Six walks through the ancient parishes of Breage and Germoe

Tregonning Hill

Godolphin Warren

Breage & Carleen Circular

Ashton & Germoe Circular

Rinsey Cove

Praa Sands

Contents

Sometimes you can experience all four seasons in one day. Paths can be muddy or slippery underfoot, so please wear appropriate footwear and clothing.
Please take extra care when walking along the coast and be aware of the tide times.
Although there are maps in this book, it's always useful to take along your own Ordnance Survey map.

Remember to follow the Country Code:

- Enjoy the countryside and respect its life and work
- Guard against all risk of fire
- Fasten all gates
- Keep your dogs under close control
- Keep to public paths across farmland
- Use gates and stiles to cross fences, hedges and walls
- Leave livestock, crops and machinery alone
- Take your litter home
- Help to keep all water clean
- Protect wildlife, plants and trees
- Take special care on country roads
- Make no unnecessary noise







Key

- Parking
- Telephone
- Post Office
- Public House
- Caravan
- Golf course
- Camping
- Mine buildings

Tregonning Hill

Time: Allow 1½ - 2 hours.

Going: Moderate climb to the top of the hill. Easy walking on top.

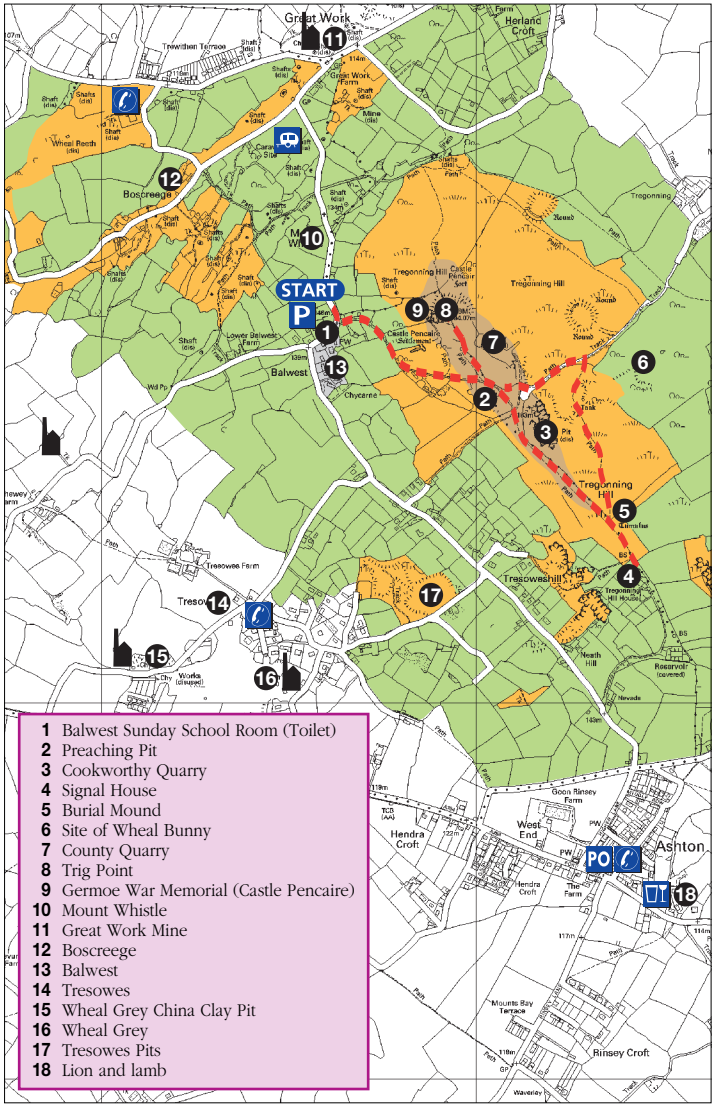
Length: 3 miles.

Location: Take the A394 Penzance-Helston Road. At Ashton, take the Balwest road next to the Post Office. Balwest is about 1 mile up the road.

Parking: Roadside parking is difficult. There is a small car park behind Balwest Sunday School Room and adjoining cemetery.

Time: Outside the main entrance to Balwest Sunday School Room.

Refreshments: The nearest shops and pubs are at Godolphin and Ashton.



Choose your day well for your climb up Tregonning Hill and you'll be rewarded with stunning views over Mounts Bay, the Lizard and beyond. It's the highest summit in the area and from the Bronze Age has been an important feature shaped by man. Old meets new on this walk, from Castle Pencaire to modern communication. Located in the centre of a once thriving mining area, the hill was an important resource too, with its china clay pits and stone quarries. Now nature is taking over once more and part of the hill is designated a Site of Special Scientific Interest.

Start your walk at the hamlet of Balwest. From the car park entrance, cross the road and go right. Almost immediately turn left onto a grassy mound before the corner.

In Cornish bal or ball means a group of mines working in close proximity. Balwest derived its name from the treasure house of the Godolphins, which as early as 1540 was employing 300 persons. In the Godolphin bal group were Great Work, Wheal Reeth, Wheal Breage, Bal an Dreath and Balwest, the most westerly of the group.

An application to the mineral lord in 1690 to drive a deep drainage tunnel *(adit)* at 160 feet into the Wheal Breage workings suggests that Balwest had been working for some time before this date. The mine was worked jointly by two local families, the Richards and the Polglases. In the early days of mining it was very common for small groups to work *pitches* such as Balwest independently. There is little visible evidence of mining here today, although the main shaft of the Balwest workings made a dramatic reappearance when the cap fell away a few years ago, just to the south of the lane leading to the hill. After much excavation, the shaft was recapped with concrete.

A long standing Balwest resident maintained that Balwest had once been called Barwest and called his house by this old name. The name comes from an elvan bar that runs through the hamlet and right up over the back of Tregonning Hill, where it was quarried for road stone.

The only Methodist Chapel in Germoe Parish is the Grade II listed chapel at Balwest, which was built in 1829 to accommodate the growing population of miners and their families. It replaced the smaller 1798 chapel thought to have been sited close by. One of the original trustees was Francis Carter, a brother to the notorious smuggler and privateer Harry Carter, the self styled *King of Prussia*.

The footpath onto Tregonning Hill is at the back of the grassy mound, away from the road. The first part is steady and firm underfoot, but the path quickly levels out before a second short steep climb. As you reach the top, take the first path on your left, which takes you to Germoe War Memorial. This is the highest point on the hill at 637 feet (194 metres) above sea level. It might not sound very high, but the views are stunning.

Balwest Methodist Church.

View towards Mounts Bay.

Germoe War memorial profiled at sunset.

Castle Pencaire circles.

Centuries of history are laid out before you. To the south-west is the ancient village of Germoe with Mounts Bay spread out behind. St Michael's Mount with its castle is clearly visible near the coast. To the north is Leeds Shaft engine house of Great Work Mine nestling at the base of Godolphin Hill.

Germoe War Memorial is built on top of the great fort of Castle Pencaire, today just a large heap of stones and originally a Celtic stronghold from c.250 BC. A double ditch probably surrounded the fort and evidence of this can be seen on the northern side. Castle Pencaire would have overlooked a number of hut circles, of the two that are still visible, one measures about 70 yards in diameter. Within these circles, there would have been a number of smaller huts where the Celts lived and sheltered their animals from marauding wolves and other predators. The Celts were excellent farmers and field patterns dating back to this time can still be seen on the eastern slopes of the hill.

A Celtic chieftain probably gave his name to the hill, possibly *Conin* + *'the homestead of Conin'*, which over the centuries has evolved into *Tregonning*. The nearby village of Carleen means *'the place of the fort'* and the name probably came from the Celtic word *caer* meaning *'fortified homestead'*.

Start to retrace your footsteps from Germoe War Memorial back to rejoin the other path. On your left is a small overgrown quarry known as County Quarry (please don't attempt to go near as the terrain is dangerous). During World War II, a plane crashed here when returning to base in worsening weather and all the crew were killed.

While on patrol at 10.22 hrs on the 26th September 1941, a Hudson spotter plane sighted a merchant vessel about 35 miles south-west of Belle Isle in the Bay of Biscay. Three Beaufort Bombers of 217 Squadron Coastal Command were dispatched at 11.50 hrs to attack what believed to be an enemy vessel. Two of the bombers were unable to find the vessel, the third bomber saw it but didn't attack.

Returning to base they broke formation. One plane landed at RAF Chivenor and another at St Eval. The third plane Beaufort MK1 No.W6483 failed to return. It had crashed on the edge of the County Quarry on Tregonning Hill at 17.05 hrs. A memorial gives their names as Pilot Officer JR Harrison 89822, Pilot Officer PF Opperman 100561, Sgt HL Carter 11622321 and Sgt DA Ryder 1255613.

