

CHAPTER 6

Snowdon's Ice Age

The period between the end of the Caledonian mountain-building episode, about 400 million years ago, and the start of the Ice Ages, in much more recent times, has left little record in central Snowdonia of what happened during those intervening aeons.

For some of that time central Snowdonia was above sea level. During those periods a lot of material would have been eroded away, millimetre by millimetre, year by year, for millions of years, reducing the Alpine or Himalayan-sized mountains of the Caledonides range to a few hardened stumps, the mountains we see today. There were further tectonic events elsewhere on the earth which affected Snowdonia, such as the collision of Africa and Europe, but with much less far-reaching consequences.

We can assume that central Snowdonia was also almost certainly under sea level at other times. During these periods new sedimentary rocks would have been laid down.

However, if this did happen, there is no evidence to show it that it did and any rocks that were laid down have been entirely eroded away. For example, many geologists believe that the whole of Britain must have been below sea level during the era known as the 'Cretaceous' (from 145 million until 60 million years ago). This was the period during which the chalk formations were laid down and which today crop out in much of southern and eastern Britain. The present theory assumes that chalk was laid down over the whole of Britain and that it has been entirely eroded away from all those areas where older rocks are exposed, including central Snowdonia.

And so we will pass over 350 million years in fewer than 300 words, moving at break-neck speed to the near present and a timescale measured in thousands, rather than millions, of years.

There have been twenty different cold or 'ice' ages on the earth since 1,600,000 years ago, interspersed with temperate 'inter-glacial' phases. Plant remains from the temperate period between 100,000 years and 80,000 years ago have been uncovered in North Wales under the glacial deposits (known nowadays as 'till', though previously called 'boulder clay') of later ice ages. But, in general, each resurgent ice age wipes away the evidence of the effects of its predecessor on the landscape.

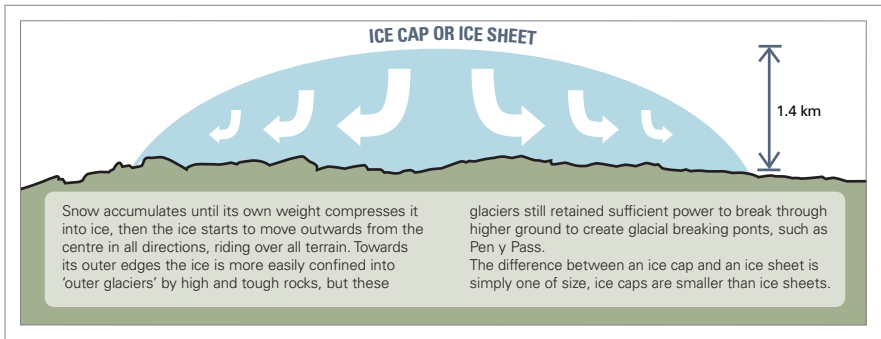


Diagram 6.1 | Ice cap/sheet

The last ice stage was at its most intense from 26,000 years to 11,500 years ago (though there was a short colder blip from 11,500 years to 10,000 years ago which led to a re-invigoration of glaciers in the highest cwms). During this period, first an ice 'cap' and then an ice 'sheet' developed a few miles to the south-east of Snowdon.

An ice cap is created as snow accumulates over several years. As the temperature falls and there is no summer melting, the snow gets deeper and deeper, building into a dome shape. The weight of the accumulated snow compresses the older layers of snow, eventually transforming the lowest layers into ice, which as even more weight is added, then starts to deform and to flow out in all directions (see diagram 6.1). At its centre an ice cap or sheet accumulates and spreads out over the land, regardless of the terrain. But as it flows further out, at its margins, it starts to become constrained by topography and develops major 'outflow glaciers', carving out deep troughs through any mountainous land it meets.

Some geologists argue that sufficient ice was created in central Snowdonia itself to account for the scenery, but it is generally believed that there was an ice sheet that covered North Wales, centred in the present-day Migneint area, an undulating region of moor and bog, with fairly low relief. About 18,000 years ago, at the height of the last ice age, the Migneint ice sheet was some 1,400 metres thick at the centre (this is higher than Snowdon is above present sea level at 1,085 metres).

