

The birth of the friction belay device

There have been many inventions and pieces of equipment that one can think of that has advanced climbing during the past years, from the first piece of rock (chock stone) placed as protection to the modern Camming Devices. One of the most significant and often overlooked, by new comers to the sport, are the belaying friction devices which we use so freely to protect our leaders and seconds. The choices now in the shops are astonishing. It was not that far back, the mid 70s, that everyone was 'body belaying'.



The waist belay with simple waist belt

The body belay was a system where you placed your **body** directly into the belaying system. This entailed wrapping the rope around your body and wrists; holding any falls with your hands and the friction of the rope around your body. In the Alps, and most of continental Europe, most climbers would use a direct belay system where the rope was attached directly to the belay but still having to hold the rope with their hands. The UK system, called the dynamic belay, came about because of the way we climbed using natural protection for the climbs and belays. In the Alps, most belays would have been

equipped with fixed gear, pegs or bolts. Initially, when climbing first began climbers had nothing but the rope. Later slings, tapes, nuts and now cams are used. Having no fixed belays required the weight and initially the strength of the belayer to be involved in the system. When using this dynamic system of belaying there are many safety areas where it can let a climber down in regards to its reliability. The stance the belayer takes- standing or sitting, the strength and reaction (reflexes) of the belayer and whether they had placed the rope around their waist or over a shoulder. There are many more, but all could play a serious part in making the climbing team safe when a fall occurred.

This sets the scene for what was to take place in the early seventies.

Back in the early seventies (1970) I was an instructor at Plas-y-Brenin. At that time I was employed in bringing rock climbing into the main stream of activities which the centre was providing. This brought me into contact with various sales persons pushing climbing gear and new ideas.

It was during this time that a salesman for MSR (Mountain Safety Research) came to the centre, unfortunately I've forgotten his full name but his last name was Penberth (Mr P). He would often visit the centre to pass on useful information about some new items coming onto the market, with the hope that we would also purchase some. I was in charge of the climbing budgets. On this occasion he had brought a new idea for belaying. It was in fact a simple chain link



The simple chain link

The idea was that this chain link would allow a climber to hold a falling climber much more easily and without the need to wrap the rope around ones body. After a lot of discussion most of those present just dismissed the idea. He asked if he could demonstrate it on our drop weight machine.

This thing of torture, the drop weight machine



The drop weight was used on every course as an exercise to demonstrate to students how difficult it was to hold a fall. Every student coming on a climbing course would have to go through the procedure of holding a ten stone concrete block. It was far better to find out under controlled conditions that they could hold someone's weight in a fall; than to discover on an actual climb that they did not have the strength or quick reactions.

Imagine a 10 stone concrete block on the end of a steel cable. This block(on guide rails) could be winched up to various heights The student standing on a plinth some 12 feet up. First the block was winched up to just below their stance to simulate a seconds fall and then above to simulate a leader fall.

Mr P.intended using this small chain link as a direct belay on the anchor points we had positioned in the buildings wall. We were to hoist the weight up high, well above his head and the anchor points, then release it. Once released the actually load would go directly onto this new device, chain link. Just to prove how he trusted this new idea, he was to hold the inactive rope in his **teeth**. At first no one would volunteer to be the one to release the weight but finally someone did. We all closed our eyes in expectation of seeing Mr. P's teeth come flying out of his mouth. There was a loud crash as the weight came crashing down to rest on the end of the rope, well above the ground; and there stood Mr. P with all his teeth still in place and he was actually grinning! We all applauded and treated this spectacle as a party trick. It's hard to image after seeing such a demonstration how it failed to impress us, and one would never have imagined that this little item could revolutionize climbing as we then knew it.

We never thought anymore about it until the following year when Mr. P again paid me another visit. This time the device had been improved from a simple link of a chain to a shaped piece of alloy



The first alloy Sticht Plate

It was now lighter in weight and with holes to attach it to a crab by a short cord. I personally still was not convinced about it and none were selling in shops.

It took me some time to persuade myself that I should indeed try to use it. I had control of the drop weight machine at the centre and could experiment with it for myself. After extensive trials it dawned on me that indeed this idea could catch on. I also extensively researched different belaying methods for comparison. Such as comparing the forces which would be passed onto the actual belay when using this new device against the waist belay. I also did many more tests, too complexed to record here, which eventually convinced me that it could become a useful piece of equipment. Eventually this report was sent to the Technical committee of the BMC, who unfortunately lost it!