Rejoin the path up from Balwest and go left towards a white building known as the Signal House. Just before another path joins from the left is a small opening on the right next to the path leading to the Preaching Pit.

For many years on Whit Sundays, Ashton Methodists have congregated here for their Sunday School celebrations. Nowadays Christians of many denominations meet annually for ecumenical services. It is possible that this Preaching Pit was favoured as a smaller version of Gwennap Pit near Redruth, where John Wesley preached on many occasions. It is recorded that John Wesley visited Breage on the 18th August 1750 and again on the 10th September 1765 when he wrote in his diary *"I preached at Breage under a lovely shade of trees."*

Carry straight on towards the Signal House. The quarry on your left is Cookworthy Quarry where Cornwall's first china clay deposit was discovered in 1746.

Round to the south-east are excellent views towards Helston and the Lizard. When the weather is clear enough you should be able to make out the satellite dishes at Goonhilly, Bosahan Wind Farm and Culdrose Naval

Air Station. To the north-east is Carleen, surrounded by the Wheal Vor mining complex. Further round to the north is Godolphin Cross with the television mast at Four Lanes on the distant hills.

William Cookworthy and China Clay

A Plymouth chemist named William Cookworthy had been searching for the right ingredients to perfect a recipe for hard-paste porcelain.

In 1746 Captain Nancarrow from Great Work Mine invited Cookworthy to stay with him at Godolphin. Whilst visiting the mine, Cookworthy saw the men were repairing the furnaces with clay. Enquiring about the source of the clay, he was told it was found on the slopes of Tregonning Hill.

Cookworthy took samples back with him to his laboratory. He found that when either petunse *(aluminium and potassium silicate)* + china stone, or kaolin *(aluminium silicate)* + china clay were fired together to a great heat, both combinations produced porcelain.

Cookworthy took leases on various clay pits on Tregonning Hill and evidence of these can still be seen today. Clay was exported from Porthleven to Plymouth, where Cookworthy had a small factory.

Tregonning Hill's clay contains dark specks of mica and was not of the finest quality. When purer clay was found at St. Austell two years later, the Tregonning clay industry declined but lasted until the early years of the 20th century.

Porthleven harbour today.

About 50 yards before the Signal House is a burial mound or cromlech on your left, now overgrown, but still distinctive.

Although the hill has never been excavated, we know from visible evidence that Bronze Age people lived here and were probably responsible for building the great fort of Castle Pencaire. In 1920, the Cornish historian Charles Henderson wrote about two cromlechs he had discovered here, both were constructed from large stones resting on two upright stones and were Bronze Age burial places. Sadly these have since been vandalised.

The Signal House perches on the eastern side of the hill with unbroken views out to sea and is now a private dwelling.

During the Napoleonic Wars, when France was planning to invade England, there was a beacon here. In case of a French landing, the beacon was to be lit as a signal to the British Fleet out beyond the horizon. If this happened, local inhabitants were under orders to burn all their fodder and corn, leave home and drive their cattle inland.

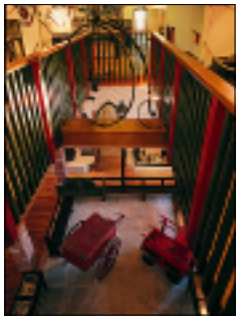
At the gate go over the stile and on the grass verge is a small boundary stone. Roughly shaped from granite. Two letters are incised on the stone, one on each side, denoting the owner of the land. The 'T' stands for Trelawney and the 'L' for the Dukes of Leeds.

Boundary stone, L for the Duke of Leeds on one side.

Boundary stone, T for Trelawney on the other.

Tregonning brick at the Helston Folk Museum.

Return back over the stile and retrace your steps back past the cromlech. Take the next footpath to the right and after about 15 yards where you join another path go right. This takes you down the back of the hillside below the Germoe War Memorial.



Inside Helston Folk Museum.

William Argall and brick making

In 1871, an experienced mine captain from Breage named William Argall, secured financial backing for a new project from two local iron founders William Harvey of Hayle and John Toy of Helston. He realised there was no great future or fortune to be made from exporting clay only, and so proposed switching to brickmaking. Kilns and drying sheds were built on the northern slopes of Tregonning Hill at Wheal Bunny.

The company expanded business in 1875, taking over the Tresowes and Wheal Grey setts, as well as building more kilns and brickmaking works near Tresowes Green. Two kinds of bricks were made, firebricks for hearths and building bricks. Each brick was incised 'Tregonning Hill'.

By 1890, William Argall and Company were controlling the whole area. A large source of clay had also been found in the Leeds pit. Looking down over the hill towards Germoe, the pits still remain, though are now filled with water and are naturally revegetating with gorse. Also visible are some remains of the brick kilns.

When William Argall retired in 1893, he was presented with a dinner service said to be made from Tregonning Hill clay. The Asiatic Pheasant pattern dinner service was specially emblazoned with Argall's monogram *WA* surrounded by *Tregonning Hill*. A few of the remaining pieces of the service are on display in Helston Folk Museum.

Part dinner service presented to William Argall in 1893.

View to Godolphin Hill from Mount Whistle.

In the fields to your right was Wheal Bunny. No trace of the mine remains today, but you can see an old stone kiln – a remnant from the Tregonning Brick & Clay Works where building and fire bricks were made. *Before you reach the bottom of the hill, bear left up a path that takes you back to the Preaching Pit. Part way up stop and look behind you for another view of the kiln and the Lizard beyond. As you reach the brow of the hill, go straight across where the paths cross. Soon you join a hardcore path, here turn right. Follow this path along the ridge of the hill, then take the path back down to Balwest.*

Wildlife on Tregonning Hill

Tregonning Hill is best seen in the late summer or early autumn when the slopes are a blaze of purple heather and yellow gorse. The heather is mostly Ling and Bell heather, two species often confused, but easy to identify. Bell heather flowers first, it has large hanging red-purple blooms from May through to September, whereas Ling produces smaller pale lilac flowers from July that gradually turn brown.

Gorse thrives on the hill. Western gorse tends to grow among the heathers and European gorse around the old clay pits. Look out for *urts* or whortleberries. Better known as the Bilberry its blue-black fruits can be gathered from the wild in autumn.

Another plant to look for on the pathways is the Lawn Chamomile with its aromatic white summer flowers and finely dissected leaves. This plant is now considered Nationally Scarce because it has been rapidly disappearing from the wild in recent years.

Although West Cornwall was deforested in prehistoric times, some woodland plants are still found growing on almost treeless places. Wood-sorrel and Wood Anemone are examples of such plants found on Tregonning and Godolphin Hills, which have adapted to a living amid boulders and beneath the bracken and heather.

The old china clay quarries on the hill provide a less exposed habitat. The softer and more easily weathered granite helps to explain the existence of Western Liverwort, a plant so rare that in Britain it only grows on a few sites in Cornwall including Tregonning Hill. For this reason part of the hill is now designated a Site of Special Scientific Interest (SSSI), the highest European level of Nature Conservation status. The hill is also a Special Area of Conservation (SAC).

The ponds on Tregonning Hill are an important habitat for amphibians and insects, such as the Palmate Newt, Toad, Grass Snake and Adders. A variety of Dragonflies and Damselflies are found here including the Common Blue Damselfly and the Golden-ringed Dragonfly, which is bedecked in the Cornish colours of black and gold.

The hill is a great vantage point for bird watching. Choose your spot and your patience should be rewarded by an insight into the lives of the hunter and the hunted. Predators such as buzzards, kestrels and even hen harriers all hunt here for mice and other creatures.

Ling.

Bell heather.

Adder our only poisonous snake. It will only bite if provoked, but is best left alone.

Godolphin Warren

Time: Allow 2½ - 3 hours.

Difficulty: Moderate.

Length: 5¾ miles.

