Pantyllyn is a small lake lying in the narrow gap between the remains of Craig y Ddinas and Craig y Derwyddon near the small village of the same name above Llandybie (N.G.R. SN606167). It is approximately 160m. long, 50m. wide and about 3m.deep.

The lake is a geomorphological oddity, lying as it does on a base of Carboniferous limestone. This rock is usually one of the most permeable rocktypes found and normally limestone areas are devoid of streams and lakes as the surface waters disappear rapidly underground.

There is another peculiarity of this lake in that it appears and disappears according to the season. It is normally full from late autumn until the spring but drains away completely by June. Seasonal lakes are known as turloughs in Ireland and have been defined as areas which flood seasonally to a minimum depth of .5m. There should also be no surface outlet, the waters should empty solely into the groundwater (Coxon 1987 i). These turloughs are fairly common landscape features of the limestone areas of Western Ireland such as the Burren peninsula of Co.Clare. Turloughs or ephemeral lakes have only recently been recognized in Britain with most of these sites lying on the chalk deposits of East Anglia. Pantyllyn is the only such lake found in Wales.

No stream enters or leaves the lake although a pipe has been laid so as to allow excess water to drain into the river Gwenlais. Water enters the lake via springs in the lake bed. These springs may be associated with a geological fault known as the Bettws fault which run the length of the lake. The water level of the lake is determined by the height of the groundwater table of the surrounding limestone outcrops.

The earliest reference we have to Pantyllyn is a lease from the Golden Grove estate which was granted in 1613. Estate maps of the eighteenth and early nineteenth century show this body of water clearly. It is remarkable that such a relatively small lake (0.64 hectare) should have survived for centuries. It could be expected that natural processes would have lead to its
Pantyllyn: a Welsh turlough, or now you see it, now you don’t

gradual reduction and possible disappearance. Many lakes which were mapped during the last century have since disappeared beneath encroaching vegetation and peat. Several examples of this can be seen on the Mynydd Du.

There are, however, local factors which have acted against these trends. The absence of streams entering the lake has meant that no stream borne sediments have accumulated. Another factor is the transience of the lake which exposes the lake bed in summer and allows dead plant material to decompose rather than accumulate as peat as would happen under a permanent body of water.

During the winter, the only emergent vegetation are numerous wilows, especially at the southern end of the lake. The submerged trunks of these trees are wrapped in a thick coat of Willow Moss (Fontinalis antipyretica). This moss is normally found growing in fast flowing streams. During the summer this covering of moss dries out and gives this woodland an almost tropical feel. This moss also grows on the lake bed and in summer this damp carpet provides shelter for aquatic organisms at this time. Samples taken from the benthic layer in winter have shown that Pea Mussels, (Picidium) and the leech, (Herpobdella) are present. These species have been shown to be indicative of base-rich waters in Wales.

During the summer months, lake bed is covered with a marsh-fen vegetation which includes such grasses as the False Reed grass (Phalaris arundinaceae), Flote grass (Glyceria declinata), and Bladder sedge (Carex vesicaria). Research on Irish turloughs has identified a group of 21 plant species with which they are associated. Eight of these species have been identified at Pantyllyn. They include Marsh Pennywort (Hydrocotyle vulgaris), Creeping Buttercup (Ranunculus repens), Lesser Spearwort (Ranunculus flammula), Marsh Bedstraw (Galium palustre), Water Mint (Mentha aquatica), Meadowsweet (Filipendula ulmaria) Common Persicary (Polygonum persicaria) and Silverweed (Potentilla anserina). Silverweed has been found to be present in every turlough examined.

There are some similarities between the mosses of the Irish turloughs and Pantyllyn. Fontinalis antipyretica has been recognized as a turlough species. Experimental work has shown that it can withstand long periods of drought but cannot survive frequent alterations of drought and submergence. It can be inferred that Fontinalis is indicative of sites which are flooded for long periods. Surveys have identified another moss, (Cinclidotus fontinaloides), as an important turlough species. This species is absent from Pantyllyn - probably because Cinclidotus grows in areas which are heavily grazed, whereas Pantyllyn is ungrazed. Fontinalis does not normally produce spore bearing capsules but at Pantyllyn this moss fruits abundantly. The trigger for the formation of capsules is the drying out of the lake. Normally capsule formation is a rare event for
those plants in flowing water.

The causes of turlough formation are not precisely understood because of a lack of large-scale geological maps and detailed studies of the last glaciation. They are usually associated with lowland areas with a gently undulating relief. They tend to occur above pure, well-bedded and well-jointed limestones. It has been suggested that where turloughs are aligned along faults, it is not because of any hydrological influence of the fault but to the fault determining the direction of glacial action (Coxon 1987 ii). In the case of Pantyllyn it appears that the Bettws fault has directed the line of glacial movement and that the lake was excavated by ice.

The lake produces a humid microclimate which is of crucial importance to lichens, mosses and liverworts. The area is sheltered and this humidity occurs when these plants are making their greatest growth in the winter.

The trees around and in the lake support a well developed lichen flora of over 30 species. This is in marked contrast with other local woodland blocks on the Glangwenlais ridge where the lichen flora is relatively impoverished as these woodlands are more exposed to drying winds and pollution.

The lichen, Usnea ceratina, has been found at Pantyllyn. This is the only locality known in Carmarthenshire for this pollution sensitive species. This lichen has declined markedly throughout Britain during the last 150 years.

Local tradition asserts that many years ago, a man drowned in the lake. During cold winters children were warned not to skate there as the place where the victim drowned never froze. During the summer this spot is marked by an overwhelming putrid smell. This story is capable of being explained by natural phenomena. The failure of one area to freeze is probably connected with powerful springs causing currents in the lake body. During the extremely cold weather of February 1991, the lake froze completely apart from one circular area about 2m. across.
It is probable that as the water level drops, the remaining waters become increasingly concentrated with tadpoles and other aquatic organisms which eventually die and putrefy.

Like the Carmel woods nearby, this unusual site is threatened by quarry expansion. A century ago, the local poet, Watcyn Wyn, lake as a symbol of things eternal :-

"Tra bydd calch yng Nghraig y Ddinas, a thra bod dwr ym Mhantyllyn" (Y ferch o Landybea)

"Whilst there is lime in Craig y Ddinas and whilst there is water in Pantyllyn;"

Today there is very little left of Craig y Ddinas. It has been almost totally quarried away and is now only a name on old maps. It remains to be seen whether or not Pantyllyn will follow it into oblivion. If it is destroyed, Wales will have lost a unique part of her landscape

References