

Nottingham University Caving Club - Training Notes

Sheet 6 (Single Rope Technique – SRT)

Overview

This sheet will look at the “Sit-Stand” or “frog” Single Rope Technique. Single Rope Technique, or SRT, is the name given to the ascent and descent of a pitch using a single rope, i.e. without the use of ladders or other cumbersome and time-consuming equipment. This sheet will firstly outline the equipment needed to SRT safely and, most importantly, will consider the equipment’s limitations. The various manoeuvres required to safely negotiate a pitch will then be considered.

1. Introduction

Single Rope Technique (or SRT) is heavily clouded in mystique for a large number of cavers, being perceived by many as the domain of only the most experienced, exploration cavers and completely impossible and, indeed, unnecessary for the average caver. By contrast though some see it as the only way to cave and require all new cavers to learn the basics from the outset.

However, both these outlooks are probably misguided. Indeed, SRT is well within everyone’s abilities although it certainly requires a greater degree of self-sufficiency than, say, ladder and lifeline. Some trips, however, are still better tackled using ladder and lifeline techniques. SRT, then, is a natural progression for all cavers interested in expanding the range of their caving. Although it may appear offputtingly complicated at first, things soon become second nature and a whole new world is opened up to its exponent.

2. Warning

It would be wholly irresponsible of me to write this sheet without some mention of safety. SRT is a totally different world from that of ladder and lifeline, where a confident and experienced leader can, with good lifelining techniques and a few well chosen words of advice, safely look after a novice on their first vertical caving trip. With SRT the onus is totally on you - the individual - and you must, therefore, be completely competent in the basic techniques required (explained below) before you go on any underground SRT trip. There is, therefore, no substitute for training in a gym, well chosen tree or on scaffolding. Here, any problems can be safely ironed out and, in the case of difficulty, you can always step onto a ladder and sort yourself out. Anyone going underground, fresh from the caving shop, with a brand new SRT kit, thinking they know it all is an idiot and would be well advised to call cave rescue before going underground!

In addition, while these notes are designed to fully explain all the basic techniques and the equipment involved, there is no room for error underground and, consequently, an afternoon in the garden hanging from a tree clutching these notes is not sufficient training. You will almost certainly be making some mistakes which may prove life-threatening. You must seek the assistance of someone who is experienced in SRT and SRT training.

3. The Equipment

With such a vast array of metal available in caving shops today it is all too easy to purchase the wrong equipment if not very careful. In any case, a good understanding of the equipment and its capabilities is imperative if you are going to do properly understand what you are doing. In what

follows I will outline the equipment needed for the safe and efficient exploration of vertical cave systems using SRT. I will also look at the uses and limitations of this equipment, the latter a subject all too often overlooked in the quest for a rapid acquisition of SRT proficiency.

3.1 Leg-Loop Harness

This is designed to allow the caver to hang both comfortably and safely. In addition it is the means by which all the equipment is attached to the caver. The harness is normally worn throughout the caving trip and, as such, must be strong and as abrasion resistant as possible. To this end, it should be made from either polyester or nylon and be at least 25 mm, but preferably 50mm wide. Those commercially available today are stronger than the caver who will be wearing them but a few points are important:

- Harnesses should be specially designed for caving and not of the climbing type. The main difference being their height. A climbing harness is designed to minimise the possibility of someone tipping out when turned upside down and, therefore, sits higher on the body. A caving harness, on the other hand, sits necessarily lower on the body allowing greater freedom of movement and a more efficient prusiking style (see further on). As such there is an inherent weakness in a caving harness and they should always be worn either in conjunction with a chest harness or with a karabiner attaching it to a load-bearing belay belt which is higher on the body. In this latter case the gate of the karabiner should be regularly checked as they are heavily prone to undoing themselves in this position.
- Harnesses should have a central link which can be undone to allow the harness to be easily put on and taken off. This joining link is normally metal, in which case, it must be a maillon rapide because of the certainty of cross gate loading if a karabiner is used. For further information, see below under “maillon rapide” (section 3.2).
- Harnesses should have a piece of tape running between the back of the leg loops and the upper “belt” section. This is not intended to be load bearing but rather, prevents the leg-loops from riding down your legs when you crouch. This is very useful.
- A harness should have at least two gear loops (non-load-bearing tape attached to the sides to allow kit to be stored out of the way).