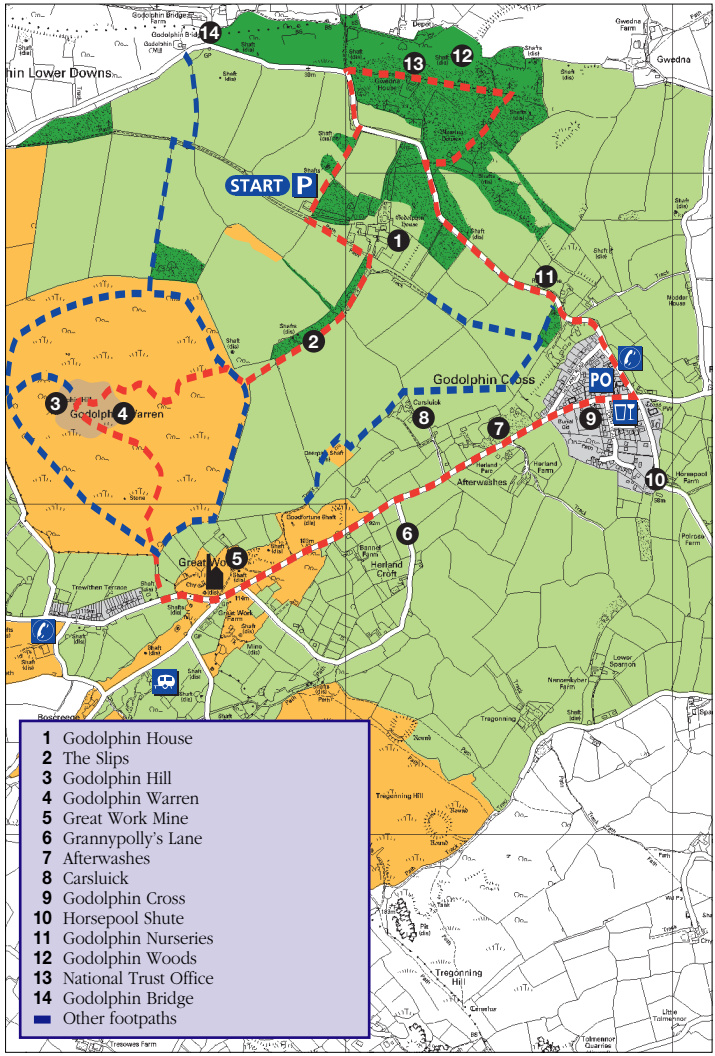
Location: Either take the B3302 Hayle-Helston Road, at St Erth Praze take the turning to Townsend, go straight across the crossroads, down the hill and Godolphin House car park is signed on your right.
Or from the A394 Penzance-Helston Road, turn off at Breage and follow the signs for Carleen and Godolphin, go through Godolphin Cross and after about half a mile you'll find the Godolphin House/ National Trust car park signed on your left.

Parking: At the Godolphin House/ National Trust car park. Roadside parking is strongly discouraged.

Refreshments: At Godolphin Cross you can eat at the Godolphin Arms or buy snacks at the Post Office. When open, Godolphin House serves cream teas.

Dogs: No dogs are allowed at Godolphin House. Well-behaved dogs are welcome on National Trust land.

Please note: Godolphin House is privately owned. The National Trust owns the surrounding estate.



This walk explores the heartland of the Godolphins, one of the most influential families of the early Cornish mining industry. They ascended to the highest office from the wealth of minerals extracted from around Godolphin and Tregonning Hills. Their estate has remained almost unchanged for the last 200 years or so and is now part of a short-listed bid to achieve World Heritage Site status for Cornish mining. The terrain varies from the wilds of the hill to sheltered woodland in the river valley, all havens for wildlife. We pass by Godolphin House, the largest and grandest house in 17th century Cornwall, with extensive gardens and an adjoining deerpark.

Leave the car park and turn left down the lane to the road. Go left, cross over the road and follow the verge as far as the bend, then go right over a stile into Godolphin Woods.

A wrought iron kibble. The design is attributed to Richard Trevithick.

Old boundary walls on the Godolphin Estate.

This is the site of Godolphin Copper Mine. Five lodes were worked in this valley from below Godolphin Bridge in the north over to Gwedna in the east, a distance of nearly a mile. Three different groups of adventurers worked the area, these were Godolphin Bridge Mine, Godolphin Mine and Wheal Dolphin. However, the workings were so wet that 5 steam pumping engines and 2 water wheel driven pumps were needed to dewater the mine. The water wheels were enormous, being 44 and 48 feet in diameter. Around one of the engine houses the ground was so extensively worked that in the 1840s the sides of the shaft collapsed and the engine house slid perpendicularly down into the shaft.

There was mining activity in Godolphin Woods from the 1600s to the 1840s. The remains of Polglase's Shaft can be seen on the right, just one of over 50 shafts in the woods. Ore was drawn up the shaft to the surface by means of a *horse whim*. This consisted of a horizontally mounted drum with a beam slung below. Horses were harnessed to the beam and walked in a circle, so that the drum turned. Wound onto the drum was a rope, both ends of which passed over pulleys and down into the shaft. Buckets known as *kibbles* were attached to the ends of the rope, and as the drum rotated, one kibble was lowered and the other raised. Smaller shafts had just one kibble. Altogether 23 of these horse whims worked at this mine.

J.H. Collins (1912) states that the mine sold over 9,000 tons of copper ore between 1815 and 1846.

Bluebells in Godolphin Woods - one of the best shows of bluebells you are likely to see anywhere.

Godolphin Woods

The woods are not as old as you might think. Most of the trees here were planted after the 1840s when the mines closed and are a mix of oaks, pines and sycamores. Few plants grow beneath the oaks because the dense canopy lets little light through, but in spring there are breathtaking displays of bluebells and snowdrops. Ferns and a rich mix of plants grow under the pines including Wood Sorrel, Holly, Herb Robert and Ivy.

The heathland areas within the wood have been designated as a Special Site of Scientific Interest (SSSI) because rare mosses and liverworts grow on mineral-rich soil. To the naked eye they don't look at all interesting, but seen close-up through a lens an intricate and delicate structure is revealed. Also growing here is a species of unique Bramble, which is only found in Cornwall.

There are also several man-made ponds in the woods. These were originally built to store water for the mining industry and are today home to dragonflies and damselflies. Look out for the exotically named Broad-bodied Chaser, the smaller Beautiful Demoiselle or Emerald Damselfly. To main difference between dragonflies and damselflies is that the latter are usually smaller and rest with their wings together over their backs.

A dragonfly.

The Purple Hairstreak
This butterfly is dependent on oak trees. The caterpillars emerge in springtime and feed on the leaf buds. Later in July/August the adults emerge and can be seen flying about the canopy of the oak and ash trees.

Britain's most westerly colony of this butterfly is found in Godolphin Woods where it feeds on Alder Buckthorn. The best times to spot them are between March-June or August-October before they hibernate for the winter.

The wheel plate in garden, now a table.

Follow the path straight ahead. After about 200 yards into the woods you'll come across a large house on your right – this is Godolphin Count House.

This was the old Count (Account) House for Godolphin Mine. Now owned by the National Trust, it has been refurbished to provide an educational centre for schools and other groups, plus offices and a store. The National Trust took over the 555-acre estate in 2000, a deal excluding Godolphin House. Landscape and access works to the estate have included new parking; repairing and replacing gates; improving old footpaths and creating new ones; safety works at Great Work and Godolphin Mines; clearing fly-tipping; and letting farmland with conservation restrictions.

Butterflies

For the enthusiast, 29 species have been recorded around Godolphin Estate, with gems like the Purple Hairstreak and Brimstones, as well as the Large Skipper, Small Skipper and Silver-washed Fritillary.

Carry straight on to a bridge, crossing over the old water course (leat) and continue on until you reach a wide track. Here turn right, then after a few yards go right along the first marked footpath. Go over the bridge and immediately fork left. Follow this path through the trees until you reach a driveway. Go straight across the driveway, following the hedge on your left until you reach a stile at the end. Go over the stile onto the road.
Here turn left following the road. Go past Godolphin Nursery on your left and then down to the bottom of the dip. Stop here a moment to step back in time.

Around 200 years ago you would be standing amongst a cluster of three noisy waterwheel powered stamping mills. On your right was Maiden Stamps, to your left Black Downs Stamps, and behind you the Ruthdower Stamps. These mills treated ore from the local mines. Maiden Stamps was still working in the 1940s.

(The path to your right, just before the driveway, joins a National Trust permissive path and other Public Rights of Way on Godolphin Hill.)
Continue along the road up the short hill into the village of Godolphin Cross.

Godolphin Cross lies within the ancient tenement of Herland and was known as Herland Cross until the late 1800s. It is said that the village name was changed by the proprietors of the first post office here, because they thought Godolphin sounded more distinguished than Herland. The name Herland means *'long pool'* and dates from around 1300. It is likely that a pool existed nearby possibly connected with the tin streaming industry.

The 1786 Godolphin Estate map shows just one house just to the south of where the church now stands. By 1840 however, the tithe maps show most of the granite cottages had been built, probably to house workers at the nearby stamping mills.

Almost immediately you come to the village Post Office and shop.

This has been here for over 100 years and is one of five shops that existed in the village before the days of public transport. Between them these shops sold everything from bootlaces and tin baths to shotguns and cartridges!