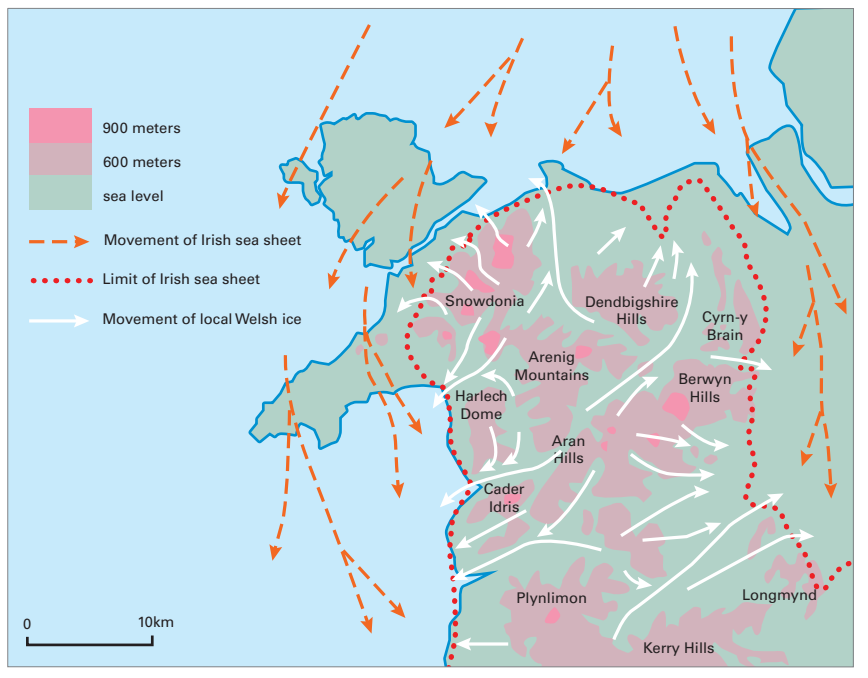
The ice sheet overran the area around present day Snowdonia, subjecting the whole range of mountains to burial under ice, except for the very highest summits (such as Yr Wyddfa, Garnedd Ugain, Glyder Fawr, Glyder Fach and Elidir Fawr). These summit points ('nunataks' in the geologists' jargon) would have stuck up above the ice sheet rather like hill tops which protrude above a cloud inversion, but surrounded by the dirty white/grey colour of the ice sheet and its outlet glaciers (see photo 6.1).

The mass of ice thrust towards Snowdon by the power of the Migneint ice sheet found its path impeded by the lie of the high land, made up of tough volcanic rocks. But the accumulation of snow and ice in the Migneint was irresistible (see map 7.1). Its outlet glaciers cut major 'breaching' points, creating today's mountain passes.

Photo 6.1 | An outlet glacier of the Greenland ice sheet.

Photo John Simmons,
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Map 6.1 | Ice flows in
Snowdonia at the height
of the last ice age.



The major breaching points were, from east to west: between the Glyderau and the Carneddau at present day Idwal Cottage (photo 6.2); at Pen y Pass (photo 6.3); at Bwlch Drws y Coed (leading into the Nantlle valley); and near Llyn Cwellyn. The first three of these points are all marked by some of Snowdonia's most overpowering scenery with narrow gorges cut straight through the mountains. This is most spectacularly seen in the steep mountain crags on either side of the Llanberis Pass below Glyder Fawr and Crib Goch, in the western face of Pen yr Ole Wen, opposite Cwm Idwal, and in the eastern face of Mynydd Mawr.



Photo 6.2 (top) |
Glacial breaching point
at Ogwen Cottage.



Photo 6.3 (middle) |
Glacial breaching point
at Pen y Pass.



Photo 6.4 (bottom) |
Secondary glacial breaching
point, Llyn Cowlyd, Carneddau.

There were secondary breaching points too – on the Snowdon massif these were Bwlch y Saethau, Bwlch Cwm Llan, Bwlch Brwynog and Bwlch Maesgwm, and on the Glyderau at Twll Du (the Devil's Kitchen above Cwm Idwal), Cwm y Caseg Fraith and Bwlch Goleuni. Bwlch y Brecan, on the Glyderau Ridge below Foel Goch, was also a secondary breaching point, but here the ice flowed from the Nant Ffrancon side into Cwm Dudodyn and the lower Llanberis Pass. On the Carneddau there was a secondary breaching point between Pen Llithrig y Wrach and Creigiau Gleision (above Llyn Cowlyd Reservoir – photo 6.4), as is obvious today from the profile of the lower Carneddau as seen from Tryfan or the southern end of the Glyderau Ridge.

At these secondary breaching points, the ice found a way over the obstruction of the hard volcanic rock, but without cutting deep trench-like valleys. Instead it just left the cols that separate the present day summits of the Snowdon massif and the Glyderau. Each col or bwlch provides present day walkers, as they have to descend and re-ascend between summits, with excellent opportunities for pondering the fact that water, in the form of ice, is more powerful than rock (though the ice is dependent on cracks in the rocks and other weaknesses to start the process of breaking the rock up). These slopes also often provide an opportunity to study the changing beds of rocks – for example the climb from Bwlch y Brecan to the summit of Y Garn crosses a succession of rock types, several volcanic and some sedimentary, illustrating the way in which the area's unique geological history has ended up providing us with so many great walks, walks that cross over millions of years of rock of many different types and is now exposed by glaciation.

