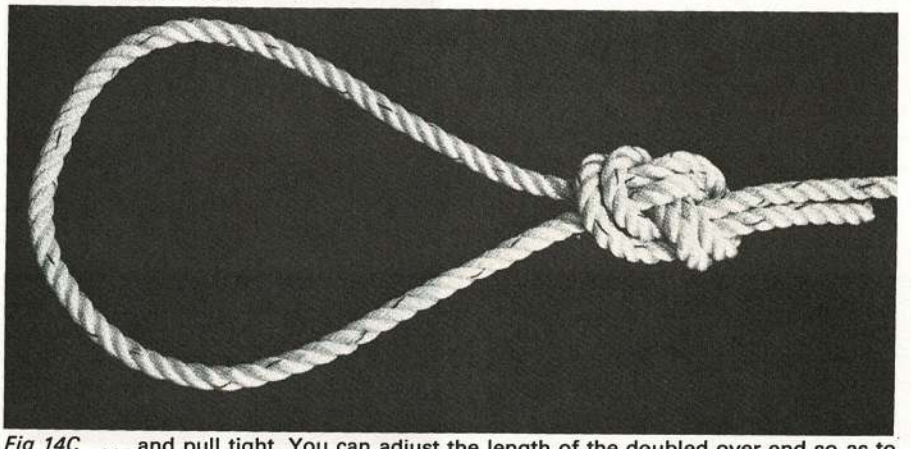

Fig 14C . . . and pull tight. You can adjust the length of the doubled over end so as to form as large a bight as you need.

Figure of Eight Knot Forming a Bight Anywhere in the Length of a Rope

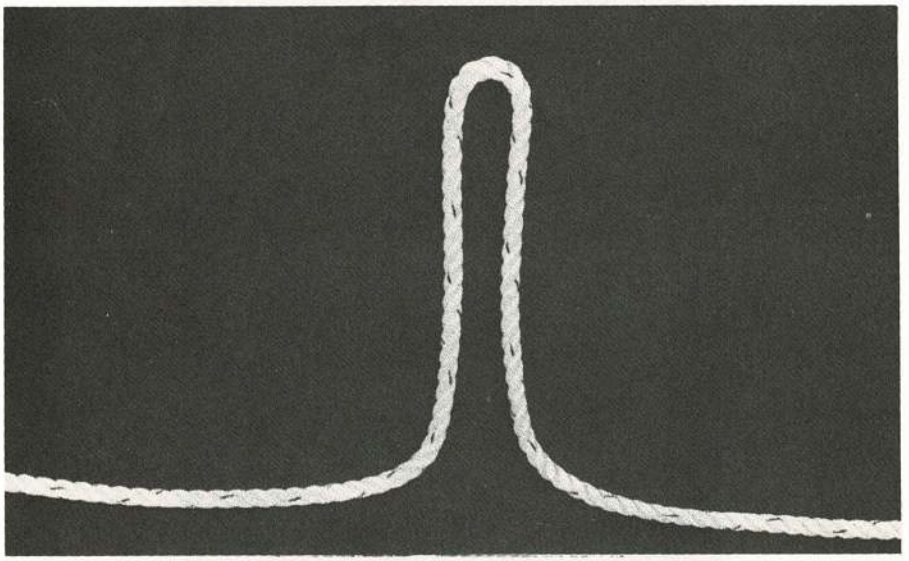

Fig 15A Double over the rope where you need the bight . . .

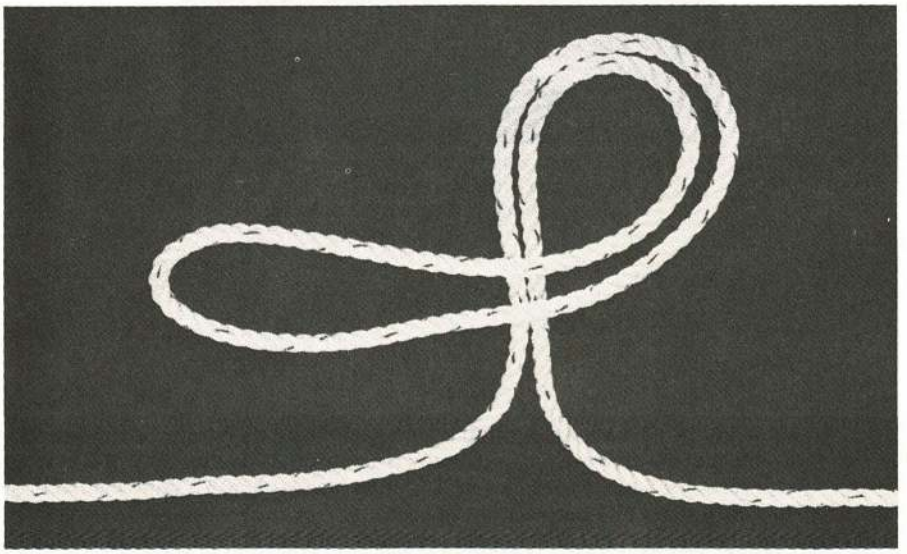

Fig 15B . . . then tie a figure of eight knot. This is a picture of the first move. To complete the knot take the double end around underneath to form the second loop, then back over and down through the first loop . . .

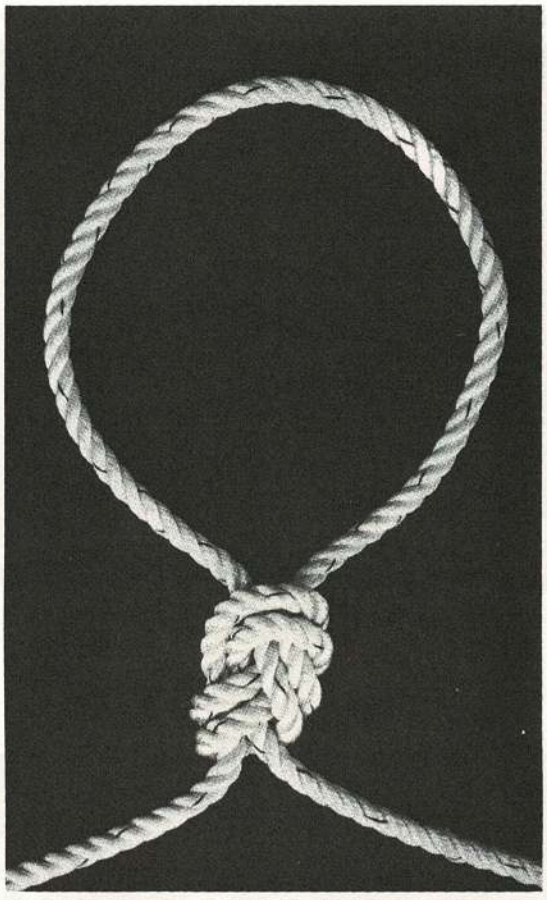

Fig 15C . . . and pull tight. As before, adjust the length of the doubled over part so as to form as large a bight as you need.

The Half Hitch

15. A half hitch is simply a loop (around anything to which a rope can be fastened) in which the running end is drawn tight and jammed against the standing part. It is seldom used by itself but is the basis of many knots. It is often used to finish a knot when one or more half hitches around the standing part will serve to lock the knot and prevent it from working loose, except that in nylon rope a half hitch will work loose and an overhand knot is used instead. A slight adjustment to the overhand knot forms a half hitch around the standing part, Fig 16. Note that a second half hitch around the standing part, Fig 17, makes a useful knot which is used in several situations as we shall see later.

(AL4, Sep 78)

The Half Hitch

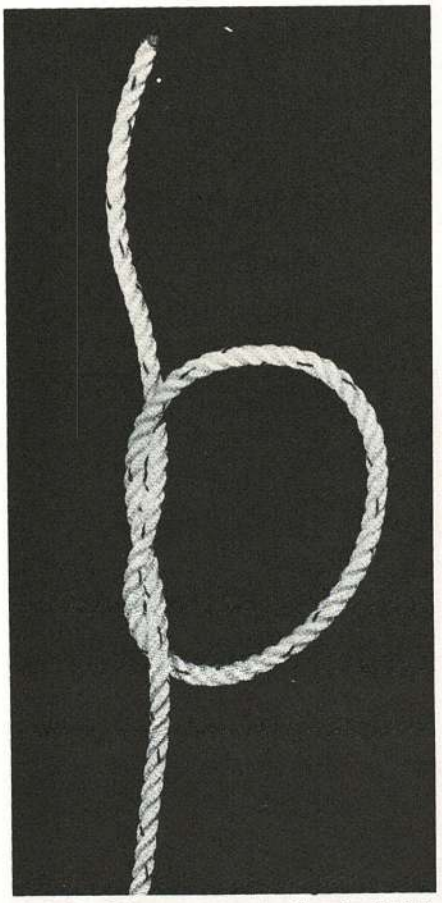

Fig 16A The easy way to tie a half hitch is to start with an overhand knot . . .

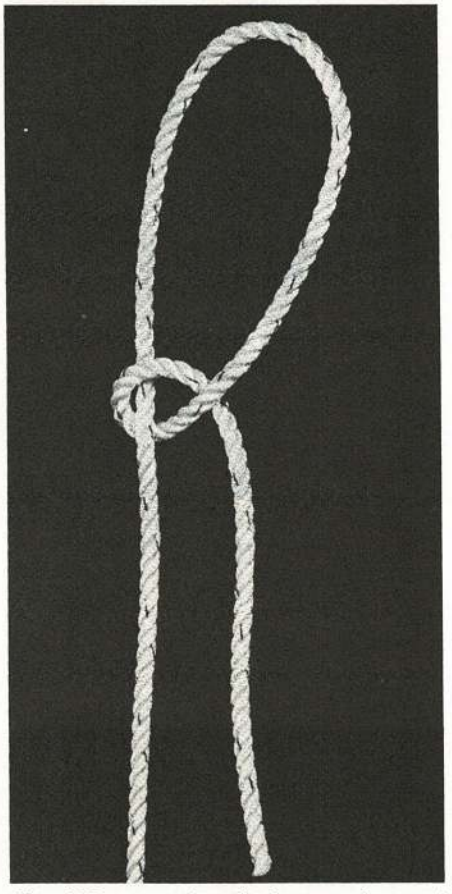

Fig 16B . . . and pull the running end down.

(AL4, Sep 78)

Double Half Hitch

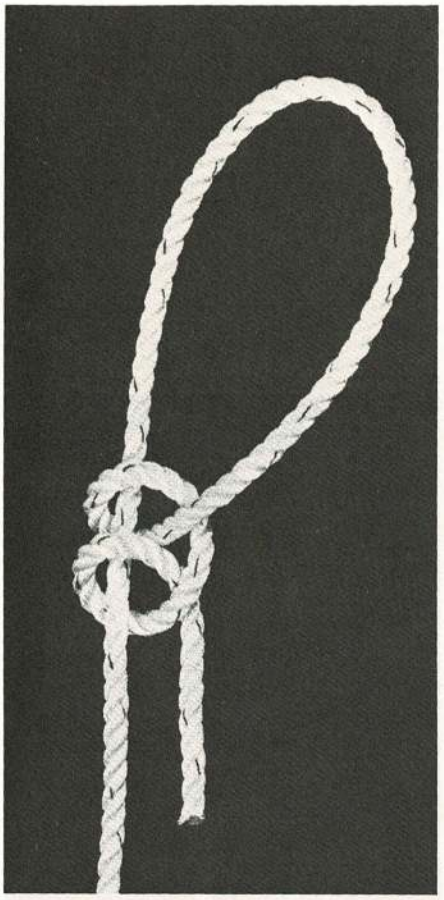

Fig 17A Add a second half hitch to the one shown in *Fig 16B . . .*

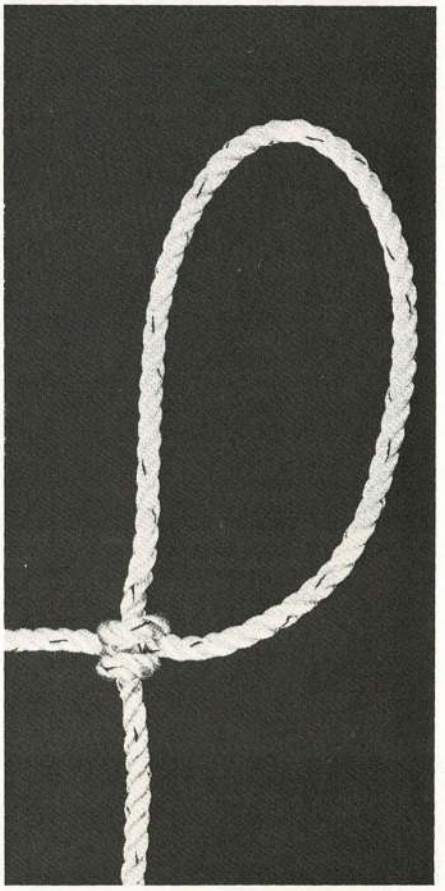

Fig 17B . . . and you have a useful knot which is used in several situations as we shall see later.