Moving on, the Methodist church on your right was built in 1929. At the back is the former and older chapel, now the village hall.

The curving stone wall here was the site of the blacksmith's shop until the 1970s when it was demolished, although by then it had been disused

Left: Horsepool Chute showing the front portal for filling barrels and the side portal for filling buckets. Built in 1890 just before a severe drought, it was the only source of water for miles that didn't dry up.

Above: The blacksmith's shop, with a gentleman and his dog. Godolphin Cross c1900.

for some years. In earlier times it was a great gathering place where much gossip was exchanged. The blacksmith in the 1940s was Jimmer Johns. Euchre, the much loved card game of the Cornish, was Jimmer's passion. He and a few like-minded friends would often play by the dying embers of the forge till 3 o'clock in the morning.

Soon you reach the crossroads, with the church on your left and the Godolphin Arms on your right.

The church was built in the mid-1900s to relieve overcrowding at Breage. Sadly the church closed in 1998. One tall tale relates how a young man riding a bike rode down the steep roof while roofing repairs were in progress!

Bear right up the side of the Godolphin Arms.

The Godolphin Arms was built c.1830 by a local mine captain who lived nearby at Trenear Farm. The roof and upper floors were constructed from old mine timbers. At one time it was known as the Trelawney Arms and later The Wellington, finally becoming the Godolphin Arms when the pub of the same name at Trewithen, Great Work closed in the early 1900s. The long building extending from the back of the pub was once a cheese factory.

Within a few yards you pass The Old Post House on your right.

The Godolphin Arms.

This was the depot for horse drawn buses many years ago. Next door was the carpenter's shop, this was situated on the first floor and was run by Jim Bailey until the late 1940s. On the ground floor were cow stalls where his daughter Lily kept a few cows. Like others in the village, she drove them to the fields on the outskirts of the village, bringing them back in the late afternoon for milking. Many villagers would also have kept a pig in a small sty in the back garden to fatten for the table.

A little further along on your left is the old village hall and behind this is the vicarage, both now private dwellings. Next you pass the village school on your right.

Horse drawn bus at Godolphin Cross c1900.

Until the late 1990s, the school bore the name of Herland Cross School, the last remnant of the old village name to exist. The school was opened in 1878, until this time many children would have attended the day school at Masters Pond, Great Work:

this closed a year later. Judging by the early Herland record book, absenteeism was a problem with children being kept at home for weeks at a time to help with haymaking and harvest.

Great Work Mine in 1890s. This view was taken from the top of the sand dump when the area looked more like a moonscape than a landscape. The only mine building still standing is Leeds Shaft engine house. The stamps engine house on the far left of the photograph was blown up in the 1960s.

As you leave the village the wooded area to the right is known as Afterwashes -so called because the tailings, or afterwashes, from the tin separation process ran through here. The Great Work deep adit had its portal down amongst the trees. Continue up the hill. The next lane on the right leads to Carsluick.

Carsluick too is old, first recorded in 1320. Caer means *'fortified settlement'* though the meaning *sluick* has been lost in the mists of time.

Next on your left is Grannypolly's Lane.

Named after Granny Polglase who lived in a cottage along here. Ore was brought from South Wheal Breage Mine on the lower slopes of Tregonning Hill, down this lane to the stamps at Godolphin.

The area to your right, was once the lower end of the sand tailings dump from the Great Work tin dressing floors. These extended up the hill some 150 yards and were over 15 yards high. Head up to the next junction signed Trescowe and Millpool. Turn right into Bal Lane, which brings you past Great Work Mine.

Before venturing onto Godolphin Hill (also known as Godolphin Warren) turn towards the Leeds Shaft engine house and contemplate for a moment. The engine house is the last remnant of Great Work Mine and was built in 1829 to house a 60-inch cylinder steam-pumping engine built by Harvey's of Hayle. There would have been a large complex of buildings here including another two engine houses for winding and stamping (crushing), a blacksmith's shop, a carpenter's shop and a count house. The engine house was named after the Duke of Leeds, who inherited the Godolphin estate when the Godolphin family line died out in 1785.

Great Work was the principle mine of Godolphin Bal and produced great wealth for the Godolphins, who were the landowners and mineral lords. Documentary evidence shows that the mine was in full swing by the 1540s although the archaeological remains indicate that mining could have been going on here for 200 years before this.

Leeds Shaft in front of the engine house is 30 fathoms (180 feet) to the adit level and another 1000 feet to the bottom. The Great Work lode workings extend about half a mile from Boscreege in the west to Deerpark Shaft in the east. Since records were kept in 1825, Great Work produced 6,250 tons of black (unsmelted) tin. Considering the mine had been working for 300 years before this time, the true quantity of tin raised must have been far in excess of this figure.

From Great Work Mine continue along the road for about a hundred yards, then go right up the lane just before some houses. At the gate go straight on, not through the gate. Soon you reach another gate with a stile, go over this stile onto Godolphin Hill.

Almost immediately the path splits into three, take the middle path to the summit for stunning views over the estate and beyond. If you don't want to go to the summit, take the right path to 'The Slips'.

Over to your right (south) is Tregonning Hill with its distinctive war memorial on the top. A little further to the left are the satellite dishes at Goonhilly Earth Station. Ahead of you (east) is the Basset monument on Carn Brea and beyond that St Agnes Beacon. Behind you (west) are Mount's Bay and St Michael's Mount. The engine house to the right (north-west) is Wheal Junket, near Trescowe.

This hill and its pair Tregonning are made from 270-290 million year old granite. Godolphin Hill takes its name from the Godolphin family who claimed it as their own, probably in the 13th or 14th century. However, there is evidence of Neolithic, Bronze and Iron Age peoples living here.

During World War Two, the hill was used by the home guard as a lookout for German invasion. An old black car with no wheels was set up on the side of the hill facing the sea. The plan was that if the enemy were sighted, their fastest runner Harry Smith, would be despatched to the nearest phone box to warn of the Nazi invasion.

Leeds Shaft engine house of Great Work Mine with Tregonning Hill behind.

Walk back down the hill in the direction of Godolphin Woods, with Tregonning Hill to your right. Near the bottom where the path forks, bear right. Cross straight over the base path and head towards a wooded lane known as The Slips. In spring this area is full of primroses.

The name possibly derives from slipping deerhound leashes when coursing deer. Bordering this path are several shafts denoted by circular walls *(collars),* however please stay on the path for safety reasons. These shafts were sunk on the Warren Lode, which stretches back into the hill. Although there is little evidence of mineral extraction underground, an adit connects the shafts and has its portal at the bottom of The Slips. This adit supplies water to the manor and may have been driven for this purpose. The flow of water can vary from a trickle in summer to a torrent in winter. The workings here are very early, possibly pre-1600.

At the bottom of The Slips is a gate in the boundary wall of Godolphin House. There is no public access to the house from here, so as you approach the gate bear left and go over a granite cattle grid into the field.

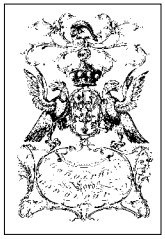
On your immediate right against the hedge you'll notice a ditch. This is the remains of a leat that brought water from the Great Work shallow adit via Carsluick Farm and the lower fields of the manor. This water supplied the stew ponds just to the south of the manor and powered two water wheels in the farm complex.

Walk along the bottom of the field to another granite cattle grid. Go over this into a lane. Turn right past some modern farm buildings and follow the lane back to the Godolphin House/National Trust car park.

Buzzard.

Wildlife on Godolphin Warren

The hill's moorland habitat supports the nationally scarce Pale Heath-violet, Purple Moor-grass, Ling, Bell heather, Bilberry, European Gorse and its smaller, more compact, autumn-flowering cousin Western Gorse. The hill is a good place to look for green woodpeckers, warblers, nightjars and cuckoos. Buzzards and foxes might be seen preying on rabbits. Watch out killers can be small as well – look carefully for Longhorn beetles, Green Tiger beetles and Heath Assassins.



The Godolphin Family coat of arms.

Godolphin House

The Hearth Tax in 1664 recorded the highest number of hearths in Cornwall was at Godolphin, suggesting it was then the largest and grandest house in the County. The fact that the house came to be built here at all, far from the fashionable centres of Europe reflects the immense wealth and influence of the Godolphin family.

It was mining that brought the Godolphins such immense wealth and power. In 1539, they achieved their first seat in Parliament, after which successive generations became politicians and held other high-ranking positions at court.