The landscape of Snowdonia is finally getting close to its present form. But the declining years of the last ice age were of vital importance in adding some key stages in the etching of the modern shape of central Snowdonia.

From about 18,000 years ago temperatures started to rise again and from then until about 12,000 years ago, 'cwm glaciers' poured out of hollows high in the mountains (see photos 6.5 and 6.6). The ice that flowed out of these glacial 'cwms' (or 'corries' or 'cirques') fed larger 'valley glaciers' in the trenches cut by the outlet glaciers (see photos 6.7, 6.8, 6.9 and 6.10). These cwm glaciers became the key agents of glacial sculpting of the present-day landscape, deepening the work of earlier glacial periods. This period of just 6,000 years was to see some of the most intense glaciation in the area and to leave many of the most magnificent aspects of today's scenery. The scenery at the time was no doubt reminiscent of the Alps and other ranges today (except in scale of mountains), with year round snow and steep glaciers, often marked by ice falls (the glacier's equivalent of a waterfall).

As with the ice cap, glaciers form when the accumulation of snow, in a hollow or gully on a mountain-side, exceeds the rate of snow loss (or 'ablation'), and it is turned first to a



Photo 6.5 | Cwm glacier, Tour du Mont Blanc. Photo Reg Atherton



Photo 6.6 | Foel Goch and Cwm Coch, northern Glyderau. A glacier would have tumbled out of the cwm just as in photo 6.5.

form of ice known as 'firn' and then to ice proper. As it accumulates and gets heavier, the firn starts to cut down into the underlying rock, forming features known as 'nivation cirques', the immature form of glacial cwm. A flowing cwm glacier develops when firn becomes ice and, under pressure of its own accumulating weight, begins to deform and to cut more deeply



Photo 6.7 | Valley glacier, Himalayas, Pakistan, fed from the side by cwm glaciers. Photo Ian Smith



Photo 6.8 | Nant Ffrancon and former glacial cwms on the left which would have fed extra ice into the valley glacier responsible for the wide, flat floor of the valley.



Photo 6.9 | Valley glacier, Himalayas, Pakistan. Photo Ian Smith



Photo 6.10 | The Llanberis Pass.

into the underlying rock and then to move downhill. The glacier becomes a flowing river of ice. The speed of flow may be slow compared with an ordinary river, but is immensely more powerful (see diagram 6.2).

The processes involved cause the ice to abrade and destroy the surrounding land. The glacier 'quarries' rock from below (exploiting joints and other weaknesses), then carries the quarried blocks away embedded in the ice. These rocks act to pluck out more rocks as the glacier flows, deepening its channel. The process leads to unstable rock walls, which then experience 'over-steepening' as rocks high up are undermined and come crashing down; this

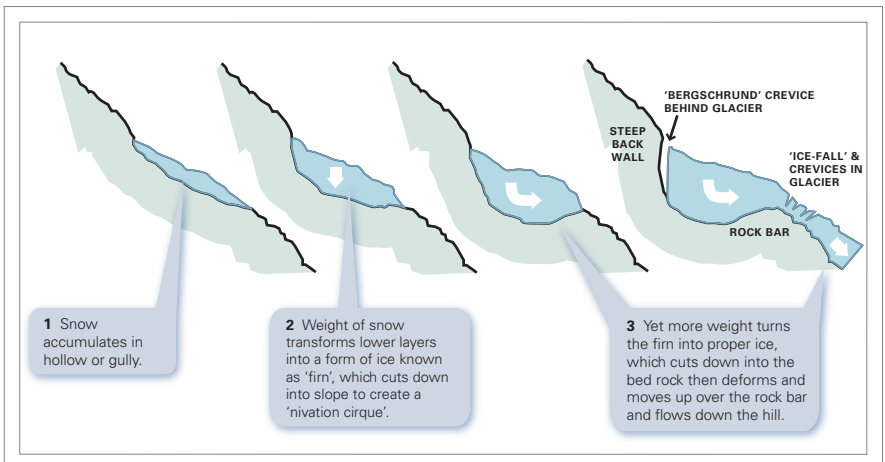


Diagram 6.2 | Development of cwm glaciers.

waste is carried away on the surface of the glacier. All the material carried away by the glacier is later dumped to become 'till' (previously known as 'boulder clay'), 'moraines' or 'erratics'.