Bends

16. Bends include two useful knots, the fisherman's bend and the sheet bend, and the reef knot. Most people would probably use a reef knot to join two ropes together but it is not the best knot for the purpose(we will see later what its uses are) because it distorts badly if it is not lying flat or if the pull on it is angled.

17. The fisherman's bend is the best knot for joining two ropes of equal thickness. Simply lay the two running ends together and tie an overhand knot around the opposite standing part, Fig 18. Make them tight and pull them tightly together to make a firm knot.

Fisherman's Bend — To Join Two Ropes

Fig 18A Lay the two running ends together . . .

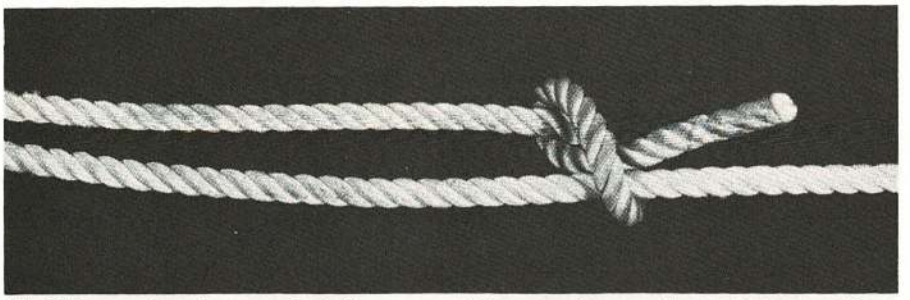

Fig 18B . . . then tie an overhand knot around the opposite standing part at one end . . .

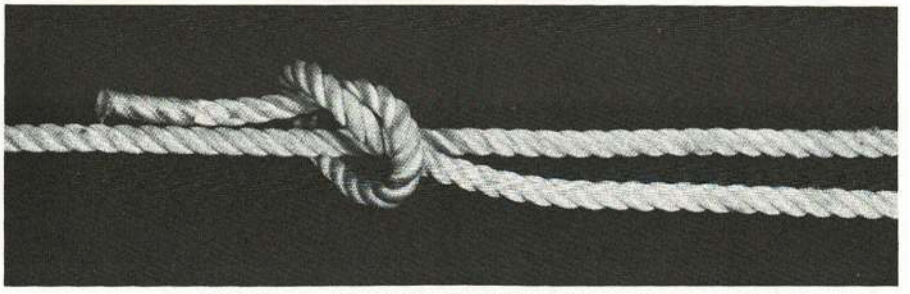

Fig 18C . . . then the same at the other end . . .

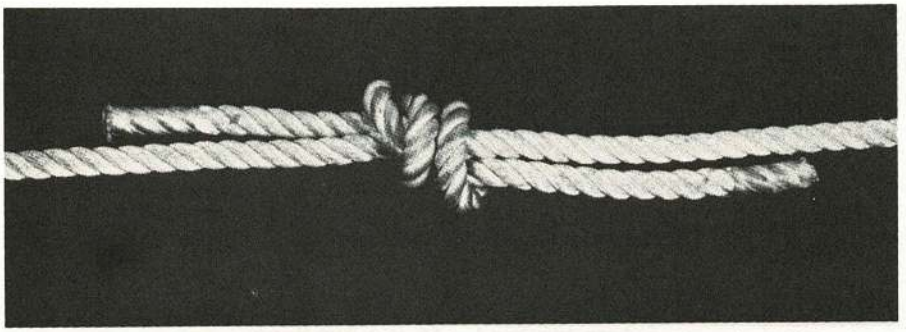

Fig 18D . . . and pull tight. To hold this knot firm, lash the loose ends or leave them long enough to lock the knot by tying another overhand knot in each.

18. The sheet bend is the best knot for joining two ropes of different thickness although it is also very good for ropes of the same thickness. It can be tied in two forms — single and double.

a. *Single sheet bend.* Take the larger of two ropes (if they are of different size) and form a loop in its running end. Take the other running end, pass it up through the loop from underneath, round and under the back end of the loop then back under itself, Fig 19.

b. *Double sheet bend*. Proceed as for a single sheet bend, but take a double turn instead of a single turn around the back of the loop, Fig 20.

Single Sheet Bend — To Join Two Ropes

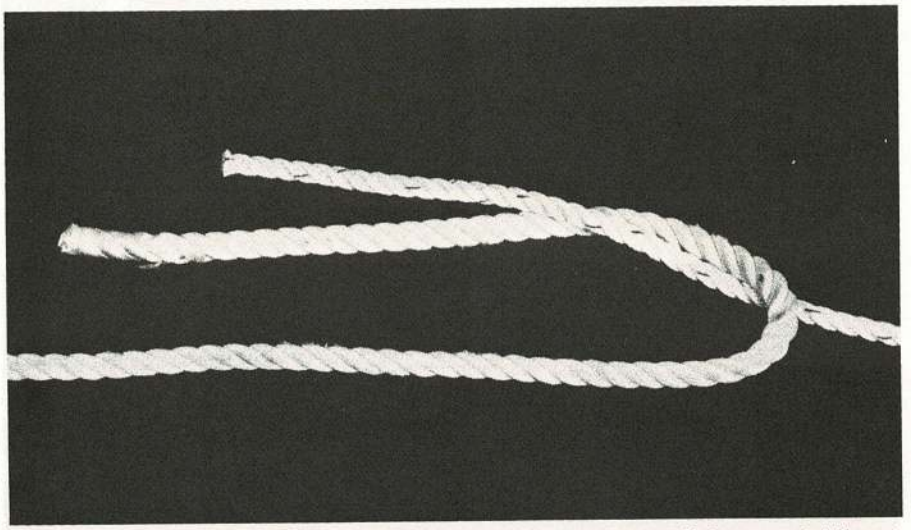

Fig 19A Double over one running end (the larger of the two ropes if they are of different size) then pass the other running end up through it from underneath . . .

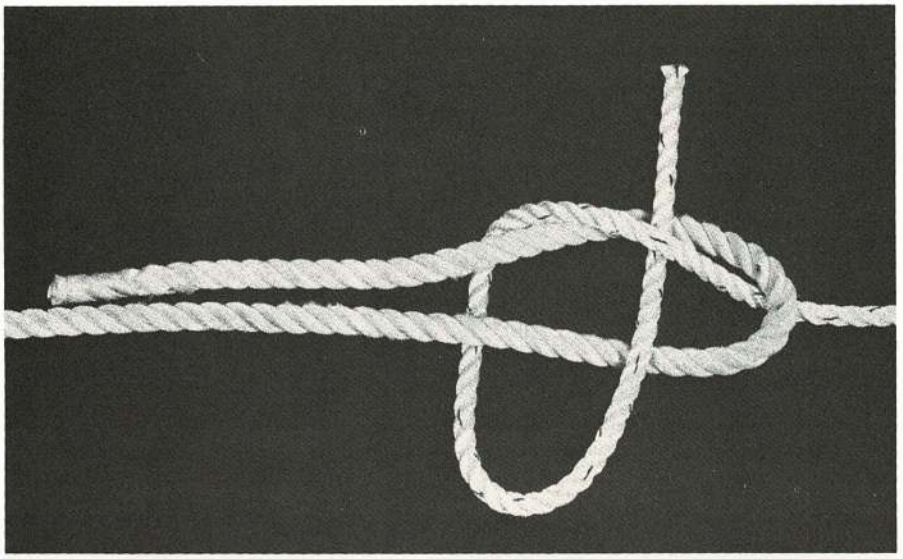

Fig 19B . . . and run it round and under the back of the doubled part and then under itself.

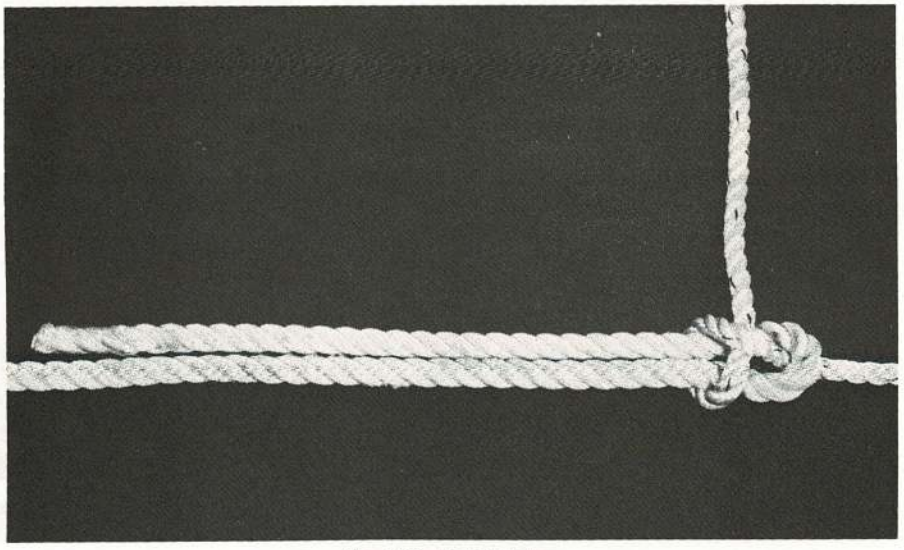

Fig 19C **Pull tight.**

Double Sheet Bend

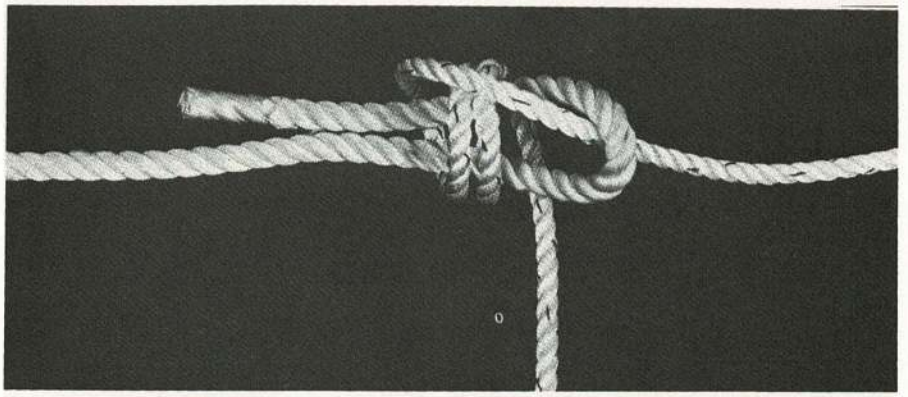

Fig 20A Take a double turn instead of a single turn around the doubled part.

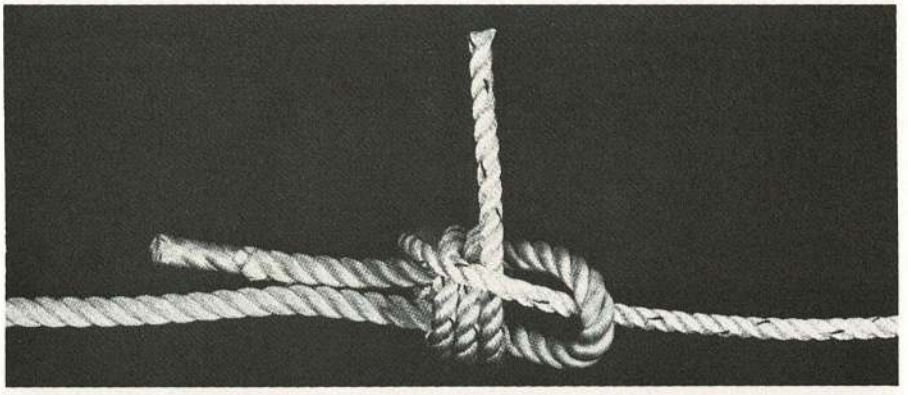

Fig 20B Pass the running end under itself.