3.2 Maillon Rapides

These are strong, versatile and cheap. Unfortunately their gates (the screw link in the bottom providing a gap via which rope and other items can be attached) are slow to open and close, as such, karabiners tend to be used if the gate needs to be opened frequently during the trip. However, it should be remembered that these are not always interchangeable and, whereas a maillon can be safely loaded in any direction, a karabiner is designed to be strong enough along its main length only and should, therefore, only ever be loaded in two directions along this axis. There is a great loss in strength (about $\frac{3}{4}$ of the stated breaking load) if the karabiner is subject to cross gate loading and this should never be allowed to occur. In any circumstances in which this may occur, a maillon should always be used. This is most certainly the case with the central link of the harness.

There are a multitude of maillons on the market today but one with a 10mm diameter should be

used as this provides a high safety margin and, carried on the harness, the extra weight over a 7mm (which would provide sufficient strength) is barely noticeable. The shape is a matter of choice. The two real possibilities are a delta shape (a sort of offset triangle) or a semi-circular (D) shape. The latter as it allows much greater freedom of movement between the various items of kit and also seems to provide more space for the kit. The gate of the maillon should always be on the bottom to gear (which goes on the top) rubbing and, thus, undoing it. Also, unlike krabs, maillons are easily distorted if a load is applied to them with the gate undone, rendering them useless.

3.3 Cowstails

These are made from a 2.5m length of dynamic rope tied with three figure of eight knots along its length so that one length reaches the elbow when the other end is held in the hand (including a karabiner) and the other length is about twice as long. The longer length is not so critical but it should not be so long that it is out of reach when hanging from it – remember when tying them that the rope stretches and the knots tighten when you hang from it. (See diagram 1)

These could conceivably be subject to a fall-factor-two fall (one which is twice as far as the length of the rope supporting it) and, as such, must be dynamic (climbing) rope to withstand this. For personal use I would recommend 9mm diameter rope as this provides the greatest stretch (and, therefore, a greater ability to absorb shock loads). 10mm rope is also an option for the individual and is considerably more durable. Indeed, the disadvantage of 9mm rope is that it must be replaced frequently (every year) although this is a minimal cost for an increase in safety. 11mm rope, while not to be encouraged for the individual SRT rig, may be the most sensible solution for club use where harsh treatment is likely.

The two end figure of eight knots should have karabiners attached to allow them to be clipped into anchor points. The middle one should be threaded onto the top of the maillon rapide (there is no need for a karabiner in this position since you will never need to remove the cowstails during use). It is usual to use snap-gate krabs as doing up screwgates slows down the clipping-in process which may encourage us not to bother with the cows' tails at all during certain manoeuvres - far better to have snap gates you use than screw gates you don't! A useful addition here is some form of retainer to hold the cows' tail at one end of the karabiner. These can either be purchased (plastic) or made from a cable tie wrapped around the rope and the krab.

It is important to remember to leave sufficient spare rope when tying the knots for a reasonable tail. This should then be taped in place against the main rope so as to prevent it working back through the knot.

3.4 Descender

There are many devices available today for abseiling. They all work by creating friction between the rope and the device, thus slowing down the fall (that's all abseiling is after all). Each device has different characteristics making it suitable for certain applications (or, in some cases, not very suitable for anything!) For SRT there are three real alternatives.

1. Petzl Stop - this is designed specifically for caving and for SRT in particular. It works on a bobbin principle whereby you wrap the rope around two bobbin in an s-shape, starting from the bottom and working upwards (see diagram 2). The brilliant thing about the

“stop” is that it incorporates an auto-stop facility which, when new, prevents movement down the rope unless the handle is squeezed. Quite apart from the greater safety margin this provides, it is also very convenient for certain SRT manoeuvres and when rigging. However, you should always remember that this stop facility is purely an aid and should not be relied upon. You should never remove your hand from the tail rope unless the stop is securely locked off (see below). In addition, when descending, the handle should not be used as a brake. It should be fully squeezed in and the tail rope held as a brake as for non-locking descenders.