The seat of the glacier digs into the mountain side, creating in tough rock the classic glacial landscapes of a glacial cwm with steep 'headwalls' and 'sidewalls', and often a 'rock bar' at the exit to the cwm. Glaslyn is a good example (see photos 6.11 and 6.12). The rock bar extends upwards into the ridge variously known as Y Gribau and Y Gribin, providing the walker with a fine, but steep, scramble. Such rock bars can be identified widely throughout wider Snowdonia, including Llyn y Foel (below Moel Siabod – see photo 6.13 and diagram 6.3) and Llyn Cau (on Cader Idris). However, it depends on the geology whether a rock bar develops or not, and under certain circumstances cwms develop without rock bars (see next chapter on cwms in the Glyderau).

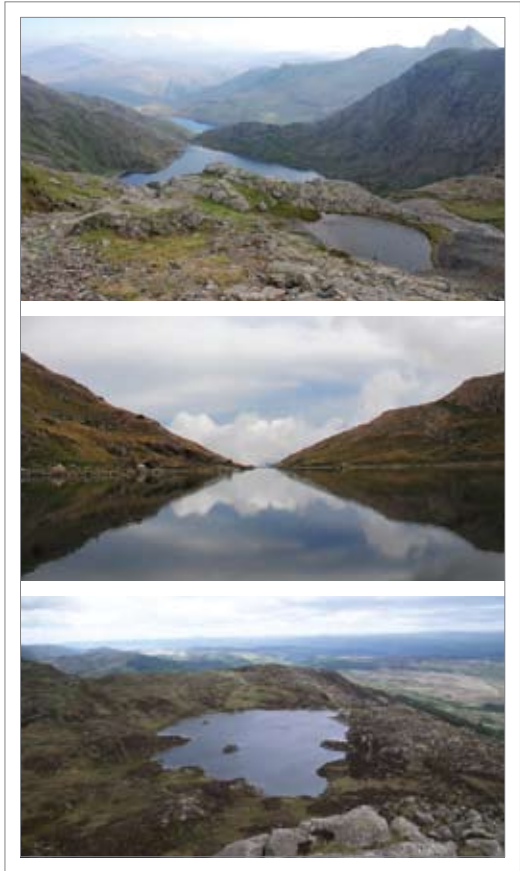


Photo 6.11 (top) | The Snowdon staircase of glacial cwms: from bottom to top, Cwm Llydaw, Cwm Glaslyn and Upper Glaslyn.

Photo 6.12 (middle) | Glaslyn and its enclosing rockbar.

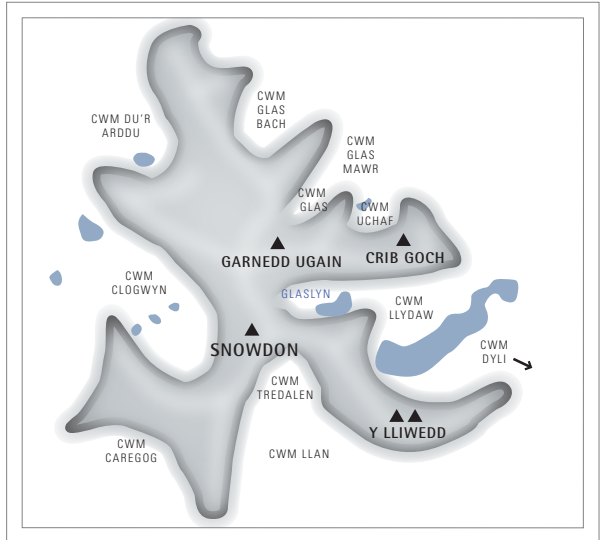
Photo 6.13 (bottom) | Llyn y Foel (below Moel Siabod). The rock bar, made of dolerite, can be seen crossing in front of the lake and running all the way up to where the photo was taken and beyond to the summit.

Map 6.2

Snowdon's glacial cwms.

Photo 6.14 | The Snowdon

Horseshoe from the start of the Crib Goch Ridge; Crib Goch and Crib y Ddysgyl form an arête, with glacial cwms carved into the rock on either side, leaving the classic knife-edge ridge.



Snowdon's dramatic shape, with its many rewarding walks, is a product of ice carving out the glacial cwms and valleys in hard resistant rock that produces sharp edges and extremely steep slopes. Ridges radiate from Snowdon's common sloping summit plateau with Garnedd Ugain. Between the ridges, which are sometimes narrowed into knife-edge 'arêtes', sit the great cwms. It is this mixture of ridge and cwm that gives Snowdon its particular magnificence. Fittingly for the highest mountain in Wales it offers the walker the opportunity to delight in some of the best glacial scenery in the British Isles.