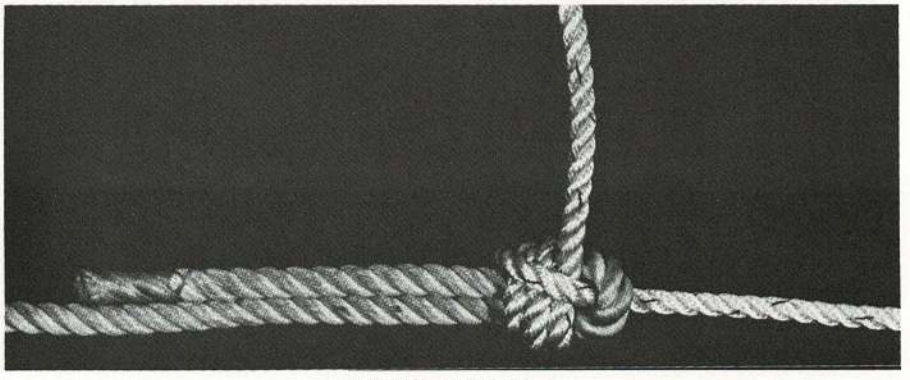

Fig 20C Pull tight.

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19. The reef knot is a simple knot tied left-over-right and then right-over-left, Fig 21A–E. But beware, if the two sides of the reef knot do not correspond exactly it becomes the dangerous granny knot which will not hold. Fig 21G–H. The reef knot should be used to join two ropes, or the two ends of one rope, only when the knot lies on a flat surface. It is used mostly for:

a. Bandaging.

b. Tying shoe-laces, although in this, for the right-over-left second step the laces are looped so that when drawn through they form a bow. Do your laces slip? Then you have tied a granny instead of a reef knot.

If using a reef knot for any other purpose always lock it, Fig 21F.

Reef Knot

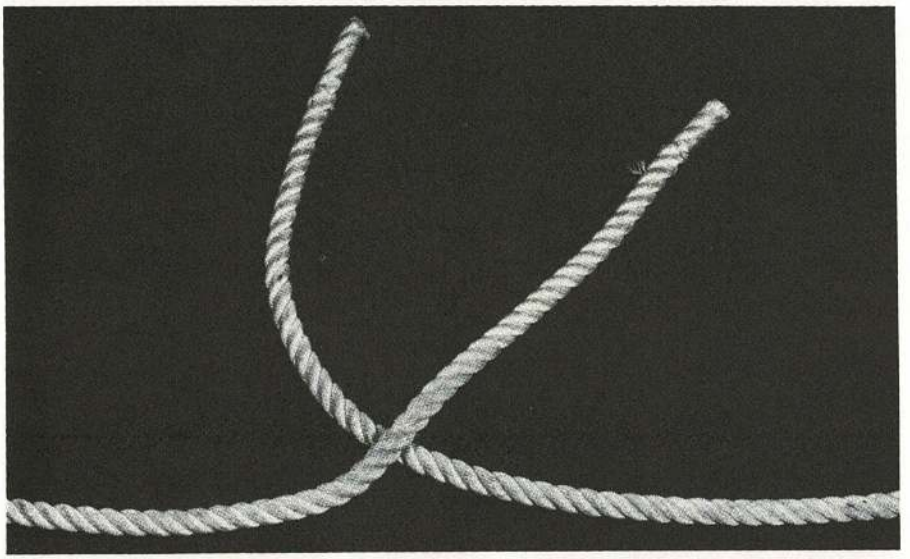

Fig 21A **Left over right.**

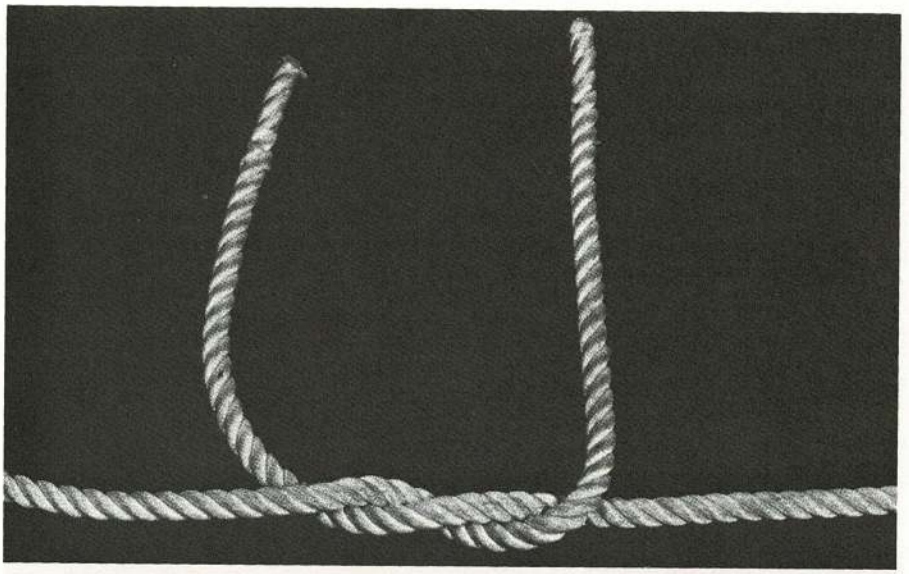

Fig 21B Left running end round and under the other.

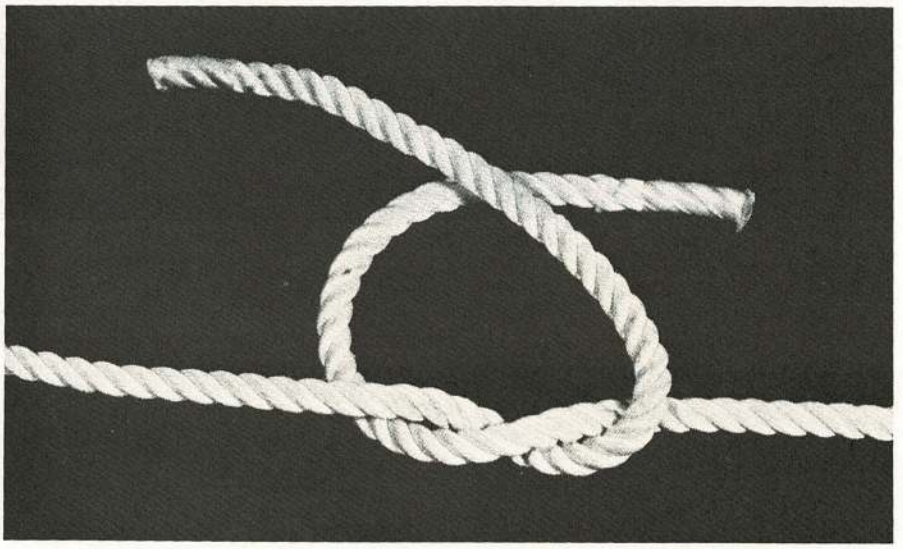

Fig 21C Right over left.

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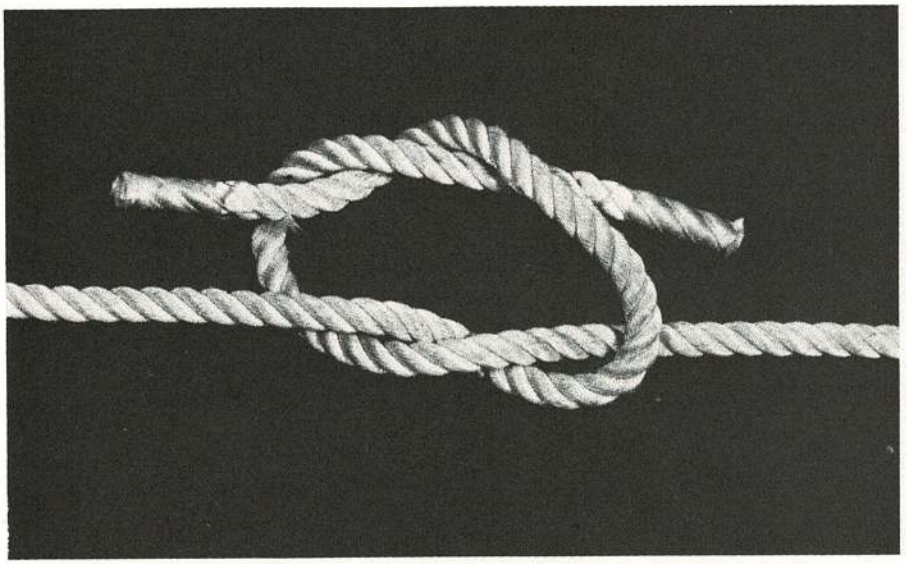

Fig 21D Round and under

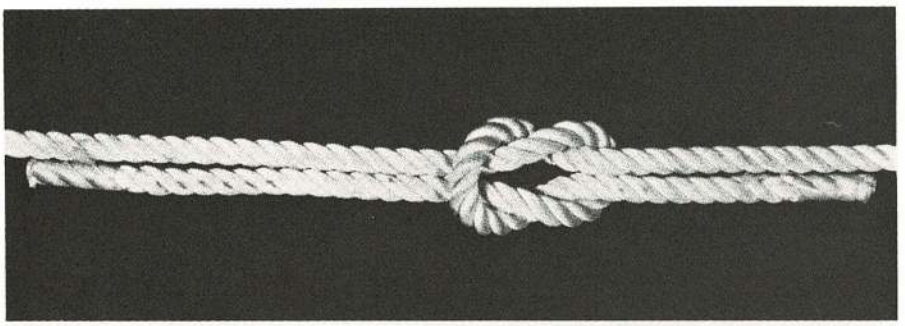

Fig 21E Pull tight.

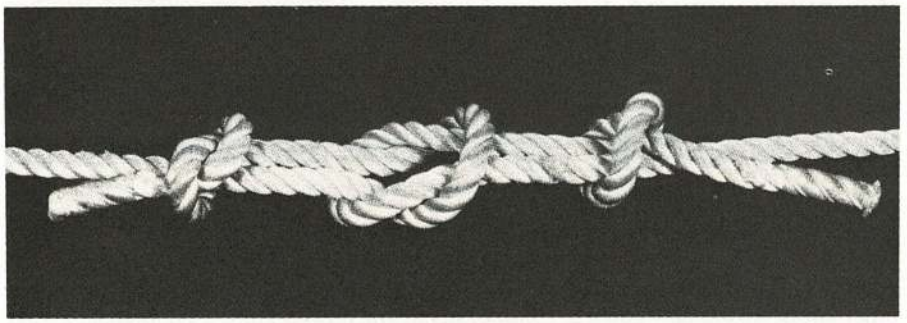

Fig 21F Reef knot locked by tying overhand knots at each running end.

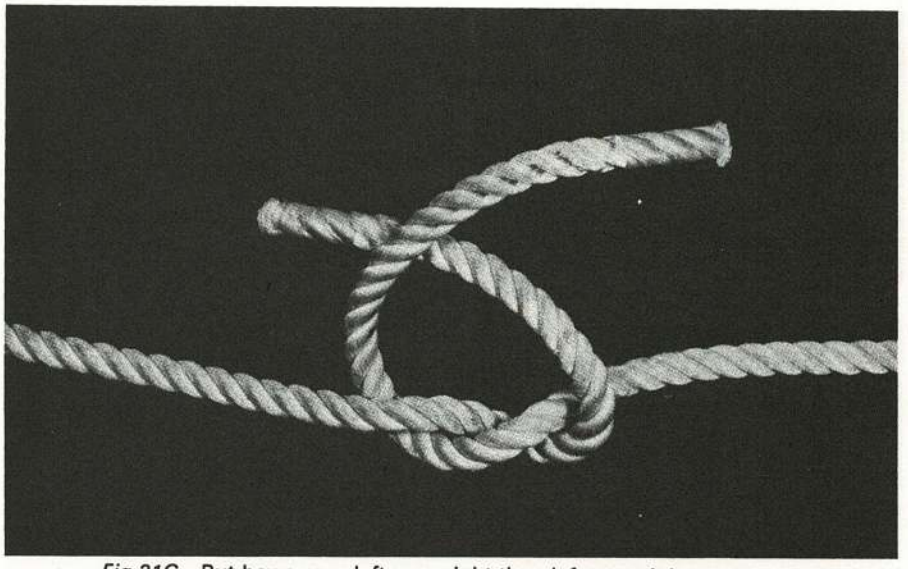

Fig 21G But beware — left over right then left over right again . . .

