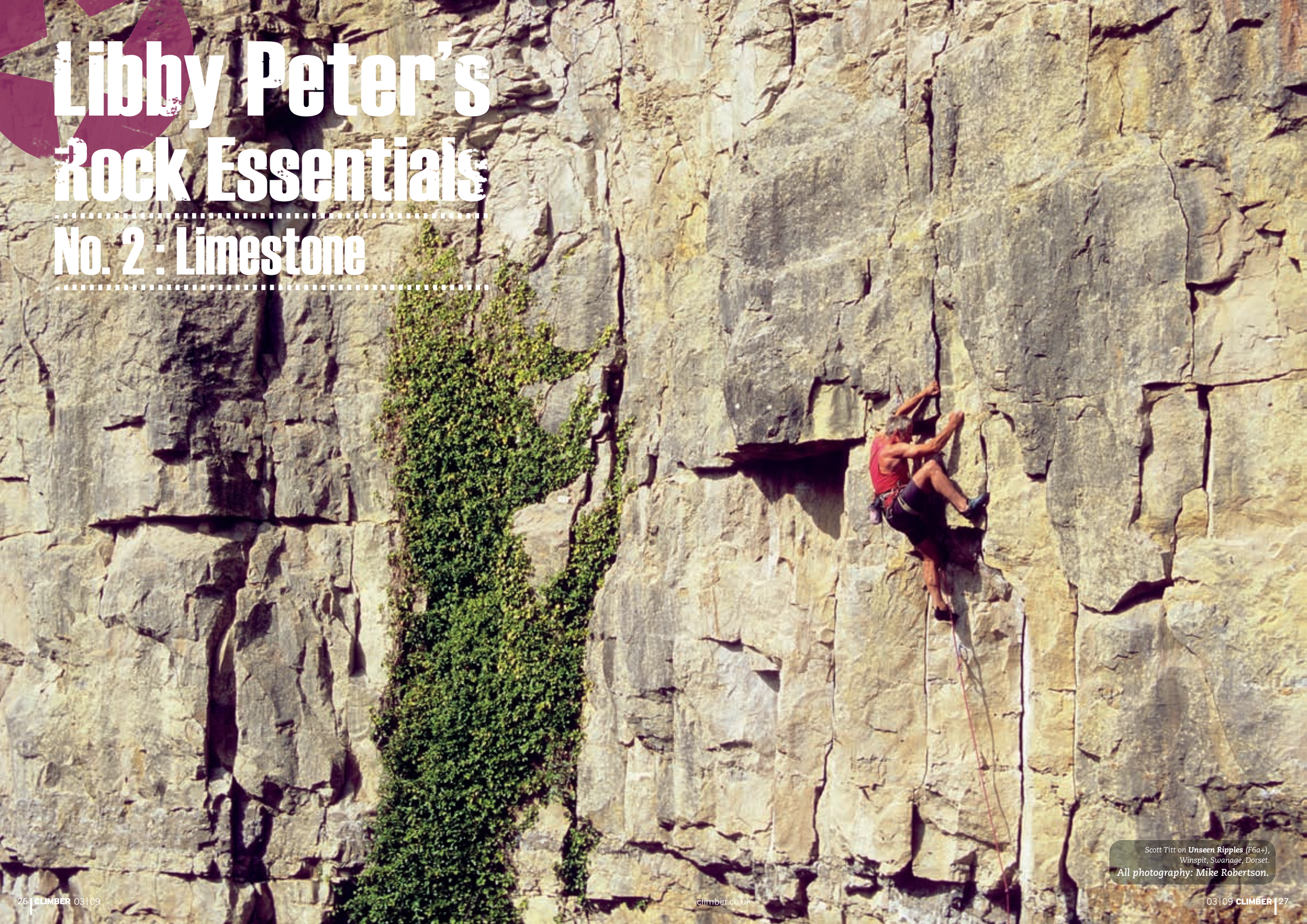
Libby Peter's Rock Essentials

No. 2 : Limestone



Scott Titt on ***Unseen Ripples*** *(F6a+), Winspit, Swanage, Dorset.*
All photography: Mike Robertson.