The Snowdon Horseshoe (encompassing a 'staircase' of four glacial cwms) is the centre-piece of Snowdonia's outstanding rock architecture. A walk around the Horseshoe – out on the Pig Track, Miner's Track or the knife-edge ridge of Crib Goch, and back over Y Lliwedd – is truly memorable (see photos 6.11 and 6.14) – see Walk 1.

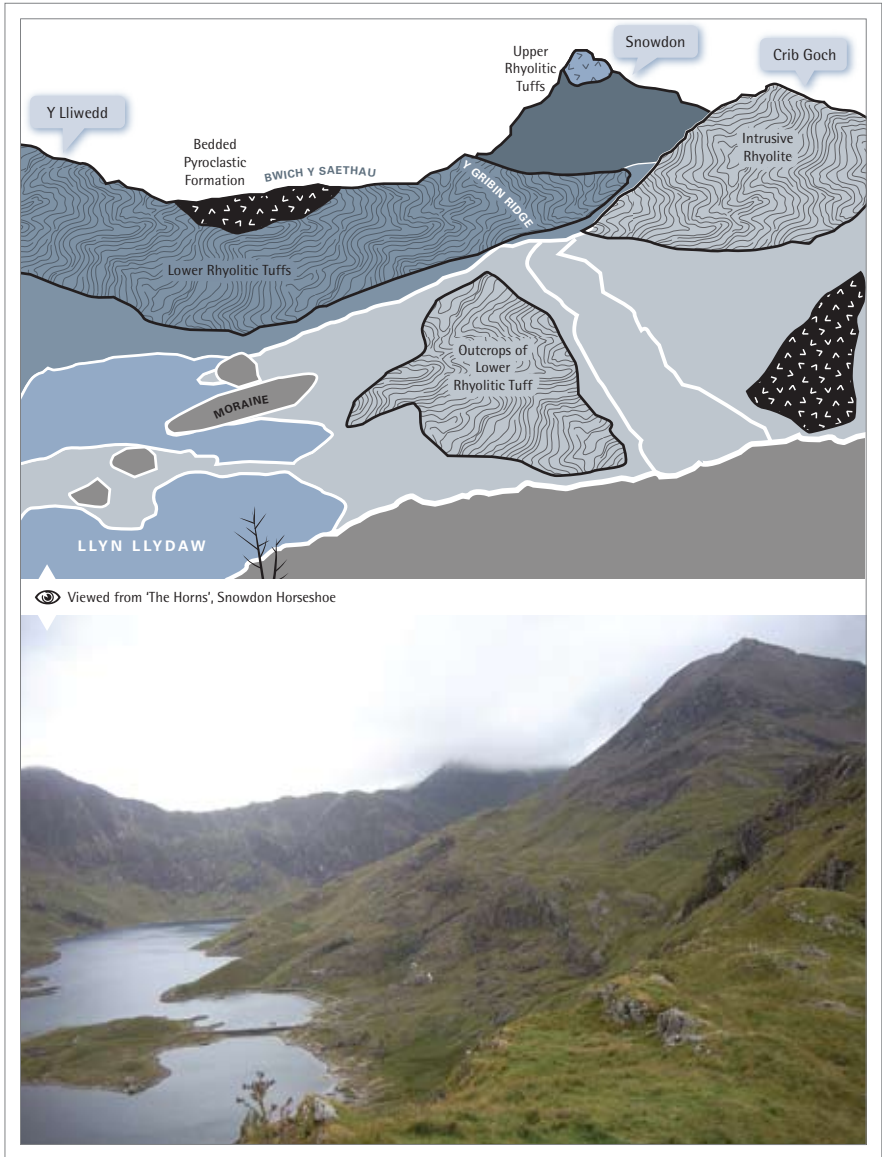


Diagram 6.4 & Photo 6.15 | Lower left, Llyn Lydaw. Left centre, Y Lliwedd. Centre right (hidden in cloud), Snowdon. Top right, Crib Goch. The terrace halfway down the side of Crib Goch is carved into the Bedded Pyroclast Formation, with intrusive rhyolite above and Lower Rhyolitic Tuffs below; the terrace also marks the upper limit of the Llyn Llydaw glacier and today carries the Pig Track.

All the standard routes up Snowdon provide both a bird's eye overview, looking down into the glacial cwms from the higher reaches. The lower parts of the routes also bring the walker closer to the detail of glaciation – 'moraines' (mounds of rock, now usually covered with vegetation, left, for example, by 'retreating glaciers'), 'roches moutonnées' (rock outcrops smooth on one side and craggy on the other) and 'rock steps' (differences in height in a valley where two glaciers joined and deepened the valley floor in a sharp step). A walk lower down also brings a different perspective on the rock formations. Both high and low parts of the walks provide a chance to assess the scale of work done by the cwm glaciers of the last few thousand years of the ice age. To gaze upwards is as important as casting an eye downwards in gaining a feel for the power of ice. The depth of the cwms is perhaps best appreciated from the Miners' Track between Llyn Llydaw and Glaslyn.