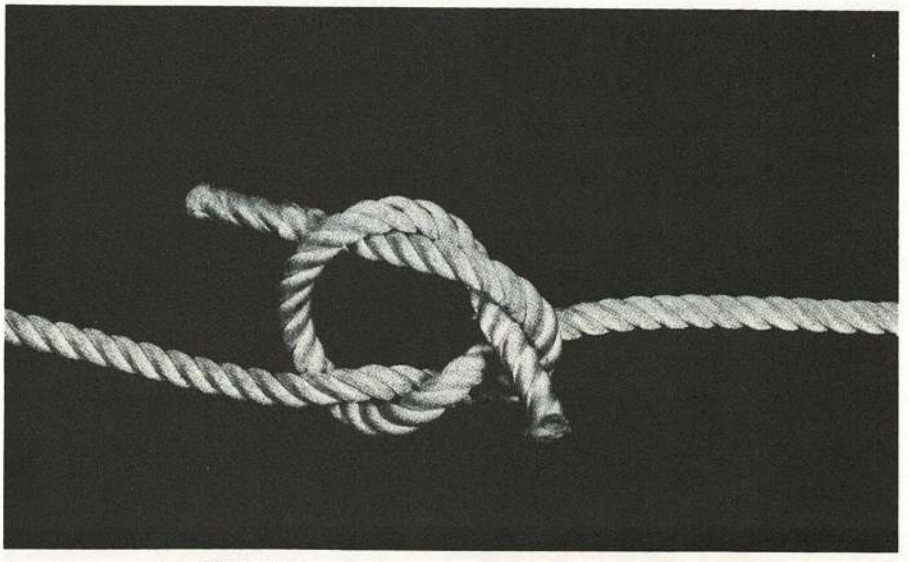

Fig 21H . . . makes the dangerous granny knot.

Hitches

20. We have already seen the half hitch, Fig 16, which is used in many ways to make other knots; we are now going to consider hitches of various kinds used to make a rope fast to some solid object.

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21. The round turn and two half hitches is the common method of making fast any rope end. Wrap the standing part a whole turn round the spar or other object (make sure that it is a whole turn and not a half turn), and then thread the running end around the standing part in two half hitches, Fig 22. Make sure that the half hitches are both made in the same direction otherwise a cow hitch results which is not so secure, Fig 22F and G.

The Round Turn and Two Half Hitches — To make a rope fast to a fixed object.

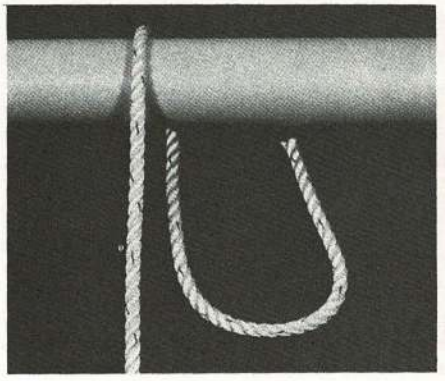

Fig 22A A half turn.

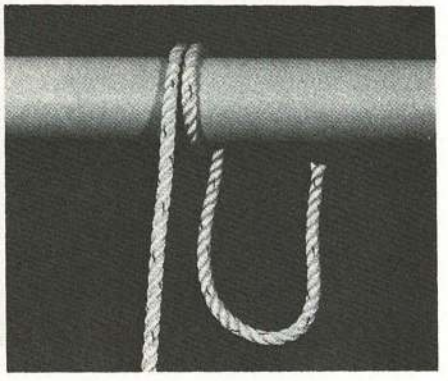

Fig 22B A round turn.

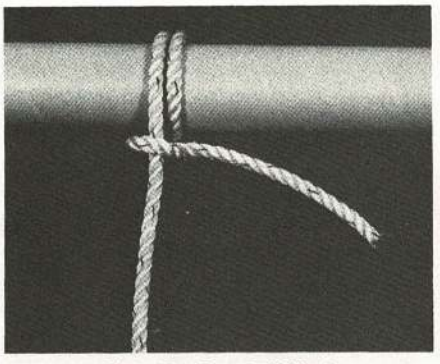

Fig 22C One half hitch.

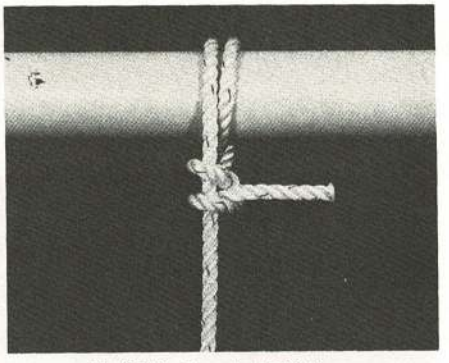

Fig 22D Two half hitches.

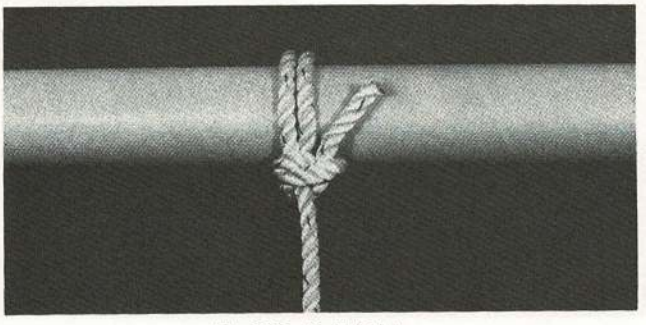

Fig 22E Pull tight.

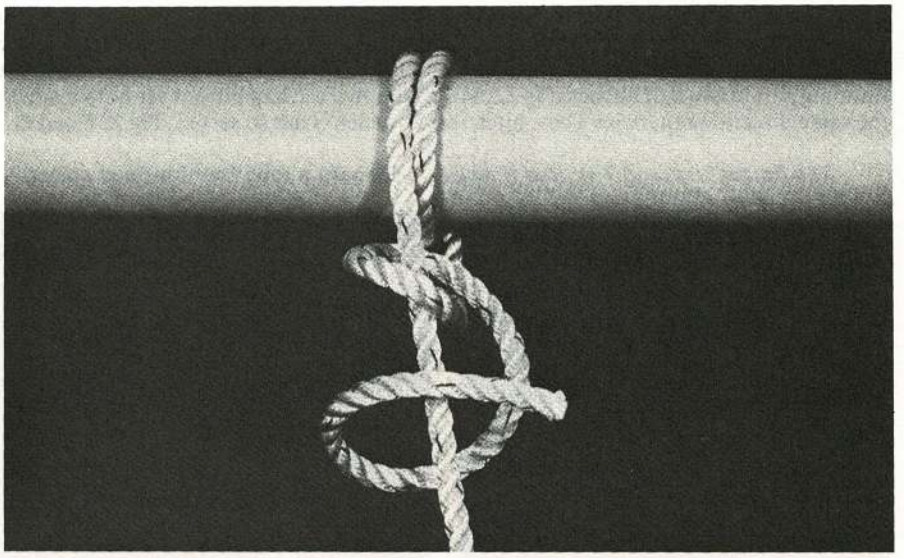

Fig 22F . . . but ensure that you make the half hitches correctly — the second half hitch passed under instead of over . . .

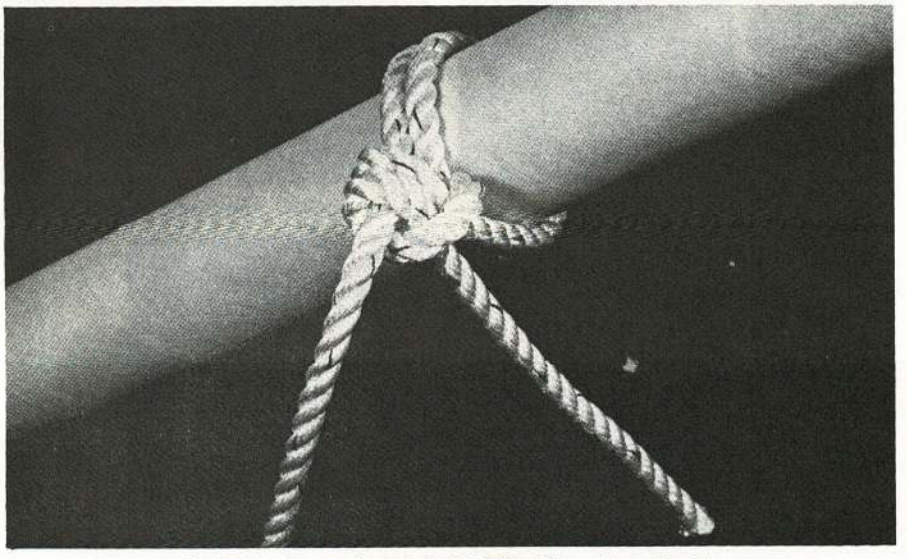

Fig 22G . . . makes a cow hitch which will not hold.

22. The clove hitch, best known of all the hitches, is easy to make. The harder you pull against it the tighter it holds, although if the pull is jerky or angled it may work loose. Do not use it therefore for tying up boats unless you lock it with one or more half hitches or better still use the rolling hitch. To make a clove hitch simply pass the running end around the spar in the form of a half hitch and then round again in a matching half hitch, Fig 23. The clove hitch can be made in any selected piece of the standing part provided that the knot can be slipped over the post or bollard to which it is made fast. Simply loop the standing part (at the required spot) into two half hitches, the second behind the first and slip them over the post pulling hard to make the knot firm, Fig 24.

Clove Hitch — best known method of fastening a rope to something — but not always the best method

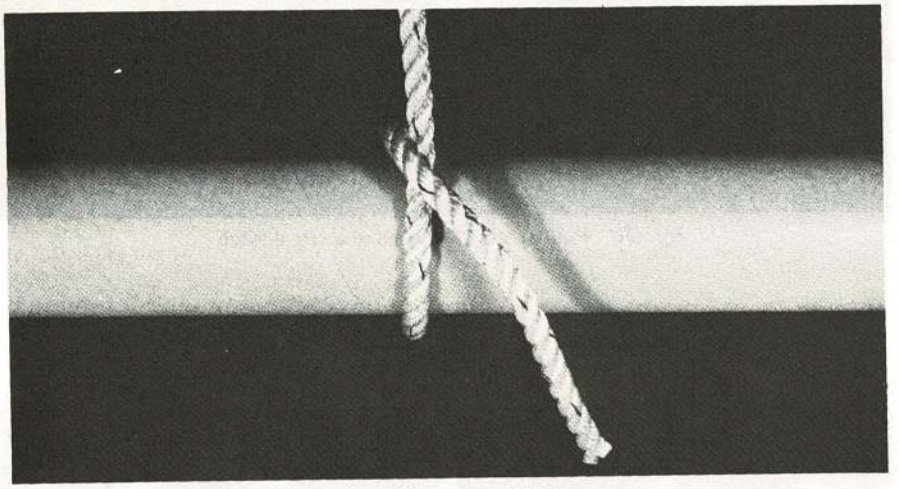

Fig 23A One half hitch

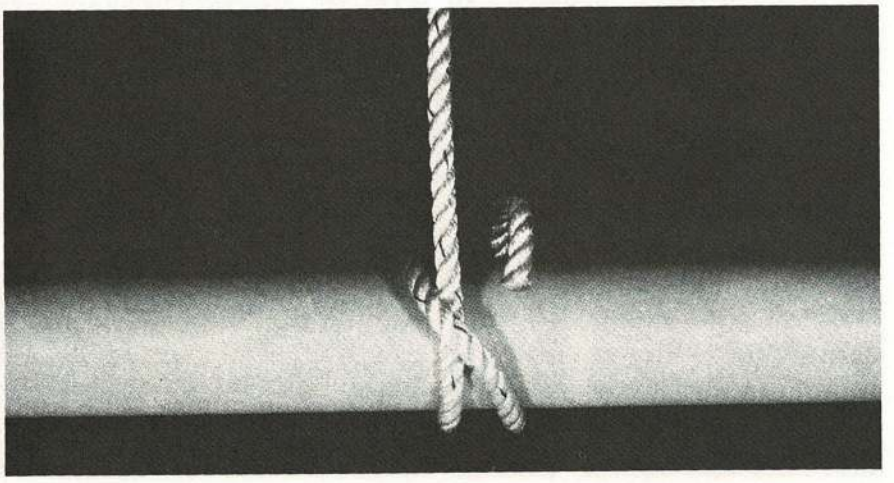

Fig 23B Two half hitches.