This new device now called 'Stitch Plate' came out way ahead of anything used at the time. I was able to do these tests as P.Y.B as we had purchased a stat meter (an analog clock which can measure maximum forces reached at a given point in time). This could be placed within various parts of the belaying system. The final approval of course had to come from its actual use whilst climbing. For the following six months I took it climbing with me, until finally coming to the conclusion that not only would it make climbing safer, it would also increase our ability at the centre to allow students to lead climbs and hold each others ropes when belaying. Until then it had always been a hit and miss affair as to whether to allow clients to hold each others ropes in a leading situation, even holding a second could be problematic. It was far too easy for them to just let go of the rope, either as a leader holding a second or a second belaying the leader. We, as instructor at the time, always had in our minds that we may be soloing the routes we took students on. When clients were waist belaying other seconds it was important that an instructor or guide always kept a hand on the rope just in case the client let the rope go.

Looking back it is really hard to understand the resistance of the staff at the centre to change over from the old body belaying to this new friction style belaying. It took over nine months of persuasion for the Sticht Plate to become a central part of the climbing courses, but not our general activity ones, It was TOO specialized for that I was told. One also has to remember mass communication wasn't as well developed as it is today. Now we are overwhelmed with such information on web.

I well remember climbing on the Ormes with a well known and competent climbing friend, doing a new route in Great Zawn. I was going to lead out on a long unprotected pitch and he was perched on a two inch foot ledge hanging on slings, over the sea! I asked him if he wouldn't mind using my belay device (the alloy plate) He told me in no uncertain terms to F---- off as he wasn't going to use such a stupid idea. He had far more faith in a system that he already knew than some strange little 'pissing piece of alloy'!

During the many tests I did at P-Y-B with this new device the Sticht Plate, named after Hans Sticht the inventor, I found that a higher weight load was being placed on belays when seconds fell, This was because forces went directly from the device onto the actual rope attached to the anchor points, thus placing a greater load on ones anchors. The obvious advantage of the Sticht was that it was fail safe for stopping a fall and of course a

climber could always backup belays. In the older waist belay system the rope was put around your waist so that your actual body resistance was included in the belaying. The greatest advantages of ALWAYS being able to hold a fall, be it up or down, far outweighed the disadvantages of the greater loads on the belay.

In actual fact the friction belay device revolutionized the teaching of climbing at both P-Y-B and Glenmore Lodge. It had taken me over nine months to convince my fellow instructors that we should use this system of belaying for our courses. Initially, like me, they too were reluctant to dump the old and well used system of body belays.

By now the Sticht had again improved. On one of Mr. P's visits I had shown him my spring version of the alloy plate he had first given me.



The first spring

Within weeks we had the new spring version of the Sticht plate and this design has now been used for many years, and is still in use today. In the early part of 1975 I was invited to visit Glenmore Lodge to demonstrate how we were using this new device, all our instructors at P-Y-B, where then using the 'Sticht' on all rock courses but not yet on other activity courses, they still needed to except fully that it was superior to anything we could teach in body belaying. After just one visit Glenmore Lodge changed completely over to

this new system. I have to this day kept a prized letter from Fred Harper (the then director at Glenmore) saying how enthusiastically they had accepted the new belaying system.

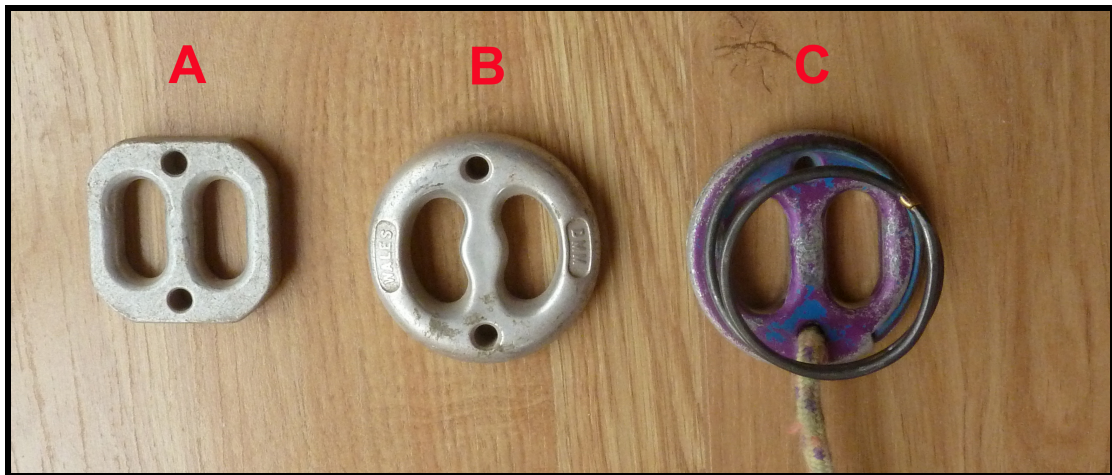
Both Glenmore Lodge and P-Y-B taught many thousands of students to use the new device. It eventually became the main belay system on instructor training and assessment courses. It had also quickly gone into climbing shops. This increased exposure no doubt played a major part in getting the friction belay device idea spread throughout the climbing world.