This descender generally provides enough friction on its own. However, if you are using new or thin rope, are using a stop for the first time or are maybe somewhat overweight (!), you may need extra friction. This can be obtained by wrapping the tail rope around an additional braking karabiner positioned on the right-hand side of the stop. This karabiner should be steel (as should any karabiner that has rope run over its surface as alloy wears very rapidly on muddy, gritty rope). I suggest an HMS karabiner as it is designed for an Italian hitch knot which, in certain situations (e.g. rescue), may be required to provide maximum additional friction and, in any case, this then acts as an emergency descender. If you wanted to reduce weight then it is possible to use the krab on the long cowstail for this purpose provided it is, of course, steel. A snapgate steel krab is, however, difficult to come by and there is much to commend having “too many” krabs underground.

Very occasionally (on thick, long or old rope) the stop may provide too much friction. In this situation it can be threaded it in a different way (see diagrams 3 and 4). You should be especially wary when doing this, however, as very little can be done in mid-descent if more friction is required. This problem is most likely to occur on long pitches (greater than 40 metres) where there is a heavy weight of rope below which, of course, reduces on descent. In this case, a rack (see 3) is preferable.

As mentioned above, on any occasion when the hand is to be removed from the tail rope the stop must be securely locked off first. There are two ways to do this - one (called a “soft” lock) (diagram 5) will only hold as long as your weight is left on the rope whereas the hard lock will hold in all situations (see diagram 6). Given the short length of time it takes to put on a full, hard lock, its use is recommended during every manoeuvre. The soft lock’s sole use being when locking off a stop used in conjunction with a braking karabiner. In this case a soft lock should be used before the full, hard lock. You should be completely familiar with locking off a stop before beginning to look at SRT manoeuvres.

A word of warning - as has already been hinted at above, the handle can provide an illusion of safety. However, the greatest problem with these devices is the tendency for inexperienced users to grip the handle in a moment of panic rather than letting go, leading to them plummeting. This has already accounted for several accidents and, as such, a Petzl stop should not be seen as failsafe - beginners should still be lifelined.

2. Petzl Simple - these are exactly the same as a stop but without the autolock function. It is a valuable exercise when training to use one of these for a while to try to discourage reliance on the handle of a stop. They are cheaper than a stop but are not worth the saving.

3. Rack - these are heavier and much more awkward than a stop but, as mentioned above, come into their own on long descents where the stop will get very hot and variable friction is an advantage. There are very few places in Britain where their use is to be encouraged and, as such, no more will be said about them here.

No other descender (except possibly the new design of self-locking descender that will lock both when gripped hard and when released but I've not yet seen one of these and I gather it is extremely bulky and awkward) is suitable for SRT use.

3.5 Jammers

These are devices which allow the rope to flow freely in one direction but prevent it moving in the other. They are the key to SRT. They work thanks to an angled cam that jams against the rope in one direction of pull and allows free movement in the other. There are two main types: spring-loaded and lever-action cams. Lever-action cams have their place in long, straight ascents such as those found in the USA but they require dismantling to attach them to a rope and on the "short" British pitches they are too fiddly to warrant serious use. They can, however, come into their own on very muddy ropes where sprung cams have difficulty gripping. Sprung cams have little angled teeth which, when pressed against the rope by the caver's weight, dig in and prevent movement. Because they are angled the rope moves freely in the other direction. These are the jammers for use in the UK

Very important is that jammers are relatively weak and, as such, should not be subjected in any way to shock loading. Clearly, they should not be used as a belay device or when rigging unless everything in the system is taut.