The first written mention of the Manor of Godolghan was in 1297, however by the 1530s this name had changed to the anglicised form, Godolphin. During this time the Godolghans were actively expanding their agricultural and mining interests. Like other wealthy people across Britain, they built a defended house to protect their possessions, which was later replaced by the present house. When William Worcestre was listing West Country castles in 1478, he recorded 'Castle Godolghan in the settlement of Godolghan, ruined.'

The present house was completed in six main phases. The first established a sizeable courtyard house in c.1470 and over the next 160 years extensions and modifications were added. The final phase of c.1630 included the double colonnade front - an exceptionally modern design for a mansion so remote from the cultural centre of London –joining the two older wings of the house to provide a range of entertainment rooms.

Besides refashioning the house, the Godolphins laid out gardens to openly display their wealth. Two mediaeval gardens survive. The Side Garden is early 14th century and at its peak covered 4½ acres. The younger garden is the King's Garden of c1500.

The decline of the Godolphins

From the early-1800s, the family focus shifted to London. The Godolphin Estate was left to stagnate and was rarely visited by the time of Francis 2nd Earl of Godolphin. Francis lived near Newmarket, a location suited to his great love horse racing. Today's British bloodstock is said to descend from his famous stallion, The Godolphin Arabian.

By 1785 there were no male heirs and the estate passed to the Dukes of Leeds, whose seat was in Yorkshire. They were classic absentee landlords, investing little in the estate whilst extracting large amounts from its mining and farming interests. They planned to extend the house, but this work was never materialised.

Revival

The Schofield family bought the estate in 1937. In 2000 the National Trust bought the estate, an arrangement enabling the Schofields to keep the house, stables, farm buildings and gardens. One of Cornwall's exceptional historic sites has now been safeguarded and essential repairs began in 2001.

The Deerpark and Warren

Probably created by Sir Alexander Godolghan around 1300, the deerpark and warren were symbols of wealth and affluence. The deerpark encompassed most of the hill and the fields that ran down to the manor, as well as a large tract of land on the northern side of the hill reaching as far as the River Hayle. The entire area was surrounded by a deep ditch and a high hedge known as a deer pale, constructed to allow deer on the outside to jump in, but made it difficult for deer on the inside to jump out. A large part of the deer pale is still intact today.

Remnants of the deer herd lingered on until the mid-19th century. Hounds chased one almost to Camborne, where it dropped dead from exhaustion. A second was shot at nearby Crawle. The third and last deer was trapped at Carsluick, where the farmer had become so incensed by the animal ravaging his crops that he set a trap made from an upturned harrow in a pit. When the animal jumped over the hedge, it became impaled and the farmer then secretly butchered the deer.

In mediaeval times, rabbits were imported from the Mediterranean and accommodation was provided for them in the form of pillow mounds. These were earth mounds with small stone chambers inside where the rabbits could shelter from the wet and cold. Rabbit meat was considered a great delicacy and to possess a colony was another sign of affluence.

Rabbit pillows on Godolphin Hill, said to be the finest examples in Cornwall.

Godolphin House.

Breage & Carleen Circular

Time: Allow 3 hours.

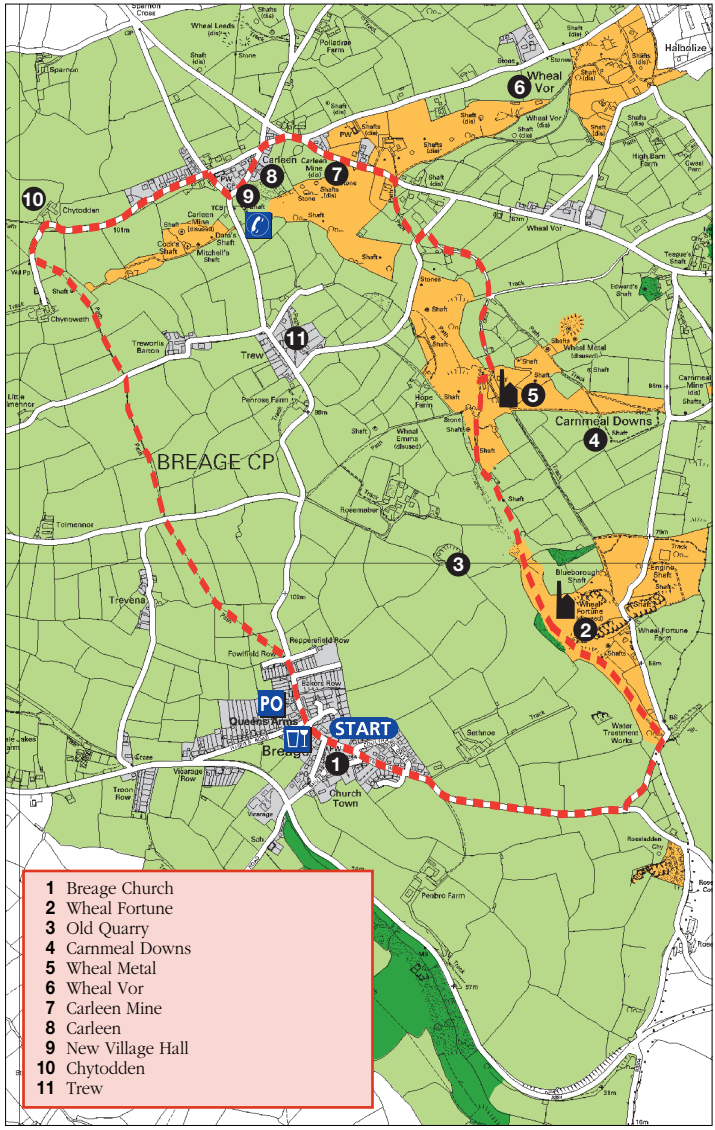
Difficulty: Moderate.

Length: 6 miles.

Location: Take the A394 Penzance-Helston Road, and turn off at Breage.

Parking: You can park on the roadside in Breage village near the church.

Refreshments: At Breage the Queens Arms serves real ales and food; or you can buy snacks at the Post Office. There is no pub or shop at Carleen.



This walk starts at Breage church, which is famous for its 15th century wall frescoes, then takes you through some of the richest mining land in the county, where John Wesley preached. The small village of Carleen was once the centre of great mining activity and the first steam engines to work on Cornish mines were erected here at Wheal Vor. There are some unexpected extras like the decoration on Wheal Fortune stack supposed to represent the dancers at Helston Flora Day, and the vast springtime sea of yellow gorse.

Start at Breage by the church and pub, where you can park on the roadside.

The village gets its name from the St Breaca, who came here from Ireland with her brother Germoe around 460 AD and established a church here. Later, with the expansion of the local mining industry, Breage grew as people moved into the area to work at Wheal Vor, Wheal Fortune and Trewavas Mine. According to the 1841 census, the population of Breage parish was in excess of 6,000. At that time, the village had its own baker, grocery shops, wheelwright, blacksmith and carpenters' shops, as well as its own water supply – all now disappeared.

John Wesley, the great Methodist preacher, visited Breage in 1750 and many converted to Methodism. Chapels were built in the village, today only one remains open.

The Queens Arms, Breage.

Breage Church

"An old and pretty village dominated by the grand fifteenth century church tower of its wholly granite church. The south porch has a carved outer arch. Inside the church shows a splendid vista of granite arcades … the roofs … are rich fifteenth century. The many mediaeval wall paintings, notably St Christopher and Christ of the Trades in the north aisle, are more vigorous and impressive than is usual in English churches." (John Betjeman, 1964)

The church is dedicated to the Irish missionary St Breaca. Her first church was built on the slopes of Tregonning Hill between the farmsteads of Tolmenor and Chynoweth, later moving down on the hill of Penbroc, or Penbro, as it is known today. Germoe established his church not far away.

The Godolphin family worshipped here and three Godolphin helmets are displayed in the Godolphin Chapel. Margaret Blagge, wife of the famous Sidney 1st Earl of Godolphin (1645-1712) died after giving birth to their only child Francis (later 2nd Earl). Her request was to be buried close to her husband's ancestral home, although she had never visited the area. Her body was "conveyed in a hearse drawn by six horses from Whitehall to Breage", a journey that took 14 days. Following the hearse were two coaches, each with 6 horses. She was buried in the Godolphin family vault and the funeral, in 1678, is reputed to have cost £1,000! Stained glass windows to her memory are in Truro and Liverpool Cathedrals.

Godolphin Chapel ceiling.

Roman Stone on display in the church.

Breage Church.

The wall frescoes were uncovered in 1890 by Parson Barnes during restoration works. *"Some extremely curious and rare frescoes have been discovered on the walls of the parish church of St. Breage of the date of about 1400. There is a figure of Our Lord 10 feet high, and from all parts of the body streams of blood are issuing from emblems of various trades, such as anchors, shears, battle-axes, pruning-hooks, netting-needles, masons' mallets, plumbers' beads, harps, and others."* (extract from the West Briton).

