Flora Cambriensis

The wild orchids of Wales (and Scotland and England) are not like the showy tropical varieties you now find on sale everywhere from garden centres to supermarkets, but what they lack in that characteristic they make up for in their subtle details and their ecological importance. They are also a challenge to taxonomists who try to name them. Is that a new species, sub-species or just a variation? Or is it a hybrid, for many freely hybridise producing populations of plants that are neither one thing nor the other. What's more, these orchids are evolving, taking advantage of new habitats which other plants cannot colonise. Eventually that subspecies or hybrid will become a species in its own right.
The UK as a whole has several orchids that grow nowhere else in the world, and a significant number of these are restricted to Wales. Three of the illustrations come from *Flora Cambriensis* by L. Harries and published in 1887, from over half a lifetimes study, in 17½ volumes. While something of a collectors item these days it is still valued as a definitive textbook by botanists the world over. The Dark Helleborine illustration was a special commission to recreate those prints. These rarities were celebrated by the Welsh Post Office with this special issue in 1987 to coincide with the anniversary of that great work.

The Dark Helleborine. (*Epipactis carbifolia*). The Helleborines of genus *Epipactis* are, by and large, plants of the edges of woodland. While they tend to grow in strict ecological niches, some species can be the first to take advantage of a habitat that other plants shun. They can be found on sand dunes, in limestone crags, on former industrial sites and growing under the pines in coastal plantations. The Dark Helleborine's habitat is restricted to a few coalmine spoil heaps in the valleys of South Wales. It was first identified as a new species as recently as 1972, having been previously mistaken for the common Broad Leaved Helleborine. However like other opportunist *Epipactis* species it has evolved to be self pollinating. It has been reported to be cleistogamous - self pollinating before the flower opens; perhaps the ultimate in inbreeding in an area where this is not uncommon!
What makes this plant unique is that it appears to have evolved a means of absorbing the finest particles of coal into its cellular structure to combine with the chloroplasts.
Now something black is known to absorb solar radiation and it was proposed that this was an evolutionary leap that would provide the chloroplasts with more light for photosynthesis, but this process only works with certain wavelengths of light. However it has now been discovered that it is radiant heat that is absorbed, raising the temperature within the cells just a degree or two and therefore increasing the photosynthetic rate. This is particularly advantageous in the summer drizzle that Wales experiences as weather.

Bot-fly Orchid. (*Ophrys ovisodorata*). Orchids of the genus *Ophrys* are more likely to be found in southern Europe, though Britain does have some species including the Bee Orchid. What is remarkable about this genus is that some species' flowers mimic an insect, both visually and by scent. A male insect is drawn to the flower and what happens next is termed pseudo-copulation. While getting jiggy with the flower the male will get the sticky detachable pollinia attached to his head, in such a position that when visiting another flower they rub against the stigma and fertilise the ovary.
This orchid is restricted to the upland limestone areas of north east Wales, where it fools the sheep bot-fly by appearance and having the scent of a sheep's breath. The female bot-fly lays its eggs soon after mating in the nostrils of sheep. When hatched the larvae make their way up into the sinuses of the sheep, and eventually the pupae are ejected in one big sneeze. The rarity of this orchid is due to the old farming belief that the fly had to visit the

flowers before laying eggs, and therefore to eliminate the infestation from his flock he needed to eradicate the plants. Ironically, the biggest danger to the orchids is grazing by sheep, as they tend to find them delicious.

The Harlot's Slipper. (*Cyprepedium profligatus*). The Lady Slipper orchid is perhaps the showiest orchid growing wild in Britain. So much so that Victorian plant hunters dug up so many of them from the wild that at one point it was reckoned that there were only 3 left in the wild. That situation is now improved, but sadly not for the even rarer Welsh species the Harlot's Slipper, so named due to its bright scarlet colouration referencing the Whore of Babylon in the Book of Revelations; the original scarlet woman. This plant has not been seen in the wild or under cultivation since 1872 and is only known from old prints and rare reported instances. Again, it is a plant of limestone hills, preferring wet alkaline soils and some shade. The last reported sighting was in a gully on the Great Orme at Llandudno, though it was also found on the hills that loom above Abergele and Prestatyn.
Its rarity is not so much down to over-collecting, but because of its common name and a belief by of religious sects who take the Bible too literally (c.f. Elisha Chapel) who feared that seeing these orchids would inflame men's loins with lust, and would systematically destroy any plants found. The Druids, for reasons of their own tried to preserve the plants, which in the 1850s lead to several hilltop confrontations between the two sides. Often this would be in the form of a standoff for many days, with the Druids protecting plants with signs and devices. By night the fires of both camps could be seen on the hilltops for miles around, and would draw crowds the following day in the hope of a full pitched battle. Some, seeing the night-time fires, reported supernatural battles being fought on the hills with coloured lights and flashes illuminating the hills. More likely it was just the wind whipping up sparks from the bonfires, but it makes a good story for the press to report.

The Satyr Orchid. (*Orchis satyrus)*. The *Orchis* genus comprises the true orchids; look up why orchids are called orchids and you will see why. In Britain these plants prefer the chalk downs of the south, but the Satyr Orchid of Wales lives up to its name by inhabiting hillsides half way between the lower slopes of human habitation and the rocky crags, home to wild goats. The common names for this genus reflect the appearance of the small individual flowers in the inflorescence. Thus we have Man Orchid, Lady Orchid and Monkey Orchid. The Satyr Orchid follows this for each flower has petals which resemble a little homunculus, with those representing the legs covered in fine down under a magnifier and having sepals at the top that curl back like goat horns. Its anthropomorphic characteristics are complete in other details too!
The *Orchis* genus, from which orchids take their name, is named due to the two ovoid tubers from which the leaves and flowers sprout. Scholars of Greek will know that 'orchis' is derived from the word for testicles (gave it away, didn't I). These tubers used to be dug up and used to prepare an aphrodisiac liqueur by the very people who should have no use for the concoction - the Augustine monks of Valle Crucis. By allowing the male congregation a sip ensured there were few empty pews on a Sunday, and the scarcity of the orchid is testament to the popularity of the practice, though like quack remedies the world over any benefits were most likely the alcohol present.