Lowest and widest of the staircase of cwms is Cwm Dyli, with Llyn Teryn cupped away in a corner (best seen from the Miners' Track), and unfortunately scarred by a modern intrusion – a highly conspicuous pipeline feeding a hydraulic power station in Nant Gwynant (see photo 10.13). Lines of moraines run east-west across the Cwm Dyli marking stages in the 'retreat' of the glacier as rising temperatures moved in phases regularly shifting the melting point closer back to the source. An andesitic intrusion forms the jagged rock step at the back of Cwm Dyli, from near Llyn Teryn (see photo 6.5). The ice has plucked the rock away from the front of the andesite leaving nearly vertical walls. These andesite crags are easily seen on the recommended walk on Snowdon on the Miners' Track (Walk 1) where they display some very clear 'columnar jointing' (see photo w1.1). The crags could be described as very large 'roche moutonnées', that common feature of glacial areas, where a smooth rounded shape faces 'upstream' and a craggy, plucked one 'downstream'.

The broad base of Cwm Dyli was scooped out by the glaciers pouring out of Cwm Llydaw immediately above it and further up comes Cwm Glaslyn, both containing glacial lakes. Cwm lakes can be quite deep. Glaslyn is 40 metres deep and Llyn Llydaw, 57 metres at its deepest point. The Pig Track runs on a shelf high above Cwm Llydaw, where softer 'Bedded Pyroclastic Formation' rocks are sandwiched between the tougher Lower Rhyolitic Tuffs (below) and intrusive rhyolite (above). This shelf also marks the rough height of glacier in Cwm Llydaw, which not only poured out through Cwm Dyli, but also breached the ridge at Bwlch y Moch, below Crib Goch's eastern ridge, to pour down northwards into the Llanberis Pass (see photo 6.15 and diagram 6.4).

Eventually the temperature started to rise again, until only the highest points could sustain the cold conditions needed to support a glacier. It was in this late stage that Upper Glaslyn came into being (see photo 6.11). It is often missed by walkers hauling up the last



Photo 6.16 |
Y Lliwedd, a
glacial arête.

stages of the Pig Track, but is well worth a short detour to peer over a retaining wall (erected as part of the mining operations here, so very great care needs to be taken moving into and out of the area). From the threshold of the tiny cwm, peering down at Glaslyn below and Llyn Llydaw below that, it is easy to get a feel of the retreating staircase of glaciers of the recent past. Here was the seat of the last remnants of glaciation in the Snowdon Horseshoe.

Undoubtedly among of the scenic masterpieces of the Snowdon Horseshoe are the 'arêtes' of Crib Goch and Crib y Ddsygl on the northern side. The somewhat less sharp-edged ridge of Y Lliwedd on the southern side is no less magnificent a viewpoint – and for the landscape gazer probably provides a less distracting point on which to sit and wonder at the mixture of rock and water laid out before you (see photo 6.16). Crib Goch and Crib y Ddsygl got their shape as glaciers, on one side in the Horseshoe and on the other side in Cwm Uchaf and Cwm Glas, all cut back into the head and side of their cwms, leaving the sharp ridge and its exhilarating walk (see photo 6.14).

Snowdon's other great cwms, Cwm Glas Mawr, Cwm Glas Bach, Cwm du'r Arddu, Cwm Clogwyn, Cwm Caregog, Cwm Llan and Cwm Merch should not be overlooked and all are worth exploring if you have the time and experience to veer off the tracks and navigate your own route (except Cwm Llan which is on Watkin Path), especially on days when the clouds cover the summits.

From the Llanberis Pass, or from above it on the flanks of Glyder Fawr, the route up through Cwm Glas Mawr to Cwm Uchaf ('upper cwm') and Cwm Glas looks impossible for anyone other than climbers (see photo 6.17). But despite appearances there are some routes for those prepared to scramble up steep slopes – though be warned that going into the higher

Photo 6.17

Cwm Glas Mawr,
Cwm Glas and Cwm
Uchaf – three glacial
cwms cut into the sharp
eastern face of Garnedd
Ugain and Crib Goch.
Centre left is Cwm
Beudy Mawr, part of the
Llanberis Pass breaching
point rather than the
seat of a glacier.



reaches is a serious undertaking and should be done only in clear weather. There are only a few safe routes out and these are hard to find, and as there are dangerously steep crags above and below on all sides a minor navigational error could be catastrophic.