1. "Petzl Croll" Chest Jammer - this is specifically designed by Petzl as the chest mounted jammer in an SRT system. It is angled so as to lie flat against the chest when attached directly to the harness's central maillon. Again, it is attached to the top of the maillon. Some people - usually of the taller variety - prefer to attach the chest jammer via a 5/6mm maillon link to the central maillon but this is not normally necessary. A Croll jammer is yellow.
2. Handled Jammer - this is attached to the rope above the croll and a piece of rope attached to the bottom of it forms a footloop. The handled jammer is basically a non-twisted version of the Croll with the addition of a handle and is designed for SRT use. However, the handle can encourage people to pull up with their arms when prusiking rather than pushing with their legs. It is possible to purchase both left and right-handed varieties which are blue and yellow respectively.
3. Standard Jammer - this is a handled jammer but without the handle. It used to be red but recently the climbers have got their hands on them and they have become multi-coloured!. For the reason stated above of people tending to pull up on the handle of a handled jammer, when learning SRT it may be preferable to use a standard jammer. For normal use, however, the handled jammer is preferred as it is almost impossible to release a standard jammer from the rope using one hand and the handle has uses in other situations (such as pulling oneself up a steep slope protected by a traverse line).

3.6 Footloop

This is a length of 8mm static rope tied at either end so that one end has a loop in it large enough to fit (fairly easily) two wellied feet and the other is the attached via a karabiner or a maillon to the standard jammer. The knots tied are not critical but a bowline is useful for the foot end and an overhand knot for the jammer end. To attach the footloop to the upper jammer many people use a maillon (7mm short oval) as it is cheap, durable and rarely needs to be undone in this position. However, I like to attach my jammer (with footloop clipped into the cam) to the gear loops on the harness when not being used. Because of this I recommend a krab as it avoids having to undo the maillon or carry another krab to clip it into. For rescue applications (see sheet 7) a karabiner is also very useful, preferably a wide oval one. The length of the footloop is crucial to how efficiently you climb the rope. It should be the right length so that the standard jammer rests just above the croll when you stand upright with feet in the footloop. Some people use tape for the footloop, arguing it lasts longer. However, there have been problems with this catching behind the cam of the croll leaving you in a very difficult situation, unable to climb or descend the rope.

3.7 Safety Cord

This is a vital piece of rope attached from the krab or maillon on the handled (or “upper”) jammer to the central maillon on the seat harness. It exists to avoid you hanging from just your foot and your arm if the event of your croll failing. As such it will probably never be required but if it were, it could be subject to something close to a factor-1 fall and, as such, a case can be argued for using dynamic rope to absorb as much shock as possible. However, it has been shown that the cord’s length is so small compared to the length of the main rope that very little, if any, difference is made by having dynamic rope. In addition the knots will absorb proportionally far greater shock than such a short length of rope. As such some cavers use the same 8mm cord for this purpose as they use for the footloop allowing them to have only one length - which has certain uses in rescue (see sheet 7). Thus the preferred option is dependent on ability. If a caver is proficient at rescue then an argument can be made for offsetting the slight loss of shock absorbency provided by using 8mm static rope for the footloop against the increased flexibility for rescue. Whichever option you choose the length of the safety cord is critical. It should be long enough to allow all the necessary manoeuvres to be negotiated but the upper jammer should not be out of reach when hanging from the safety cord. This length is crucial and must be tested. Because you *should* never hang from this rope it is attached to the bottom of the central maillon so as to keep it out of the way of the other things on the top. This is the only thing that does go there.

3.8 Chest Tape

Note that this is not a chest harness as such but rather a length of tape with a buckle at the end. Clearly this is not load bearing but rather it serves to pull you close to the rope and support the chest ascender. It is important to have an easy release buckle as it is necessary to release it and tighten it many times during the trip - while prusiking it should, necessarily, be very tight which means that when you come off the rope at the top of a pitch, you are bent over double and need to release it!

The tape is run through the top hole of the croll and then over the shoulders. The ends are crossed behind you and are then brought around your sides to your front. One end is now run through the central maillon and the buckle is fastened on the other end of this.