Wall frescoes.

Wildlife around Breage

The road verges change dramatically throughout the year. In spring the smell of onions is the Three-cornered Leek now a well-established introduction from the Mediterranean that looks like a white bluebell. Brightening up walls and hedges in the summer months is Red Valerian, and Tall Tutsan, a garden escapee originally from Madeira. The strings of brightly coloured beads dangling from Hazel bushes in the autumn are the fruit of Black Bryony.

Slender Speedwell, an alien species with delicate violet flowers occurs in the churchyard amongst the mown grass, as does Chamomile and the orange flowered Fox-and-Cubs.

Three-cornered leek.

From the front of the Queens Arms, face the church and take the road to the left, which skirts the edge of the churchyard. At the far end carry straight on, following a country road past some houses. As the road goes downhill look left for views up the valley. At the bottom of the hill, turn left at the staggered crossroads just after the stream. Follow this lane as it bears round to the right. Just before the left bend go left onto a footpath that follows the valley to Carleen.

The first part of the footpath is through trees, then gradually opens up. On your left are fields, but in places you should be able to spot evidence of quarrying. The mine spoil heaps to your right are from Great Wheal Fortune, which operated into the early years of the 20th century.

After passing a ruined cottage go straight for a while. Soon you reach a lane, here bear left then after 10 yards take the footpath to the right uphill towards a chimney stack with a band of ornate white brickwork near the top.

Watson's Shaft chimney stack.

The chimney stack is at Watson's Shaft, part of Wheal Metal. The white brick decoration at the top is said to represent dancers at Helston Flora Day. The stack was connected by an underground flue to the nearby boiler house, which dates from 1885. The accompanying engine house contained a 30-inch engine that powered both pumping and stamping operations until 1901.

Carnmeal Downs

This valley is known as Carnmeal Downs and has been intensively mined for hundreds of years. Today it supports a variety of wildlife habitats that attracts badgers, foxes, rabbits, weasels, stoats and grey squirrels. Old shafts are ideal roosting places for bats and several species are found here including the Natterer, Greater Horseshoe and the Lesser Horseshoe. These little creatures are amongst our most protected animals, because of recent decreases in their numbers. If you see them flitting around at twilight, just remember one bat can eat thousands of midges during its evening flight!

Carnmeal Downs is an area of heathland where Heath Milkwort, Lousewort and Southern Marsh-orchid grow among the heathers. European Gorse grows here in abundance – its yellow flowers exude a coconut fragrance in the warmth of the sun. In summer you might be lucky enough to gather wild strawberries.

Bat.

Gorse.

At the chimney stack go left and follow the track past Lower Scotts Cottage on your right, then Higher Scotts Cottage on your left. Look left for views towards Tregonning Hill and you should soon be able to glimpse the housing at Carleen.

At the T-junction, go left, then after about 25 yards go right up a footpath, which brings you to the road on the edge of Carleen. Turn left along the road. The lump in the road here is nicknamed the "Wheal Vor Hill" and was once a bridge over water pumped from Wheal Vor Mine down the valley towards Porthleven.

Woodcut of Wheal Vor.

Carleen still has many of its miners' cottages, the difference today being that they would have originally been thatched. William Gilbert of Carleen recalls that many miners had one or two small meadows for growing potatoes and other vegetables as well as keeping animals. Goats provided milk and meat, many families took their goats to Carnmeal Downs for grazing. A pig would be killed and salted down to feed the family. And a donkey was kept to pull the shay, a simple 2-wheeled cart that was their only form of transport.

On your left is a gorsey area, this is the site of Carleen Mine. On the right, the cottages set back from the road were once the mine Count Houses and are still known as that locally. Next on the right, the three cottages beside the road are known as Churky Burrow.

A team of horses pulling a mine boiler from Harveys of Hayle to Wheal Vor Mine in 1906. The horses were owned by Mr Will Tyacke of Carleen and driven by Harry Meagor.

Carleen was once the centre of great mining activity – Wheal Vor, Wheal Metal and Wheal Metal & Flow were all close by. Wheal Vor covered almost four square miles and in the mid-19th century was one of Cornwall's biggest and richest tin mines. It is also claimed that Wheal Vor was the first mine in Cornwall to use steam power for dewatering the mine.

To give you some idea of how busy it was, the mine would have employed around 1,200 men, women and children at any one time. People came from miles around to work here, travelling on foot or by donkey

shay. Women and girls worked at the surface and were not allowed to work underground as this was considered bad luck. Known as balmaidens, their job involved crushing and processing the ore.

Seen here is the Carleen Methodist Sunday School Tea Treat procession setting off for Breage c1900.

A little further along beside a modern bungalow is a small stone building.

This is the remains of a carpenter's shop. Next door was the village blacksmith's shop, where old men would gather for a smoke and a chat.

Walk on into the village. The bus shelter, just past the road junction, is outside what was the last village store.

Closed in the mid 1990s, the shop is greatly missed as a meeting place and as the hub of the village. For many years it was run by Kenneth and Mildred Bucket and became known to all as 'Bucket's Shop'. Mrs Bucket had worked in the shop as a young girl for her aunt, Mrs Williams, who began the business back in 1925.

Take the next road to the left signed for Breage. This takes you past Gilbert's Row, a row of cottages named after the Gilbert family who still live in the village. Go straight over at the crossroads. The large building on the left just before the next crossroads was the village's first chapel.

John Wesley the celebrated preacher, visited the area in the 18th century. This led to the building of the first Methodist Chapel in Carleen in 1762. Because of a huge increase in the mining community during the 19th century, a new chapel was built in 1833. This landmark is by far the largest building in Carleen, and hasn't changed much since. Though it's now a private dwelling, it still dominates the centre of the village.

Carleen was renowned for its tea treats, held annually on the first Saturday in August. On their procession of witness, the first teachers and scholars always performed the "Serpent's Walk" over the Green at Trew before returning to Carleen to enjoy their saffron buns and other Tea Treat fare.

Men's Institute before demolition in 2001.

From the chapel, a short detour down the hill to the left takes you to the new village hall constructed in 2001.

After many years of waiting, the dream has become a reality. This modern building replaces the old wooden hut, which was the home of the Men's Institute for nearly 100 years.

Return back to the chapel. The cottage on the right is known as 'Tyack's Toff'.

This is where a haulier called Tyacke kept his horses. They pulled the huge wagons, which worked around the mines. It is said that the teams of horses would take the wagons home even if their driver was too drunk to drive. When let out of their harnesses, they would charge up the lane towards Chytodden to drink from the spring water by the side of the road, then return to their stables for a feed at the end of a hard day's work.

The opening of Carleen Institute c1904. Behind is Flat Rod Shaft engine house of Carleen Mine.

There used to be three drinking pools at Carleen where local farmers sent

their horses and cattle to drink. At the top of the lane, adjacent to Chytodden Farm is a well, which for many years supplied most of the villagers with drinking water.

From the crossroads, take the road to Chytodden and soon you'll leave Carleen behind. At the first farm buildings (Chytodden Farm) follow the road round to the left and soon you'll come to a cattle grid at the entrance to Chynoweth Farm. Just before the cattle grid go left over the stile into a field. From here the rest of the walk back to Breage is across farmland.

Go diagonally across the field to the stile on the right. Then go across three more fields, keeping to the left hedge in each one. On your right is Tregonning Hill and on your left you should be able to spot Ivey's Shaft engine house, part of Wheal Metal.

The water carrier at Carleen with the Methodist Church on the left. In the distance is Flat Rod Shaft engine house of Carleen Mine, which was demolished in 1948.

Go straight across the lane and over the stile into the next field following the hedge to the left. Go over the stile into the next field and again keep to the left hedge. Go over the stile, straight across the lane and then over another stile into the next field.

Walk straight up the middle of the field taking time to look left for great views towards Sithney with its prominent church tower, and beyond to Helston and the Lizard. Down the hill on your left is Trew.

The little hamlet of Trew, means *'black farm'* in Cornish. Most of the cottages here date from the mining boom of the 19th century, when men, women and children were employed at the great mining complex of Wheal Vor. According to the 1841 census, around 50 families lived in the village, but by 1881 the number had more than halved, a reflection of mine closure and emigration.

The big house on the village green was once called The Trelawney Arms and was a thriving concern during the 19th century. It was here that the tenants of the Trelawney Estate came to pay their rents on *quarter days*. The Green was a popular place for events such as Cornish wrestling, travelling fairs and menageries.