Standing near the cliff edge of high up in Cwm Glas, looking down into Cwm Glas Mawr immediately below and to the Llanberis Pass beyond, you can imagine the ice tumbling out of the inner cwm, cracked open in a mass of crevices, just like an ice fall seen in the Alps. Just as Upper Glaslyn was the seat of the final glacier to develop on Snowdon, so the glaciers of Cwm Uchaf and Cwm Glas came into existence at a late stage, when conditions were no longer sufficiently cold to sustain the seat of a glacier lower down in Cwm Glas Mawr. Here, and in the Snowdon Horseshoe, and especially in winter, the ice age is almost palpable. It becomes easy to appreciate the concept that we may well be in a temporary warm period between spells of widespread ice.

Around Crib Goch and Cwm Glas Mawr we are walking above the fissure-vents where the biggest eruptive episode of the LRT took place, the eruptions that led to the collapse of the Snowdon caldera. Here too is the most dramatic evidence of glaciation. Other areas also underwent mountain building pressures and ice ages, but in other places softer rocks have produced softer landscapes. It is Snowdon's tough volcanic tuffs and intrusive rocks, and the resistance they put up to glacial carving, that makes its scenery so stark, so demanding of attention.

Cwm du'r Arddu is another of nature's quarry tips (see photos 5.4 and 6.18). The wind often rushes through in force, whipping the lake up into sizeable waves and even raising a shower of spray that moves across the lake and up the hillside at the far end. It is little over an hour's walk from Llanberis, but aeons away in atmospheric intensity.

Cwm Tregalan sits high up in a corner of Cwm Llan and is what geologists call a 'parasite' on it. The glacier in Cwm Tregalan was one of the very late, high glaciers on Snowdon, carving itself a nook and leaving a moraine, nearly 50 metres high and 700 metres long, with a steep drop down into Cwm Llan proper. Some geologists believed that this was a feature known as a 'protalus rampart', where blocks of rock fell off the crags and slid across ice at the bottom of the slope to form a mound. But this view is now discounted and Cwm Tregalan seems likely to have held its own glacier, though probably a quite small one (see photo 6.19).

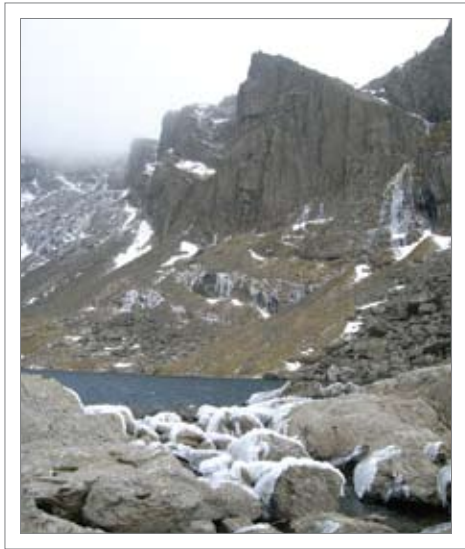


Photo 6.18 (top) | Cwm du'r Arddu.

Photo 6.19 (bottom) | Cwm Llan and Cwm Tregalan from Snowdon's south ridge. The moraine created by a small glacier within Cwm Tregalan is clearly visible running from left to right across the centre of the lower part of the photo.



There are also four minor, immature, cwms in the hollow formed by Cwm Dwythwch at the northern end of the Snowdon massif (see photo w12.1). These are probably remnants of glaciers that started to form quite late in the ice age and none is really well developed. But they do give an idea of how cwm glaciers are created in weaknesses on a mountainside.

The walk into Cwm Dwythwch is highly atmospheric (Walk 12). Sitting below the moraine that dams the lake looking at the curving rockwall below the ridge, the feeling is one of great remoteness, despite being only a few hundred metres from a farm track. A walk around the immature cwms below the ridge is detailed in the recommended walks section. The walk along the ridge is also excellent (especially in an anti-clockwise direction for views to Snowdon), but the views down into the cwms from the ridge fail to convey any real idea of the scale of the hollows carved out by these immature glaciers.

Cwm Clogwyn, on Snowdon's western flank, is unusual in that most cwms in central Snowdon are north-east facing (see photos 0.2 and 6.20). But Snowdon's extra height meant that snow and ice could accumulate, in quantities necessary to produce glaciers, even on the western face. The upper cwm is remote and wild, especially from within its enclosing arms. Three small lakes are held within the inner cwm (see photo 6.20 which shows two of them).

Photo 6.20 (right) | Cwm Clogwyn,
from Rhyd Ddu track.

Photo 6.21 (bottom) | Snowdon summit
(centre); Cwm Clogwyn (centre right),
from the Snowdon Ranger track.