3.9 Summary

As a basic shopping list, I would recommend the following:

- 1 caving leg loop harness
- 1 10mm steel D maillon rapide - (linking leg loop harness)
- 1 Petzl Croll Chest Jammer (yellow)
- 1 Petzl handled Jammer (blue - right handed, yellow - left handed)
- 1 Petzl Stop Descender
- 1 Fig 8 tape chest harness
- 1 10mm alloy screw gate offset D karabiner - (for attaching descender)
- 1 10mm alloy oval karabiner – (for attaching upper jammer)
- 2 10mm alloy snap gate krab - (for cowstails)
- 1 STEEL screw gate HMS krab - (braking karabiner for descender)
- 2 rubber rope retainers - (for karabiners on cowstails)
- 1 2½ metre 9mm DYNAMIC rope - (for cowstails) (3m x 11mm for club use)
- 3½ metres 8mm STATIC rope - (for combined footloop and safety cord)
or 2 metres 9mm DYNAMIC rope and 3metres 88mm STATIC rope - (for separate footloop and safety cord)
- 1 plastic whistle with a cord

4. Prusiking - The Basics

Prusiking derived its name from Dr. Prusik, the man who invented a prusik loop allowing climbers to climb out of a crevasse when they fell into it. As such “prusiking” has been used for a long time but it is only comparatively recently that mechanical devices (jammers) have been produced to making it more efficient and relatively easily. Make no mistake, however, prusiking is NOT easy. You still have to raise your weight vertically upwards using nothing more than your own arm and leg (preferably more leg than arm!) power. Climbing 60 metres of stairs is not easy and neither is prusiking the same distance. There are many prusiking methods in use around the world but I will look at only one of these - the “frog” rig. This works on a sit-stand principle and is the most suited to the sort of vertical caving encountered in the UK.

The two jammers can be loaded independently allowing movement up the rope by “sitting on” (the term used to describe loading a jammer) the croll while lifting the upper jammer and then pushing (directly) downwards with the legs, so transferring the weight to the upper jammer. The body then moves up the rope and the rope runs through the Croll. Sitting back down on the croll allows the caver to start again. There are two important things to note here which, if done incorrectly, will make prusiking more difficult than it need be.

1. You must push downwards with your feet when standing up. If you push forwards and outwards (as there is a tendency to do) then a lot of energy is wasted and there is also then a tendency to do 2) as well! (See diagram 7 for correct prusiking style)
2. You must not pull yourself upward with your arms any more than necessary. The leg muscles are by far the stronger muscles and should be used in preference. If your arms feel tired before you legs then your prusik style probably needs altering.

It should also be noted that when starting climbing at the bottom of a pitch or rebelay (see later

on) then there is very little weight from the rope hanging below. This means it does not move through the croll as easily, resulting in a frustrating, waste of effort. This can be avoided in one of three ways:

1. Weight the bottom of the rope either with the tackle sack containing the spare rope or, if really desperate, a rock tied onto the rope.
2. Trap the rope between your feet when you stand and then, and this takes some practice, open your feet as you lift the jammer back up afterwards.
3. Hang the rope over one of your legs and pull it through with one of your hands as you stand. This is okay for a short pitch but you will get very tired very quickly.

5. Basic SRT Manoeuvres

There is more to SRT than simply moving up and down a rope. Unfortunately, because of the necessity to completely eliminate rope rub and to develop a nice freehang away from water and stone fall, the rope sometimes needs to be either rebelayed (diagram 8) or deviated (diagram 9) at various points down the pitch. These must be able to be passed on both ascent and descent. In addition you should be able to confidently change from ascent to descent and vice-versa, pass knots in mid-rope and reverse prusik. We will look at each of these in turn. Note that much of what follows can be worked out logically on the basis of the standard “two points of contact at all times” rule.

5.1 Rebelays

A rebelay is when the rope is reattached to a belay point (or sometimes two) in mid pitch. This is usually done to alter the position of the rope hanging below to prevent rope rub but can also be employed in a longer pitch to break it up and allow more people to climb at once (see section 6). It is necessary to pass these during both ascent and descent while maintaining fully protected. This is achieved as follows.