Back to school – our first rocks

Getting your head around the geological timescale is baffling but having a grasp of when, as well as how, the rocks we climb on were formed adds a fascinating historical dimension. Though today's landscape was shaped by ice, rivers and sea within the last two million years (i.e. the very recent past), the rock themselves are far, far older.

The oldest rocks in Britain (and also the oldest rock we climb on) are found in North West Scotland in the form of the dramatic Hebridean islands such as Lewis, Mingulay and Pabbay. These ancient metamorphic rocks, known as Lewisian gneisses are around three billion (that's 3000 million) years old. The earth itself is believed to be 4.56 billion years old and there was much excitement last year when a new contender for the world's oldest rock was discovered in Hudson Bay, Quebec. This ancient volcanic-faux ampholite is about 4.28 billion years old (as yet there are no recorded routes on it!) and it's only pre-dated by finds of Zircon minerals in other parts of Canada and western Australia.

These ancient rocks are from distant eons that are referred to collectively as the Precambrian, which means they are over 550 million years old. By contrast, the youngest rock we climb on hales from the Palaeogene era (24-65 million years ago) a period of great upheaval within the earth's crust creating forces that built mountains and produced volcanic rocks.

The time period from the end of the Precambrian (550 million years ago) to the present day is divided into 12 eras, all with distinctive climatic conditions that influenced the geology we recognise today (more of these next month). The main reason for the changing climate is that the continents and seas we recognise today were not always in this position, indeed the earth's crust has been constantly evolving and moving and this is the story of plate tectonics (which we'll come back to). The picture is complex but the end result is a mesmerising geological inheritance that gives us infinite variety and endless fun.


Flowstone.

How limestone is formed

Limestone is a member of the calcium carbonate family that also includes chalk, dolomite and marble. It's a sedimentary rock formed from the remains of billions of tiny shells and skeletons of microscopic animals. Of most interest to the climber is carboniferous limestone (formed during the carboniferous period around 340 million years ago) and the younger Jurassic limestone (laid down about 200 million years ago). Of course the sediments were being laid down over many millions of years and so reflect the many changes in the condition of the sea floor during that period. Limestone varies enormously in colour and quality, more in fact than any other rock type we climb on.

Chalk is a poorly compacted sedimentary rock and forms a softer more porous type of limestone, favoured only by an adventurous minority of climbers. The chalk cliffs near Dover have been scaled 'winter style' with axe and crampons, whilst an ascent of Skeleton Ridge on the Isle of Wight's Needles must rank amongst the most adventurous (and upgradeable) alpine style ascents you'll find in the UK.

Dolomite is a limestone/magnesium mix and anywhere that limestonWe is replaced by dolomite is referred to as dolomitic limestone.

Marble is metamorphosed limestone or chalk and is such a hard and smooth rock that it's more suited to sculptures than climbs.


*The trad limestone crag of Bosherston Head, Pembroke. The **Preposterous Tales** (E2 5b) cave can be seen on the left.*

Geographical spread

England, Wales and Ireland all have significant limestone areas, yet Scotland has hardly any (the limestone and chalk it did have was eroded and transported by rivers to the bottom of the North Sea). Dorset's so called Jurassic Coast (a world heritage site) boasts over 1200 sport routes and approaching 500 trad routes. Elsewhere it is the older carboniferous limestone that predominates. South Devon, Avon and Cheddar are the main areas in the Southwest, whilst most of the South Wales coast is Limestone, with Pembroke boasting in excess of 1000 fine trad climbs. North Wales, the South Lakes and the Peak all have significant limestone crags but it's Yorkshire that has the greatest concentration of climbs anywhere in the UK (well over 3000!). In Ireland one of the most extensive and beautiful limestone areas is The Burren in County Clare on the west coast.

How to climb it

Neat and effective footwork helps enormously on limestone. More often than not the rock is steep, the handholds small and the footholds even smaller, which means you need to do everything you possibly can to get weight onto your feet. Rock boots that are well fitting (i.e. midway between comfy and crippling) are essential to enable you to feel exactly where you're pressing and don't forget to get them squeaky clean before you set off. Couple the right footwear with precise and imaginative foot placements and you'll be well on your way to getting weight off your arms.