One must stress here that it had taken so much longer to be accepted than it would have to-day. One had to wait months for magazine to be published and then not all climbers would be reading them. Now it's as simple as the click of a mouse.

It wasn't long before other manufacturers caught onto the idea and copies soon appeared in the shops.

Below .

A and B, early copies of the double belay plate. C. The original Double Sticht Plate



With all the different devices now on the market it is hard to visualize the resistance that this simple belaying method first encountered. One can see the similarities to the Sticht Plate that now exist to many of the modern belay devices, all originating from a simple chain link.

There is no doubt though, that little chain link played a major part in revolutionizing climbing. Just imagine what it would be like without belaying devices. Would we have so many people climbing or allow such young climbers holding overweight partners, I think not. How many lives has it saved? Would you as a leader be so confident of your second

being able to hold you in the event of a fall? Like all good ideas, the simplest are usually the best, and no doubt it cannot get much simpler than a single chain link. Friction devices have now gone much further, and not always for the best, into semi-auto devices which are not as simple and require more training.

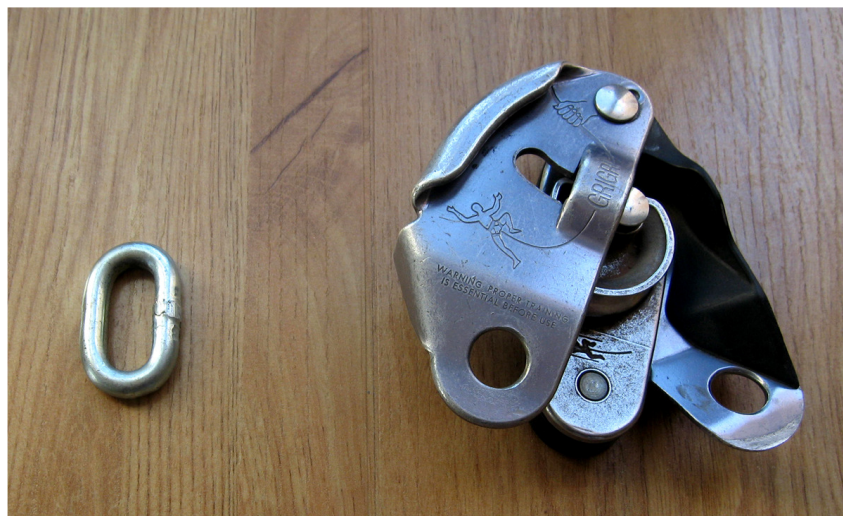
Facts to learn.

Any friction device will put a greater load on your anchors than a dynamic body belay when holding a falling second. This can be counter balanced by always having bomb proof multi belays. Just by sitting down you can back up a poor belay.

A friction device also places more load onto the top runner in the case of a leader fall. This is because you can bring the rope to a sudden stop. Modern ropes are now far better at dealing with this and of course protection has vastly improved. Always remember that the more rope there is between ones self and the belay will reduce the load on a runner in the case of a fall. Double ropes used alternately will also help to reduce load on runners.

Many years ago I recall discussing long falls with Joe Brown and the use of these new devices. At that time he was very skeptical of these new device and was still using the waist belay, after all it had served him well in the past. He recalled many times when a number ones cord (6mm hawser rope) was able to hold a fall of 30ft or so, and all on a waist belay, so what use were these modern devices? In many ways he was right and in those days of poor runners a body belay was the best way to go. What was happening was that the belaying system was breaking down on the belayer's end of the rope. It's hard to avoid rope slippage when body belaying (a useful tip for ice climbing). This reduces the load on the runners. But of course those were experienced climbers and unfortunately it didn't always end up so happily.

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From this simple piece of chain to this!