5.1.1 Ascent

1. Prusik up to the rebelay (taking care not to push the upper jammer against the knot or you will have great difficulty removing it!).
2. Attach your long cowstail to the hanger, or maillon if there is one.
3. Stand up in your footloop and remove the croll.
4. Re-attach the croll onto the rope coming from above (make sure it is the correct one) Pulling as much rope through the croll as possible at this point makes the whole manoeuvre much easier.
5. Sit down on the croll and remove the upper jammer placing it above the croll.
6. Remove the cows tail and continue prusiking.

5.1.2 Descent

1. Descend until the descender is level with the rebelay knot and lock off.
2. Clip the **SHORT** cowstail (this is why it must be short) into the hanger or maillon (or with a y-hang rebelay, the knot) and the long one into the rope below the descender (to act as a failsafe if the descender is loaded incorrectly).
3. Unlock the stop and continue abseiling until your weight is taken entirely by the short cowstail.
4. Remove the descender, replace it on the down rope then lock it off!

5. Place your foot or knee into the loop of rope at the rebelay and lift yourself up so that you can remove the short cowstail. Sit down on the descender. If this is impossible you can use the footloop of your jammer, connected to the rope.
6. Unlock the descender, check it is correctly loaded, remove the long cows tail and begin abseiling.

5.2 Deviations

A deviation is a different way of altering the hang of the rope down the pitch. It is not reattached to the cave but simply pulled away from its natural position. These are usually quicker to pass (but can be very awkward if they are too acute), take less rope and can make use of suspect belays but do not allow more people to be on the pitch at any one time.

5.2.1 Ascent

1. Prusik up until you have pushed up the deviation krab level with the belay point.
2. Lift up some spare rope from below you and clip that into the deviation krab.
3. In the same movement, remove the upper rope from the krab.
4. Continue prusiking.

Note that it is possible to just unclip the deviation and then replace it below you but this can be very hard work and you often have to clip in a cowstail to avoid swinging away.

Do NOT treat a deviation as a rebelay and hang from the anchor - deviation anchors may not be strong enough to cope with it.

5.2.2 Descent

1. Descend until you have passed the belay point for the deviation. Lock off the stop.
2. Lift up the deviation karabiner (with the rope still in it) and attach it to the rope above you.
3. In the same movement remove the rope that was initially in the krab
4. Unlock stop and continue descent.

As with ascent, it is possible to unclip the deviation and then clip it in above you but this is hard work and prone to difficulty.

5.3 Ascent-Descent Changeover

Sometimes when underground (and always in the gym) it is necessary to switch from ascent to descent. This can be achieved safely as follows.

1. Stop and attach the descender below the croll. Take out all the slack between the stop and the croll and lock off. Take great care loading the descender as errors are easily made here.
2. Move the upper jammer down the rope so that you can only stand up a little bit (so it is a few inches above the croll only) Stand up in the footloop and remove the croll. Sit down onto the descender.(The safety cord from the upper jammer should not be taut at this point)
3. Take your feet out of the footloop and lower the upper jammer. This is now a back-up in case the descender is incorrectly loaded.

4. Unlock the descender, check it is correctly loaded, remove the upper jammer and continue the descent.

5.4 Descent-Ascent Changeover

Descent to ascent is also necessary underground sometimes (if you abseil onto the knot at the end of the rope for example). It can be achieved safely as follows.

1. Stop and lock off the descender.
2. Attach the upper jammer, then stand up and attach the croll - both above the descender.
3. Remove the descender and prusik upwards.

5.5 Down Prusiking

This is a way of descending the rope a short distance without having to change to descent. The important feature here is that you never disengage the jammer completely. They are designed so that the cam opens sufficiently by pressing the top of the cam, allowing the rope to move freely, without letting it come off the jammer.

1. Stand up in the footloop and disengage the cam of the croll as explained above. Run the croll down the rope.
2. Pull down the upper jammer in the same way.
3. Continue in this way as far as required.