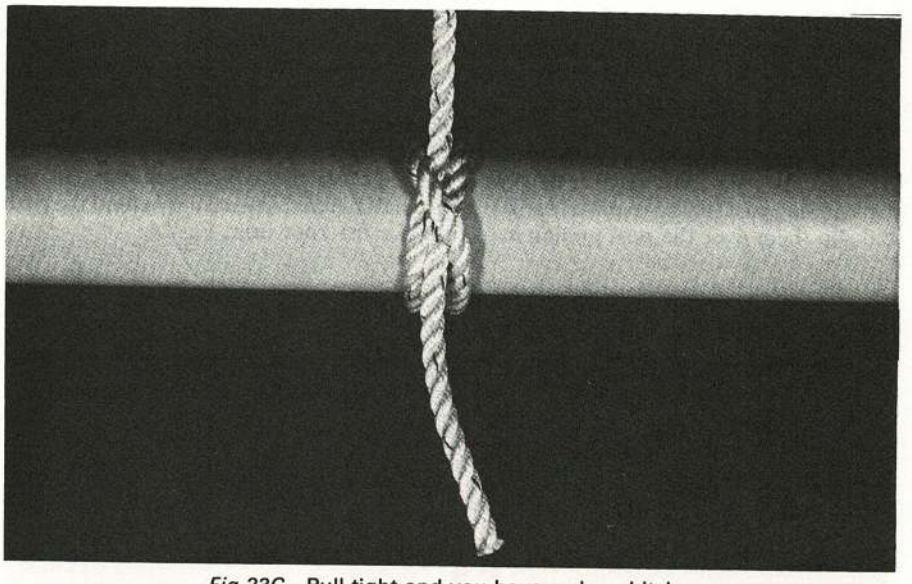

Fig 23C Pull tight and you have a clove hitch.

Clove Hitch Looped

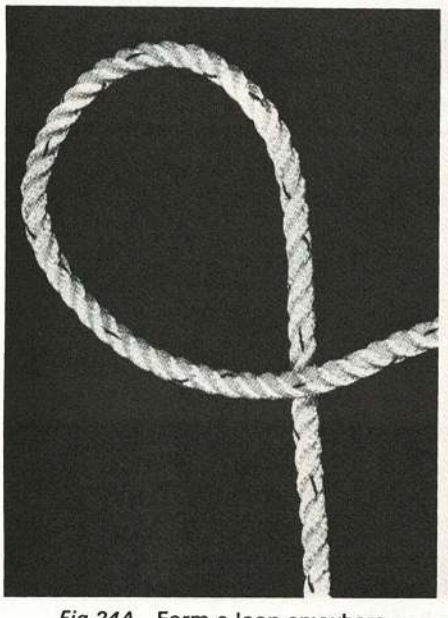

Fig 24A Form a loop anywhere

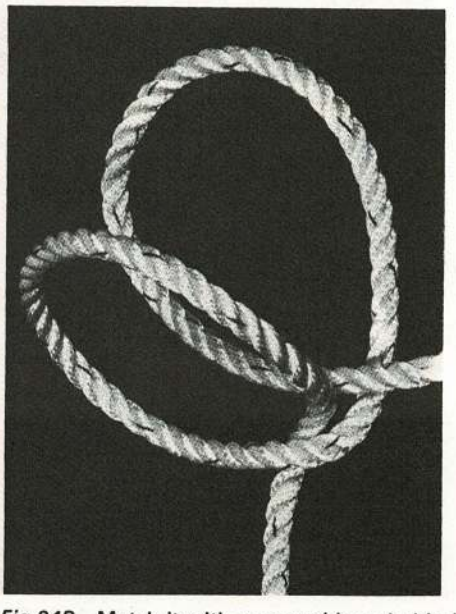

Fig 24B Match it with a second loop behind

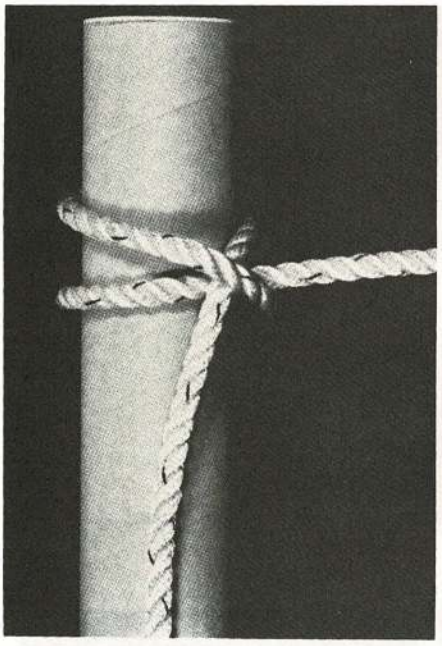

Fig 24C Slip over post or bollard

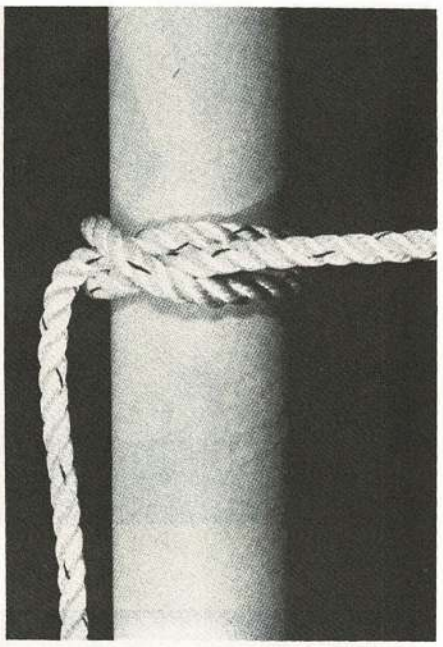

Fig 24D Pull tight.

23. A rolling hitch is a clove hitch with two or more initial turns instead of one, laid back towards the standing part and over its own initial turn pulled hard so that each turn helps to jam the other, Fig 25. Use it when the strain expected is not at right angles or whenever there is a chance that the clove hitch might slip, eg on wet wood.

Rolling Hitch

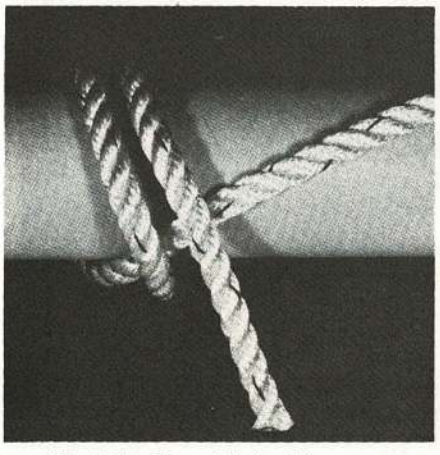

Fig 25A Clove hitch with two ....

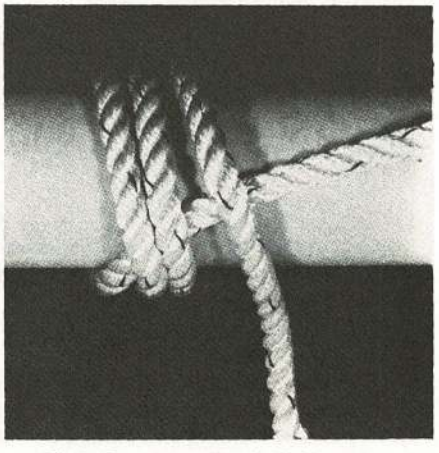

Fig 25B ... or more initial turns ....

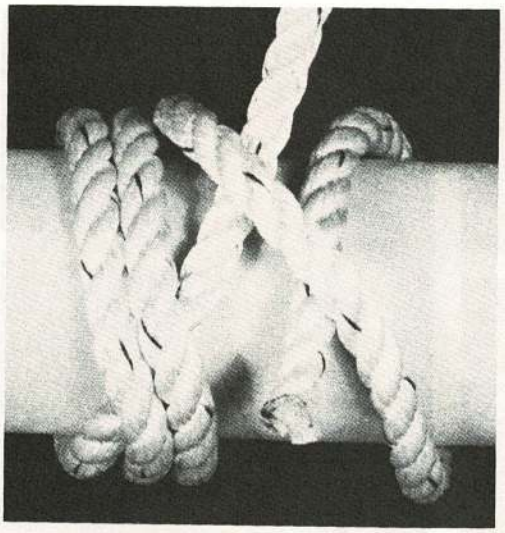

Fig 25C
... and clove hitch locked ....

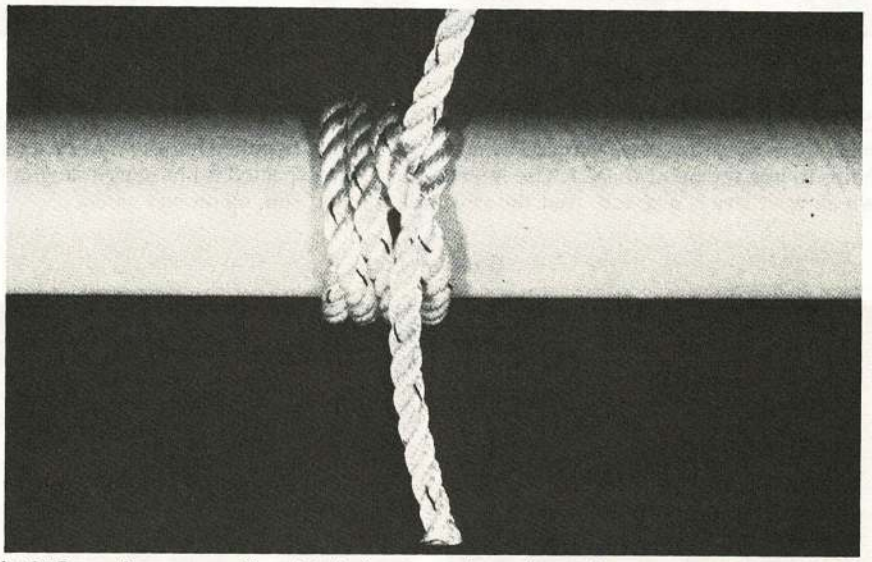

Fig 25D .... forms a rolling hitch for use when the pull expected is not at right angles.

24. The timber hitch, Fig 26, is quickly and simply made and is used for dragging along the ground a plank or perhaps a heavy branch for firewood. Make a half turn around the object, pass the running end behind the standing part and then take two or three turns around itself and pull tight as for a slip knot.

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Timber Hitch

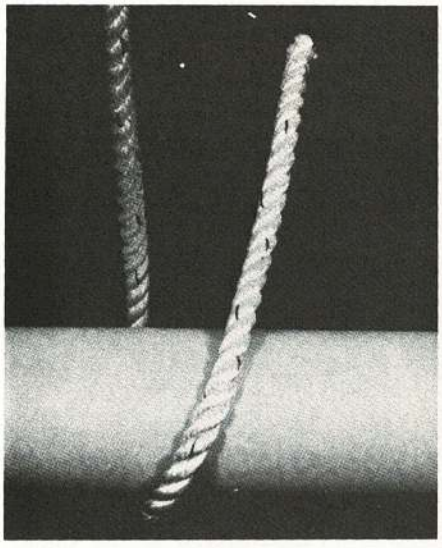

Fig 26A Half turn ....

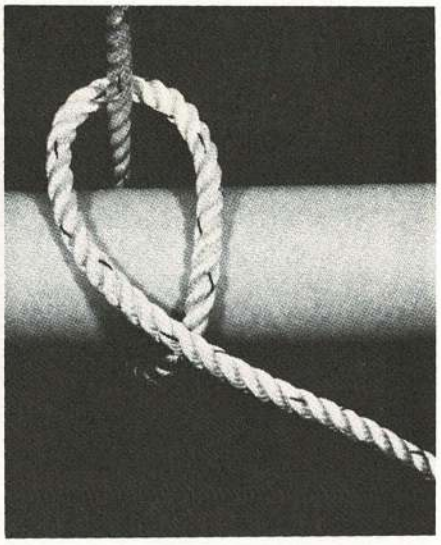

Fig 26B ... round the back of the standing part ....

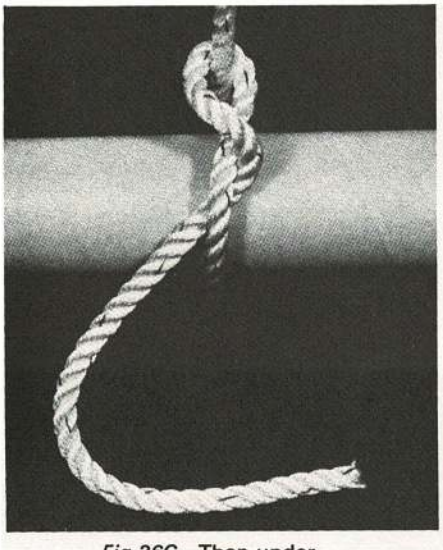

Fig 26C Then under ....