There are several moraines too, one of which is exposed on one side, showing what a moraine looks like under the post-glacial covering of soil and vegetation sported by most moraines in our area. The inner cwm has a 'threshold', the product of a tough dolerite intrusion, which holds it 100 metres above the outer cwm where two more lakes remain in existence.

A few years ago, I camped one night in Cwm Clogwyn at about 500 metres above sea level. We pitched our tents on the edge of the threshold of the cwm, just in front of Llyn Nadroedd, the most westerly and by far the prettiest of the three lakes nestling in the upper cwm. It was towards the end of one of those extremely hot summers. Moel Eilio and Moel Cynghorion were swathed in a cotton wool-like cloud that clung close to the surface, echoing the shape of the underlying hills (see photo 6.22). Then, as the sun began to set and the night drew in, waves of humid mist rolled in from the west. Wave after wave moved slowly forward, first engulfing the land below the cwm, removing from view two further glacial lakes lower down. Then the wave slowly crept up the lower slopes towards our wild campsite, finally reaching and encompassing us. Then a few minutes later the wave would pass and everything would be clear again, until the next wave approached, so it went on until dark. The next morning it was cloudy in the cwm, but as we climbed out onto the Llechog Ridge to go up to the summit of Yr Wyddfa, we pierced the cloud top and came out above an inversion, with dense white cloud below and blue sky above.



Photo 6.22

Cloud drapes
Moel Eilio, late
evening (view from
Cwm Clogwyn).

The evening before, as I watched the clouds of mist rolling in, I had noticed a row of stone piles. They were clearly the remains of supports for a leat that channelled water from the lake for use in powering machinery in the slate quarry much further down the mountainside. Even in this distant and seldom visited spot, all the essentials of the landscapes of Snowdonia were

Photo 6.23

Ceunant Mawr
waterfall, Llanberis.
Photo Reg Atherton



visible – from evidence of volcanoes to the effects of glaciation, from weathering and erosion caused by the atmosphere, to the influence of human beings.

Snowdon's glacial cwms and the glacial trenches, such as the Llanberis Pass, are evidence that short term fluctuations of climate can affect the landscape as much as the great tectonic events. Vast volumes of rock were carried away by the glaciers, with 'erratics' from central Snowdonia carried as far as Anglesey.

The melting of the great valley glaciers has left the sides of the unveiled gorges pock-marked with 'hanging valleys' (at the height where their smaller glaciers flowed into the main ice) and subsequent waterfalls. There are many fantastic waterfalls evident along the Llanberis Pass after heavy rain (see photo 6.23). Slim torrents pour down the sheer rock faces that line Cwm Glas Bach and Cwm Glas Mawr, as well as the Glyderau side of the ridge. On that side of the valley, there are fine waterfalls on either side of Esgair y Ceunant as well as

alongside the track between Llyn y Cwn (between Glyder Fawr and Y Garn) and Nant Peris. The waterfalls may be almost inconspicuous in dry weather, but after a spell of rain they command the attention of the walker as they pour out of their hanging valleys and down the hillsides in white torrents.

The descent of the Llanberis Pass – best of all on foot – ranks with a journey down through Scotland's Glencoe in drama and portent. The mass of rubble and scree that litters the slopes of the gorges, most conspicuously near Pen y Pass on the north-eastern side of the Pass, has all fallen since the glaciers melted (see photos w11.2 and w11.3). These scree slopes of the upper reaches of the Llanberis Pass almost seem like an echo of the quarry waste at the lower end of the Pass – nature's own quarry waste tips (Walk 11).

The cliffs here are today popular with climbers, presenting them with airy, exhilarating climbs. Some of the fallen blocks have also become popular with exponents of a variant of the climber's art, 'bouldering'. Boulderers can frequently be seen clinging to the massive blocks of rock, and which edge out onto the road, just south of the road bridge, Pont y Gromlech. These massive blocks are examples of one of the characteristic 'Lower Rhyolitic Tuff' rocks (breccia) and are well worth close examination – which can of course be carried out from a safe position standing on the ground and without the need to involve the spider-imitating, gravity-defying postures of boulderers (see photo 4.2).

Climbing has its fashions. A few years back it was other cliffs that were popular – the Idwal Slabs or Cwm du'r Arddu, for example. Perhaps even within the lifetime of this book the climbers will seek out newer challenges elsewhere. Whatever the developments of climbing fashion, on a longer time scale, the fallen rocks of the Llanberis Pass will be available for inspection for a long time to come. However, even that time period will come to an end if another ice age does come and glaciers return to this area. Then all those massive blocks of rock littering the slopes of the Llanberis Pass and other major troughs will be swept away like crumbs from the table and the shape of the landscape will be wrought anew.