5.6 Passing a Knot

Occasionally it is necessary to pass a knot in mid-rope (although ropes will usually be joined at rebelay so avoiding this awkward manoeuvre). All knots should be rigged with a safety loop in the end so you can clip in a cows tail during the manoeuvres (diagram10).

5.6.1 Ascent

1. Clip in the long cowstail to the safety loop at the knot.
2. Remove the upper jammer and reattach it above the knot. Stand up a little to make space for the croll above the knot – careful not to allow the croll to jam against the knot at this point.
3. Remove the croll (by standing in the footloop) and reattach it above the knot, below the upper jammer.
4. Remove the cowstail and continue prusiking.

Note that this is the opposite way around from a rebelay (ie. upper jammer moves first at a knot).

5.6.2 Descent

1. Descend until the stop hits the knot (this time there is no need to lock it off!)
2. Change to ascent (see descent-ascent)
3. Remove the descender from above the knot
4. Down Prusik (see “Down Prusiking”) until you almost reach the knot.
5. Reattach the descender below the knot and **LOCK IT OFF!**
6. Change from ascent to descent as usual (see ascent-descent).

5.7 Progression along an angled rope

Sometimes it will be necessary to move along rope that does not hang vertically. The rope will have been anchored from below, probably to direct you to the correct place. The best method for ascending is to wrap one leg around the rope, which, although painful, is the easiest, most efficient method. On descent, it is sometimes possible to abseil until you are in line with the anchor point at the bottom of the rope and then to drag yourself towards the belay point by pulling in on the rope. This is made easier if a knot has been tied in the rope onto which you can abseil. On other occasions a guideline will also be rigged. This is a taut rope into which you clip your short cowstail to guide you in the correct direction. A slightly more complicated method, on the same principle, can be used for the ascent too if a guideline has been rigged. (Diagram 11) When there is a guideline be very careful you don't clip your equipment into the wrong rope as the forces involved when hanging from a taut rope could well cause equipment failure.

6. Group Progression

One of the main advantages of SRT is that the group travels independent of each other. There is no waiting around at pitches for each member to be lifelined up or down. This means that there will always be a rope length between you and the next member of your party. Often you will be unable to see to that person so communication is vital. Without calls nobody will know when the rope below/above them is free and nobody will move. The most efficient method of calling involves shouting "rope free" followed by the name of the person who is following you. Omission of the name can bring rise to great confusion. Whistle blasts are sometimes necessary - try to use distinctive blows.

This call should be given when you are two bolts away from the other person or completely off the rope. That is to say, when you have reached the top of the pitch and have passed the first traverse line bolt or when, at the bottom of a pitch leading directly onto another one, you have passed the second bolt of the next traverse line. The exception to this is rebelaying when you may each occupy one section of rope with only one bolt between you. Never prusik up a rope length at the same time as someone else. This is sometimes considered in the interests of efficiency on very long pitches but there nothing in Britain long enough to justify it.

7. Pitch Heads

One of the greatest difficulties (and one not easily practiced on the surface) is getting on and off the rope at pitch heads. The "textbook" pitch head with the y-hang next to the lip is rare! Although on some pitch heads what is given below may seem a little unnecessary, it is imperative on most pitches and is, when practiced, the best way for all pitches.

7.1 On Descent

The pitch head is approached via the traverse line, into which cowstails should be clipped. Intermediate knots are passed by moving one cowstail at a time, thus always ensuring a safe link in the event of a fall. At the y-hang (the pitch head itself) hang from your short cowstail (clipped into the y-hang) and then load your descender and lock off. Stand up, using the rock around you or the rope itself to assist, and remove the short cowstail. Unlock the descender and ensure it is correctly loaded. Remove the long cowstail and descend.

7.2 On Ascent

On arrival at the y-hang attach both cowstails to the y-hang and/or traverse line as far away as possible. Stand up in the upper jammer and remove the croll before hanging from the

cowstails. Remove the upper jammer and move along the traverse line in the usual way.