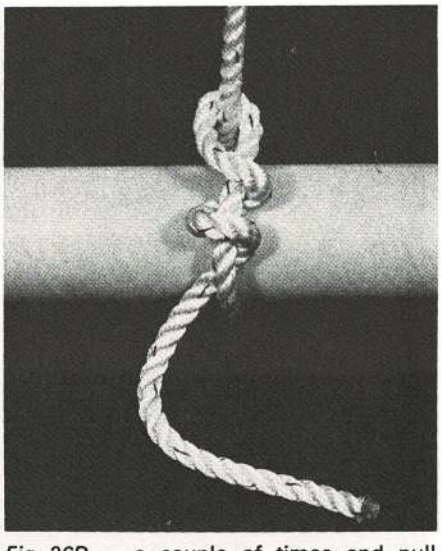

Fig 26D ... a couple of times and pull tight.

25. The bucket hitch is the ideal knot for making a rope fast to the handle of a bucket or for any similar purpose, Fig 20. Simply take a couple of whole turns around the handle, pass the running end around the back of the standing part and then slip it under the turns.

The Bucket Hitch

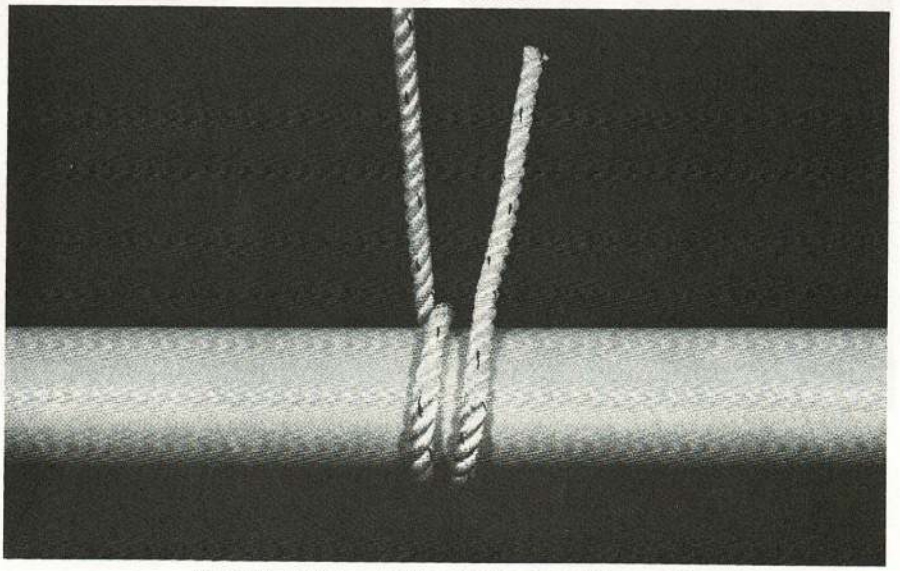

Fig 27A Take a couple of turns round the handle.

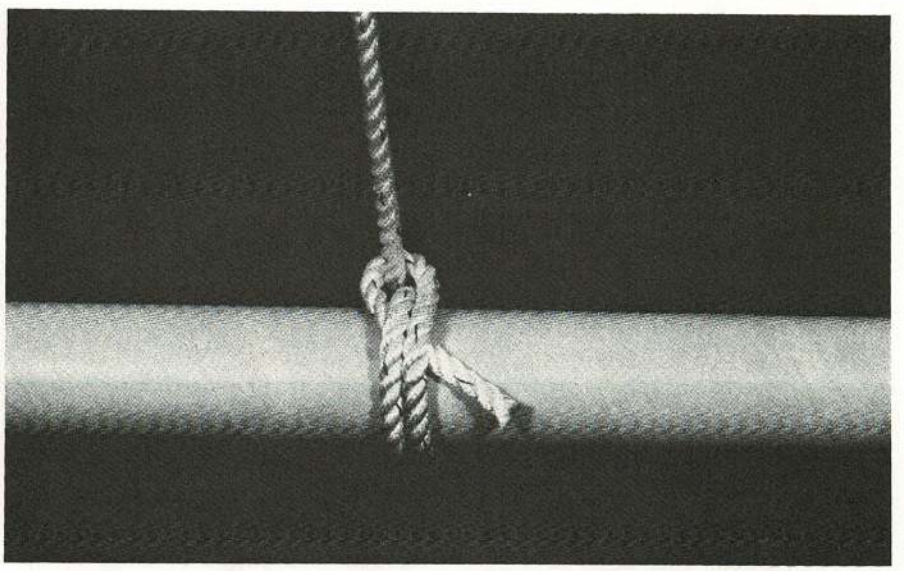

Fig 27B Pass the running end round the back and under the turns.

Other Knots

26. **The Bowline.** To fix a bight (ie a loop) in a rope we have already seen that a figure of eight knot will serve and might even be the best knot under some circumstances; but the bowline is the traditional and more usual knot for this purpose. The bight can be made in any size you choose and is useful in rescue work; if you have a few seconds to spare to make one, throw a bight, rather than a rope end to a man in difficulty. Various forms of bowline are:

a. *Single bowline at the end of a rope.* To tie a bowline at the end of a rope, first form a loop in the standing part of the rope at the point where you want the knot to be, ie at the point where the bight made will be large enough for your purpose, then take the running end and pass it up through the loop, round the back of the standing part and back through the loop, Fig 28. Pull tight.

b. The knot can be tied with one hand and, with a little practice, this is a better way than threading the knot. Take the running end in one hand, place it over the standing part at the appropriate spot and grasp it with your fingers on top and thumb behind the standing part; then turn your hand and the standing part over -- through 180 degrees. The running end will then be standing up through the loop waiting for you to complete the knot. This sounds a lot when written but in practice it is one simple smooth movement which enables the knot to be made correctly every time, Fig 29.

The Bowline

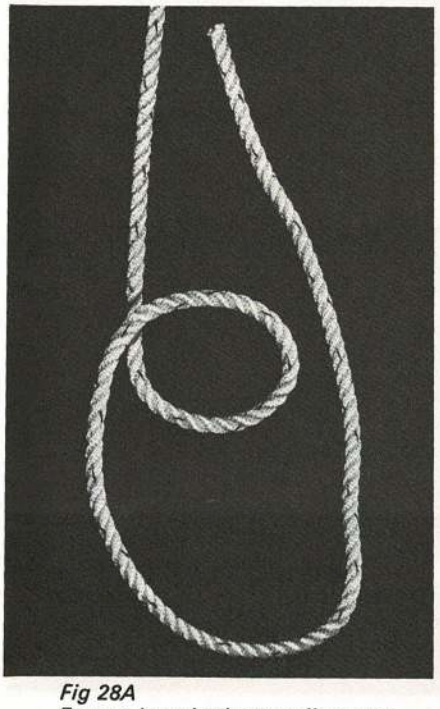

Fig 28A
Form a loop in the standing part

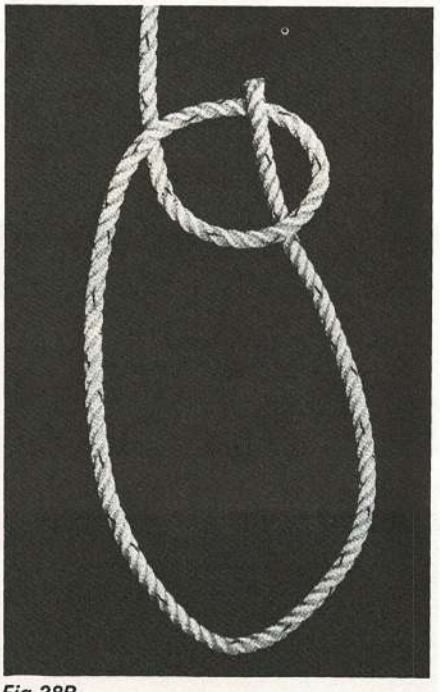

Fig 28B
Pass the running end through the loop ....

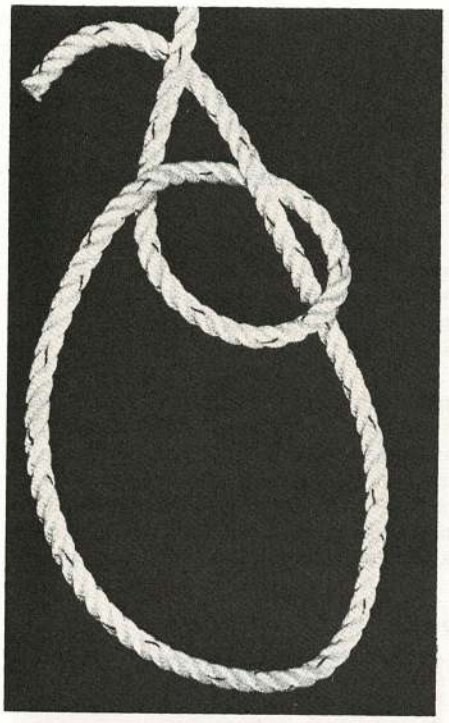

Fig 28C
... then round the back ....

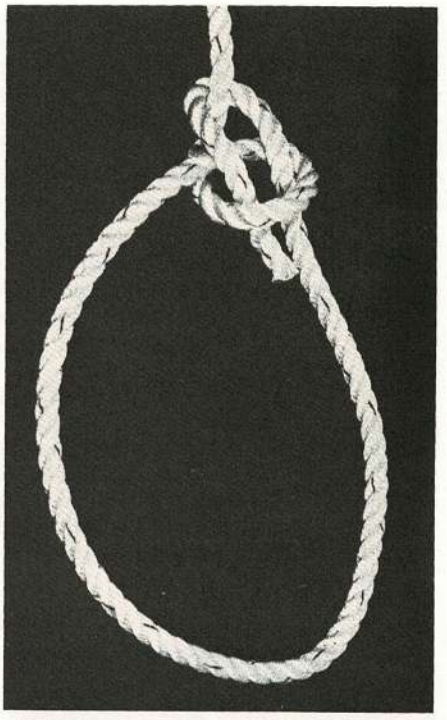

Fig 28D
... and up and over through the loop again.

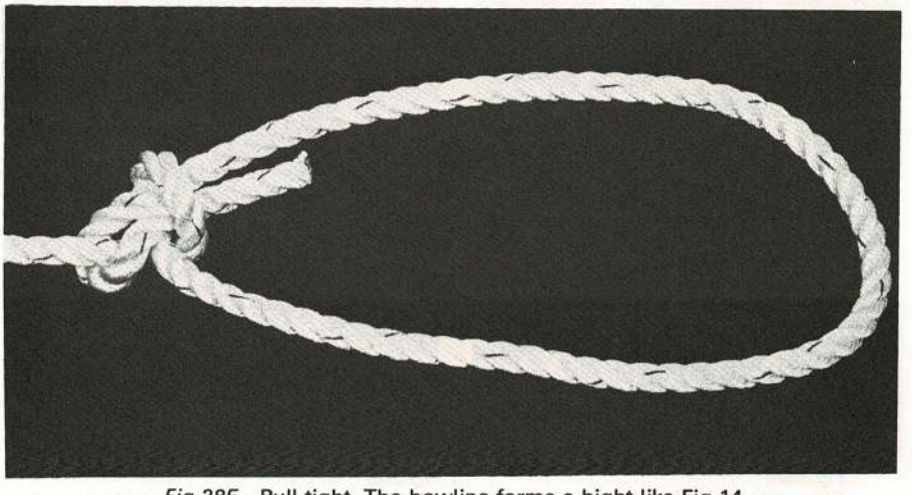

Fig 28E **Pull tight. The bowline forms a bight like Fig 14.**

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The One-Hand Bowline

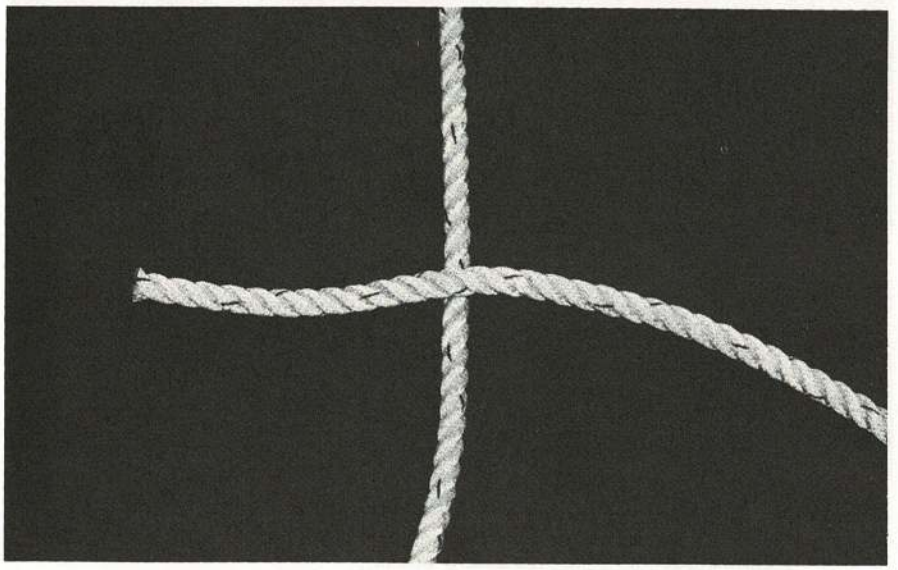

Fig 29A To tie a bowline with one hand — place the running end over the standing part ....