At the top of the field bear a little to the left to reach the next stile – this is an elegant curved granite cattle grid arched by trees. Go diagonally across the field to the next stile. Cross the right corner of the field and over another stile into the last field.

Trew, with The Trelawney Arms on the right next to the green.

Go diagonally across to the stile and onto the road at the edge of Breage. Follow the road into the village and back to the church.

Ashton & Germoe Circular

Time: Allow 3 hours.

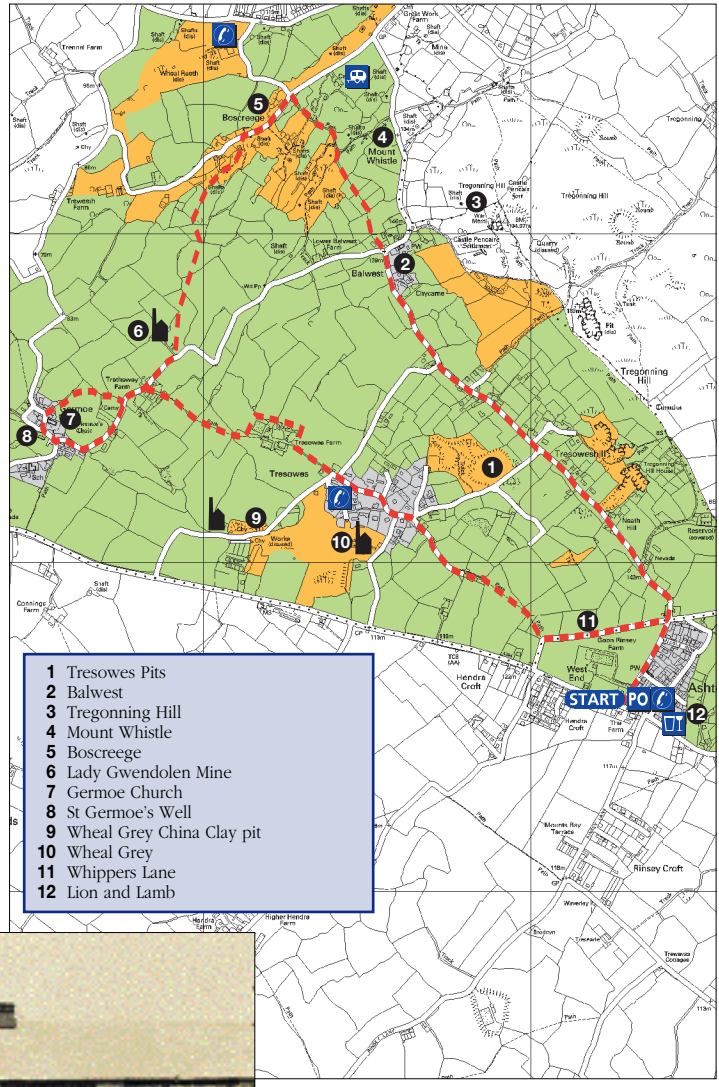
Difficulty: Moderate.

Length: 6½ miles.

Location: Take the A394 Penzance-Helston Road and at Ashton park near the Post Office.

Parking: Roadside parking is limited.

Refreshments: At Ashton you can eat at the Lion & Lamb or buy snacks at the Post Office. In summer, Tresowes Farm serves cream teas.



Ashton post office c1940.

This gentle walk explores the countryside between Ashton and Germoe. Stretched out along the main road, the countryside around Ashton was once a hive of industry, with quarry horses pulling carts laden with granite down from Tregonning Hill or bricks from Wheal Grey china clay pits. Tucked away in a sheltered valley, is Germoe village with its ancient church that has changed little over the centuries.

Start your walk from the middle of Ashton at the Post Office.

Loosely translated the name Ashton means *'the place of the ash tree'*. Today the Post Office is the only shop left in the village. In the past there were at least 6 shops, including an undertaker and a blacksmith, as well as a school, a church and four chapels. One shop had a lending library and sold wallpaper, paint, paraffin, knitting wool, reels of cotton.

The Lion & Lamb pub.

The main grocery shop sold *niffling,* which would be hung from the shop ceiling. Niffling was dried salted Newfoundland cod, which after being soaked was cooked and served with mashed potatoes. Fish sellers from Porthleven called *jowsters* would call daily in their pony and traps, selling the catch of the day.

Horse drawn buses, and later, early motor buses and charabancs, all operated from the area next to the garage. These buses ran to the main towns of Penzance and Helston. The men of the village would have been employed locally at Great Work and Boscreage Mines, the clayworks at Tresowes or on local farms.

Today none of the original four chapels in Ashton are used for religious purposes, reflecting a general trend in falling attendances. The old chapel in Prospect Row now houses the Men's Institute, they originally used a wooden building located in front of Palm House. The local blacksmith worked from another in Chapel Row, and this is now used as a net loft. The others in Middle Row and West End have become dwellings. Ashton Church is still used and the bricks around the windows were made at Tregonning Hill.

Ashton c1900.

Take the road up the side of the Post Office signed for Balwest. Just before the sharp left bend at the edge of the village, turn left onto a path, just before a gate signed Trevaskis. This path is known locally as Whippers Lane because farmers once drove their cattle through here. After about 400 yards, where the path bends to the left, go over a stile on your right by the side of a gate. Go straight across the field and through a line of trees, then across the next field to a stile in the far right corner. Follow the hedge on your right to the corner of the field then round to the left a little. Go over the stile and immediately bear right through the gate, taking you to the side of a cottage (Higher Chygwins Farm).
Go through the next gate and in the next field, follow the hedge to your left until you reach a stile. Go over the stile onto a track and go right. Soon you reach a cottage and just past this turn left down a tarmaced road between bungalows.

Red Campion.

Chaffinch.

Cornish hedges

Havens for wildlife, in spring Cornish hedges are a riot of colour when Bluebells, Red Campions and Cow Parsley are supreme. You might spot lizards and slowworms basking in the late afternoon sun, or hear busy voles and shrews foraging in the undergrowth. Look out for familiar garden birds too, such as the Chaffinch, Robin, Blackbird and Great Tit.

Go straight across at the next junction and follow the road round to the right. Soon you'll arrive at Tresowes Green junction. Just before this junction is Moors Lane, a traditional horse route to the quarries on Tregonning Hill.

Moors Lane would have been busy with horse-drawn carts carrying granite from the hill and clay from the pit. In the early days of road building, quarrymen on Tregonning Hill each had his own pile of granite boulders, all sorted by size. Naughty boys would often shift the boulders around between piles, disrupting the system and causing havoc.

With the telephone box on your left, ignore the first right signed to Balwest & Godolphin and go straight across taking the road to Tresowes Farm. On your left is stack of Wheal Grey and views to the sea.

Wheal Grey China Clay Pit workers, pre-1919.

Wheal Grey was the last place to produce china clay in the area. There were two pits here within a couple of hundred yards of each other and the clay they produced was taken to Porthleven for export. It is said there was also a kiln for making bricks and slabs for domestic fires. As the clay was cleared, alluvial tin deposits were found in the lower pit. In addition, there was a tin-bearing lode here, mined until the early 1870s. These underground workings were kept dry from the pumping engine house that still stands near the spoil heaps.

The lower pit is now stocked with coarse fish and used by a local fishing club. The lake is also home to eleven species of Dragonflies and Damselflies with such evocative names as the Azure Damselfly, Beautiful Demoiselle, Emperor Dragonfly and Large Red Damselfly.

At Tresowes Farm follow the footpath around the farm complex. At the end of the farm buildings go across the field, following the hedge to your right, go over the stile and across tow more fields.

Old cottage at Germoe.

Stretching out in front of you is Mounts Bay and on the headland in the distance is Tater Dhu lighthouse. Look for Paul Church tower above Newlyn and Creegbrawse engine house (often mistaken for Ding Dong) profiled on the hills further to the right. Down in valley is Germoe Church tower – where we are now heading.

The path comes out through a complex of old buildings at Trethewey. At the road turn left down the hill and soon you'll be in the picturesque village of Germoe.

Where the road bears left up the hill towards the school, go straight across the junction towards Germoe church. You'll find the gate into the churchyard on your right, if you want to explore this ancient building. Continue along the road following the perimeter of the churchyard. As you near the tower, tucked off to the left at the top of a narrow track. is St Germoe's Well.

The original well was recorded in 1538 when Leland visited the area. He described *"St Germoe's Welle a little without the chirchyard"*. When the road next to the church was widened and the level raised in 1905, all trace of the well was lost including the trough stones. As part of Germoe's Silver Jubilee of Elizabeth II celebrations in 1977, the well was reconstructed. The new well taps into a vigorous spring, possibly the original source!