Strong fingers are undeniably an advantage on crimpy limestone edges and pockets but as finger strength takes time to gain it's common for your fingers and forearms to let you down. There are no quick fixes here so choose your routes carefully and move hastily through fingery sequences whilst concentrating once again on your feet.

How to place gear in limestone

In most countries climbers immediately associate limestone with bolts and it's true that vast sections of cliffs, if not whole crags, would be virtually unprotectable without them. However in this country we're lucky to have some fantastic trad limestone cliffs such as Pembroke, The Burren and in Yorkshire where the rock is sufficiently featured to enable excellent gear placements.

However, knobbly and irregular cracks often make it awkward to get nuts to seat well first time. You need to look closely at the curves of the crack and be precise with exactly where and how you place the nut. The steepness of the rock combined with the awkwardness of getting the gear right means you can be pumped in no time at all. Try to spot and 'guestimate' the size you'll need from a resting point below to help save crucial seconds.

Cams don't always mix well with limestone. In some cases the cracks are very smooth with low friction reducing the holding power and in others the cracks are so irregular it's hard to get them to sit evenly. Dare I say it but in some places, Pembroke for example, hexes are often more secure.

The featuring of the rock lends itself to natural threads so a length of thin rope or tape to replace any worn-out *in-situ* threads is worth having. As ever, check *in-situ* threads thoroughly and treat them with caution, especially those on sea-cliffs.

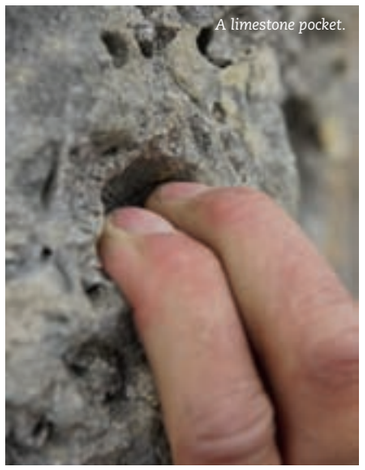

A classic example of a tufa – the perfect climbing hold!

Special features and particular hazards

- **Flowstone and tufas** are a limestone delicacy. These calcite features are deposited by flowing water to create amazing shapes and textures. Some flowstone is unnervingly smooth, whilst others are reassuringly wrinkled and the classic tufa formation was surely created with climbing holds in mind!
- **Polished** holds and gear placements are a common frustration. The insecurity can undermine your confidence completely. The best strategies are either to imaginatively avoid the obviously high-sheen footholds or if you have to use them keep your foot very still once placed.
- **Red-pointing** is a sport climbing technique that incorporates falling, resting and then practising a particular route before finally linking all the moves in a red-point ascent.
- **Tendon trouble** often plagues limestone climbers. Crimps and pockets are tough on fingers and repeated red-point attempts can exacerbate any weaknesses. Work up through the grades gradually.
- **Bolts** are normally reliable but never 100%. Check before you clip, especially if you expect to fall and always before you lower-off.

Best loved crags and routes

- Crag X, Portland. The best place to get started
- Subliminal and Cattle troughs at Swanage. Great first limestone trad leads.
- Pembroke. One of the friendliest routes here XXXXXXXX
- Anything in Huntsman's Leap, even if you have to persuade someone to take you up a climb there!


A limestone pocket.

- *Magical Mystery Tour* (HVS 5a, but feels harder), Berry Head, South Devon. Does exactly what it says on the box. It's brilliant but don't underestimate its seriousness. And don't forget the route of the same name on the Toix sea cliffs, Calpe, Spain.
- *Preposterous Tales* (E2 5b, possibly), Bosherton Head, South Pembroke. A mind-blowing blowhole journey that won't disappoint. Difficult to grade but definitely worth at least three stars. □


A wire placed in a limestone crack.

Libby has been climbing for over 20 years, she is a qualified Mountaineering Instructor and IFMGA Guide and is the author of *Rock Climbing – Essential Skills and Techniques* published by MLTUK and recently produced *Get Out On Rock* – the definitive instructional DVD. Her base is North Wales from where she runs the guiding outfit Llanberis Guides **(info@llanberisguides.com)**