Fig 29B ... then grasp it with your fingers on top and thumb behind the standing part.

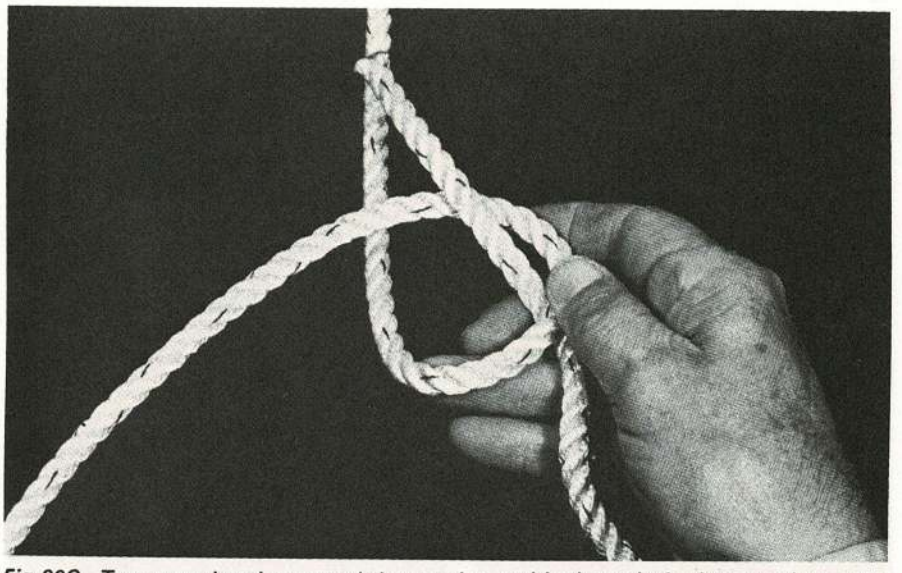

Fig 29C **Turn your hand over and the running end is through the loop ready to complete the bowline as in *Figs 28C, D* and *E*.**

c. *Running Bowline.* A running bowline is a bowline tied around its own standing part, thus forming a noose, Fig 30.

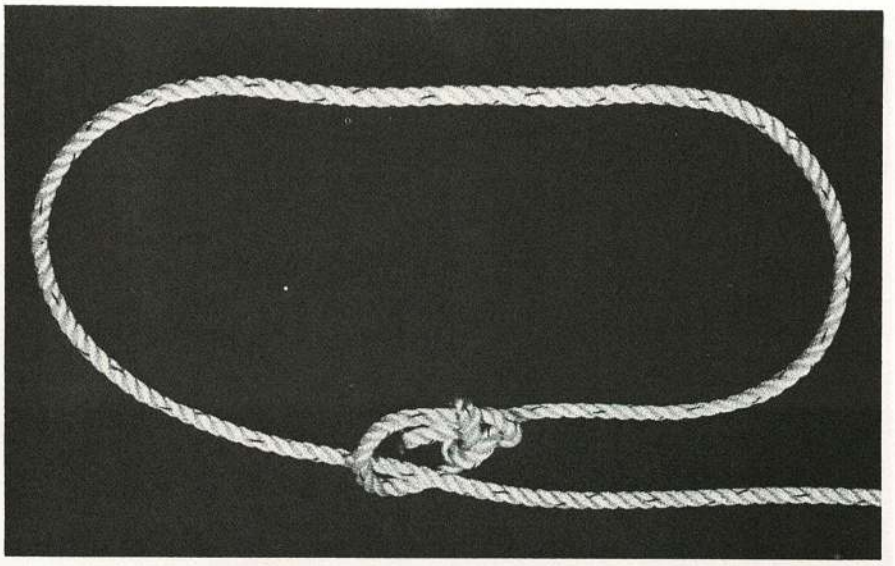

Fig 30 **A running bowline is a bowline tied round its own standing part, forming a noose.**

d. *Bowline on a Bight.* This is a double bight tied into a long rope at any part of its length without having to pull the long ends through. It is made by doubling the rope then proceeding as for a bowline except that instead of taking the running end, which itself is a loop, around the back, it is fed over itself so that it sits on the back of the standing part, Fig 31. The result is a double bight at the selected part of the rope. The two bights could be made more comfortable than one bight by placing them around your ribs and legs if you had to be hauled up a cliff.

Bowline on a Bight

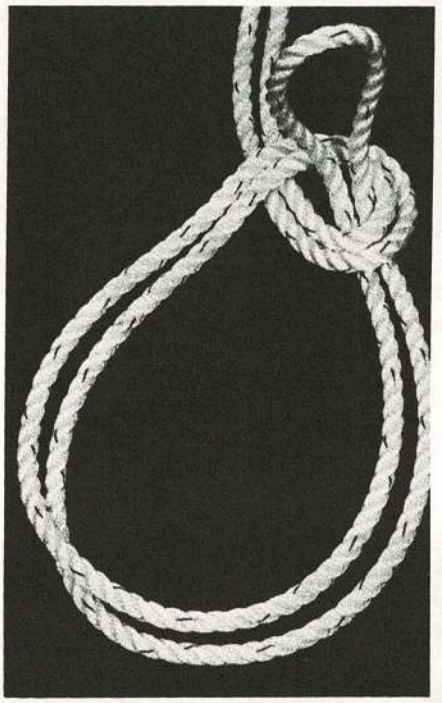

Fig 31A Double the rope and proceed as for an ordinary bowline but ....

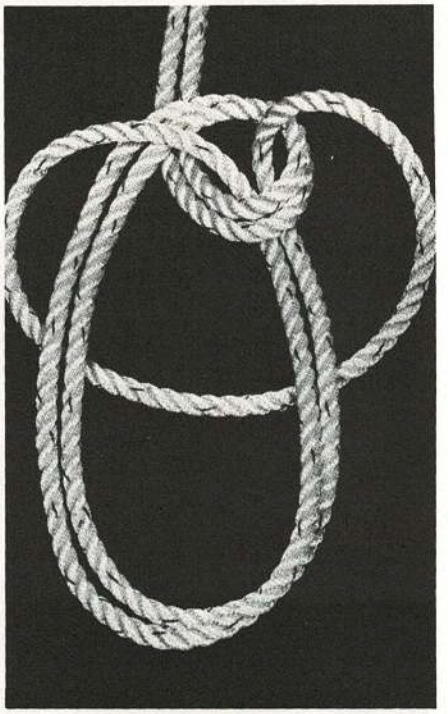

Fig 31B ... after passing the running end through the loop, spread it out and pass it back over the bight ....

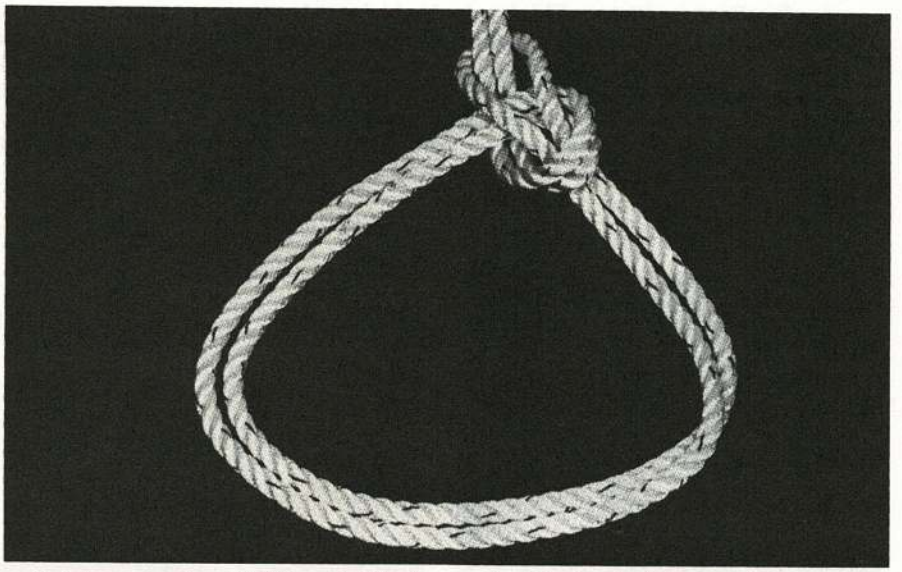

Fig 31C ...and pull tight so that it sits snugly at the back of the standing part...

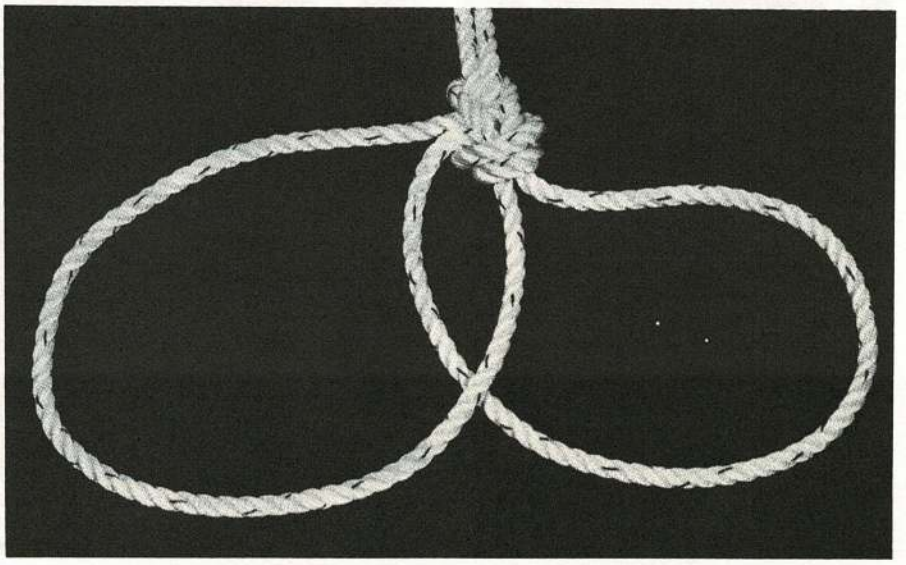

Fig 31D ... and you now have a double bight.

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e. *Triple Bowline.* This is easier to tie than the bowline on a bight and results in three bights instead of two. To tie it, simply double the rope for a sufficient length and tie the standard bowline knot, Fig 32. The three bights can be used as thigh loops or chest loops or relieve the strain which a single bight puts on a suspended man's waist.

Triple Bowline

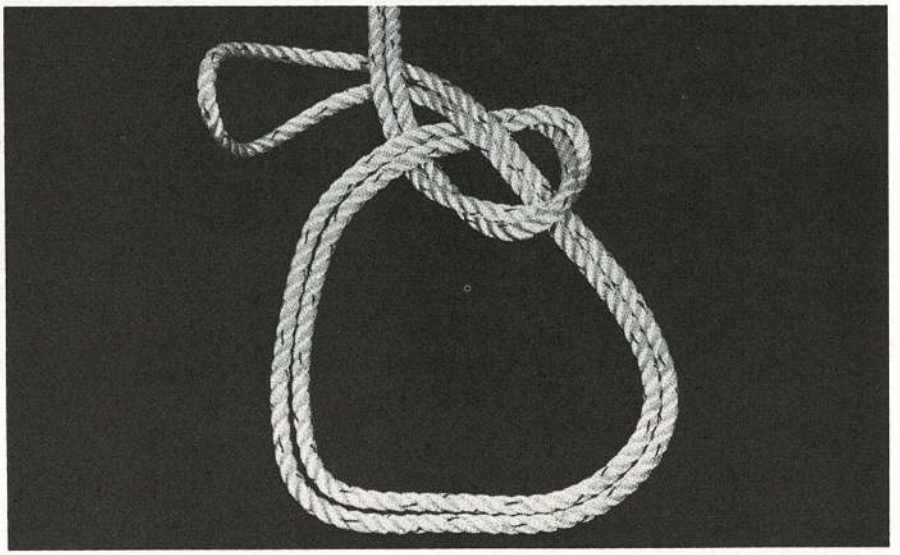

Fig 32A Tie a bowline in a double rope

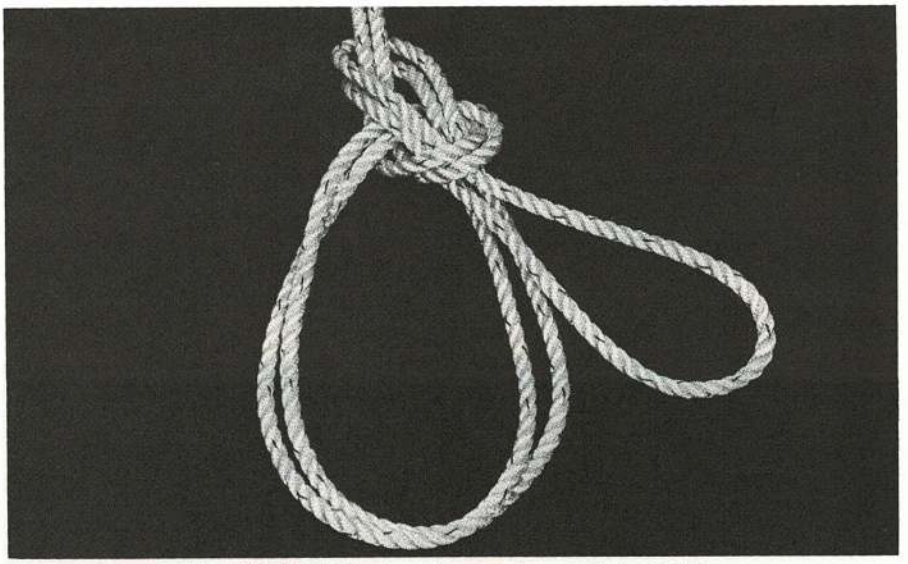

Fig 32B Feed the loop through to match the bights.

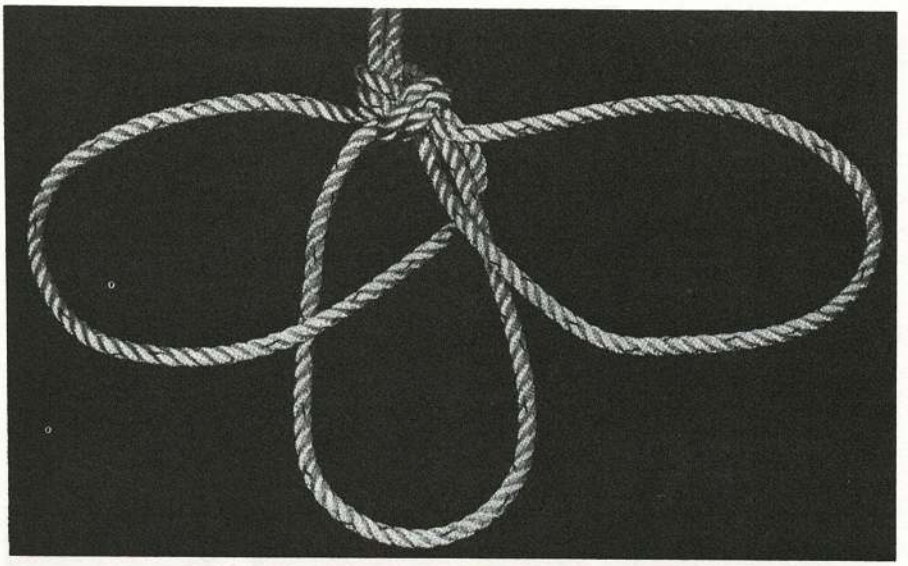

Fig 32C Pull tight and you have three bights.

27. **The Sheep Shank.** The sheep shank is used when it is necessary to shorten a rope and the rope should not be cut. Simply loop the rope along its length the required distance, then take the standing part at each end, form it into a clove hitch and cast the clove hitch over the loop, Fig 33. Pull tight.

The Sheep Shank — To shorten a rope

Fig 33A Loop the rope along its length

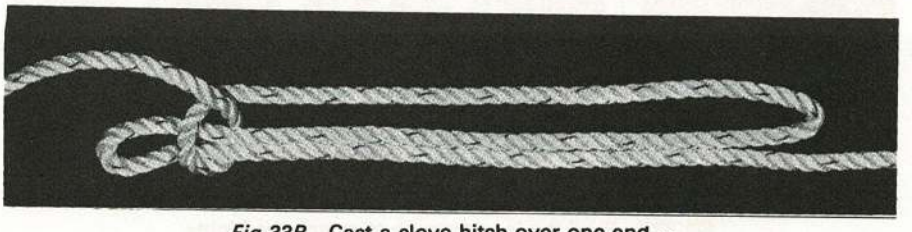

Fig 33B Cast a clove hitch over one end ....

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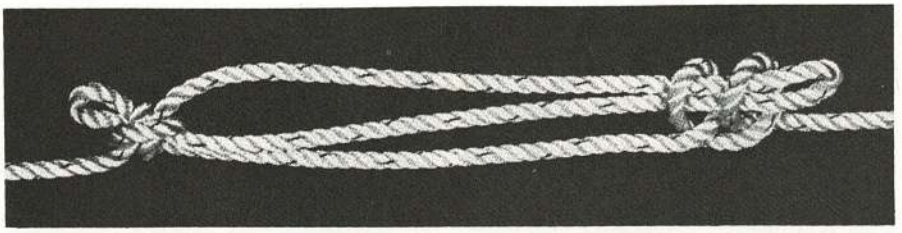

Fig 33C ... and then at the other end. Pull tight.

28. **Square Lashing.** It is sometimes necessary at Camp or in leadership exercises to lash one spar to another. Use strong cord for lashings, the thickness depending on the task. Start by tying a clove hitch on the vertical spar, just below the cross-spar, and then turn the clove hitch so that the strain leads away at right angles, Fig 34. Then take the standing part and pass it up over the cross-spar, around behind the vertical spar, then down around the cross-spar, back behind the vertical spar again and over the original clove hitch. Then repeat a sufficient number of times to make a firm job. To finish, pass the lashing round itself between the spars, two turns should be sufficient, and fasten off with a clove hitch on the cross-spar.

Square Lashing

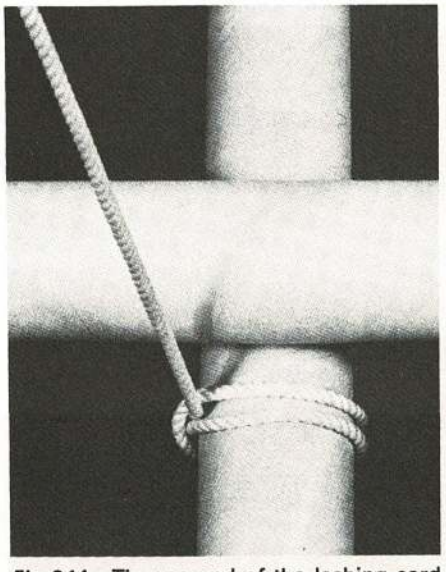

Fig 34A Tie one end of the lashing cord to the vertical post with a clove hitch ....

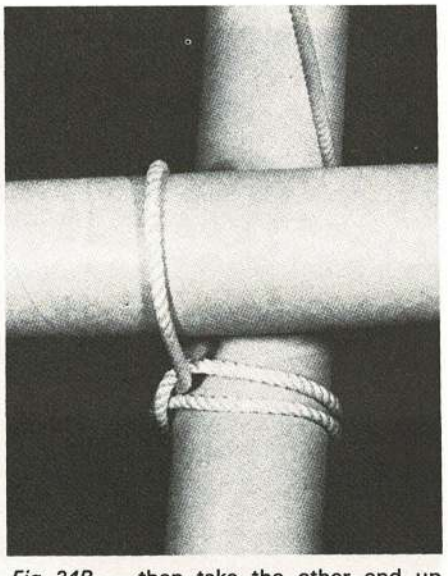

Fig 34B ... then take the other end up over the cross-spar, round behind the vertical spar ....

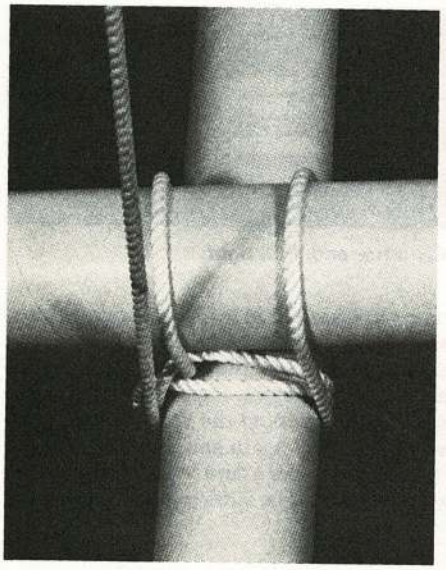

Fig 34C ... and down round the cross-spar, back behind the vertical spar and out over the original clove hitch.

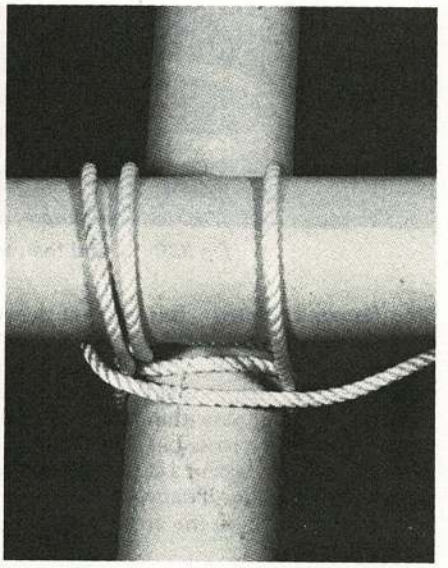

Fig 34D Repeat the lashing (*Figs 34B* and *34C*) the number of times needed to make the joint strong.

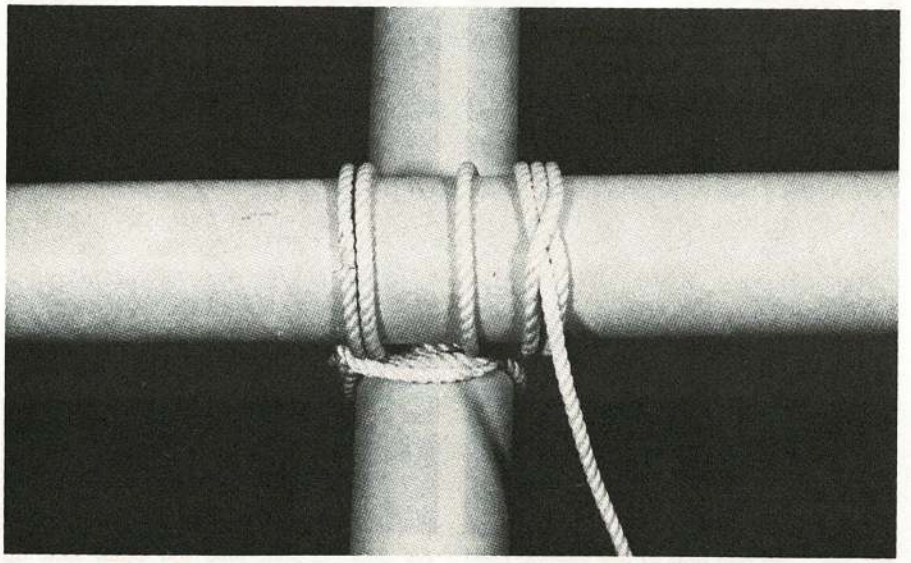

Fig 34E Finish off by pulling the lashing tight around itself between the spars (2 turns around itself should do) and fasten off with a clove hitch on the cross-spar.

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Conclusion

29. One of the basic skills which contribute to successful expeditions, rock climbing or mountaineering is an ability to use ropes and to tie knots properly. The knots described in this chapter are quite easy although they sometimes sound complicated and you only need practice to become proficient. Practise them frequently and when you are proficient try tying them with your eyes shut to simulate darkness. Also, simulate as many actual situations as you may think of — eg tying yourself into a rope for rock climbing but, of course, do not do any lifts or climbing without supervision.