Continue along the road until just past the church tower where the road bends to the left. Here go right up a track next to Churchtown Cottages and

Germoe Church

Well worth stopping at, the oldest parts of this ancient church are 12th century and built from Breaca granite, a soft stone found on Tregonning Hill that was easily worked by Norman church builders. In the 14th century, the church was extended to accommodate a rapidly growing congregation, including a north aisle of six arches on five columns and a staged tower with elaborate pinnacles at the top springing from angels. Watch out for the Germoe Monkeys - these sculpted onto the outer door ward off the powers of evil and mischief!

The church is dedicated to St Germoe who came over from Ireland with other missionaries around 460 AD. According to Leland (1540) they landed near Hayle, but were attacked by a local chieftain named Teudar. After escaping up the River Hayle, they took refuge on Tregonning Hill where they later founded a Celtic settlement. Germoe and his sister Breaca both stayed in Cornwall. The churches at Germoe and Breage are dedicated to them.

The Celtic church believed saints were more important than bishops, which could explain the origin of St Germoe's Chair. Said to be the saint's throne, others believe it was part of mediaeval Palm Sunday celebrations. Whatever the answer, its true origin is unproven. John Betjeman (1964) wasn't sure either, he described it as having *"two pointed arches and round granite columns, its triple seats within and roughly carved head looks more like a late seventeenth century romantic folly than pre-Reformation."*

St Germoe's Chair.

St Germoe Church.

into the field at the end. Follow the footpath diagonally across field and over the stile. Go over the next field and over another stile. Here you'll find yourself back on the road at Trethewey.

Go left up lane, past the old buildings on your right. A little further up go over a gate into a field on your left. Straight ahead of you is Tregonning Hill with its monument on the top. As you get towards the top of field, head for the left corner and go over the wall. Keep to the left, then go through the second and open gateway on your left. The large concrete structure clearly visible to your left once belonged to Lady Gwendolen Mine.

William Lemon

Born at Germoe in 1696 and baptised at Breage Church the same year, he was educated in the village school. He then became the clerk to Mr Coster of Bristol, who started deep mining for copper. When William Lemon married Miss Isabelle Vibart of Gulval – a lady of some property – he was able to finance his far-sighted mining ideas.

Famously, he conceived the idea of working mines on a large scale. At Poldice Mine he was the principal adventurer and provided the capital to solve the mine's water problem. Whilst John Williams planned the construction of a deep drainage tunnel *(adit)* to naturally drain the mine, Lemon campaigned in Parliament to get the duty on sea-borne coal dropped. When this duty was dropped in 1741 it became economic to buy steam pumping engines, and an order was immediately placed for 5 Newcomen engines. Deep adit construction played a vital role in dewatering Cornish mines and at its peak, the County Adit drained an estimated 13 million gallons/day from over 40 mines around Redruth and St Day through 38 miles of adits.

This remnant of Lady Gwendolen Mine was once part of a large mill complex containing plant for crushing tin ore. This was one of the last mines to work the Great Work complex.

The mine itself was relatively recent as tin mines go. Serious mining did not begin here until 1907. It was worked intermittently until 1929 when an investment of £100,000 built a new mill, headgear for the two shafts and an aerial ropeway to carry ore to the mill from nearby Wheal Reeth. It worked for five years, then the mine closed after holing into the water-filled Wheal Boys workings to the east. Three men were trapped underground for three days until the water level was pumped low enough for them to be rescued. The falling price of tin along with extra pumping costs was enough to stop further investment.

Lady Gwendolen Mine in the snow, late 1920s.

The mine was named Lady Gwendolen after the eldest daughter of the Duke of Leeds who was the mineral owner after inheriting the Godolphin Estate. The Dukes of Leeds only made occasional visits to Godolphin. They are remembered in several place names notably Leedstown, where the Duke of Leeds pub can be found and Townshend, their family name. Mines were named after them too including Wheal Leeds and the Leeds & St Aubyn Mine.

In contrast to Lady Gwendolen Mine is the ancient Trebolence Mine to the north-west. Today the chimney is all that remains of the engine house, which once contained the engine for dewatering the mine and driving the stamps. Documentary evidence of the mine dates back to 1510 and Trebolence village is shown on early maps, though no trace of it exists today. With the Cornish tendency to drop the prefix name to a place name, Trebolence was locally known as *Bullens* and was famous for particularly large sloes that used to grow there. In Cornwall these large sloes are referred to as bullens. It is difficult to know if the sloe gave its name to the place or vice versa. Given the age of the village it may possibly be the latter.

Walk across the field towards the middle of the wall and climb over the stile. To your left are open fields. Straight ahead is a wooden stile, clearly visible from the top of the wall, cross the field to this stile. Then go across the next field to a gate, here bear right and then left onto the lane at Boscreage.

Go right up the lane and soon you'll reach a T-junction. Turn right along the narrow lane to the side of Rose Cottage. After a short distance, where the lane becomes a gated driveway, carry straight on along a footpath.

When you come out onto a lane, there are two options for getting back to Ashton. Either follow the lane straight ahead and round to the left, at the road bear right. This road takes you back to Ashton.

Or, you can go off-road to Balwest. Follow the lane straight ahead as far as the corner and take the footpath on the right. After a few yards go over the stile and take the footpath to the right, which takes you through fields to Lower Balwest Farm. At the road turn left, then right at the next junction onto the road back to Ashton.

Part way along on your left is the thatched Adit Cottage built around 1702 and in the 20th century home to the Lamb Swan Pottery. Next to the cottage is an adit. This has been a source of fresh pure water for many years and is safe to drink today. Many believe it makes the best cup of tea around. Water would have been collected from here in buckets to water cattle and also for horses employed to carry materials for the clay pits and quarries on Tregonning Hill.

As you enter the village of Ashton, the road takes you straight back to the Post Office.

Wildlife around Germoe

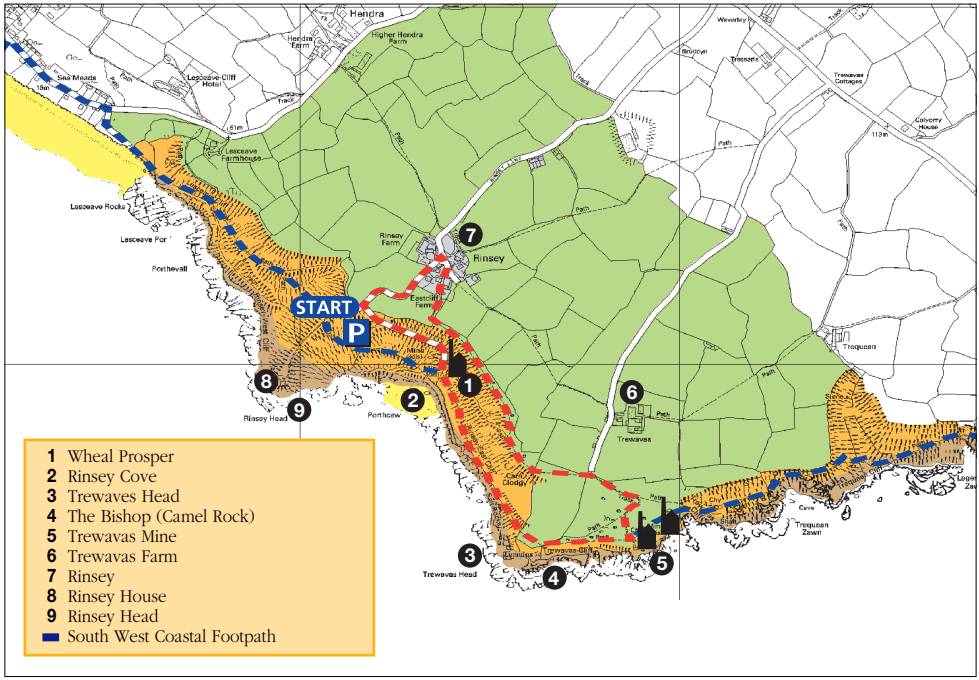
Watch out for the attractive Pencilled Crane's-bill with its pale pink petals and etched with crimson lines. Wall-me, a rare fern in West Cornwall, grows on old mortared walls, whilst Lanceolate Spleenwort prefers the stone-face of Cornish hedges.

In the early 20th century, three now rare plants were commonly found in Germoe - Coral Necklace, Three-lobed Crowfoot and Pennyroyal. The first two are plants of shallow pools, whilst Pennyroyal is associated with the muddy edges of ponds. Plant records reveal a loss of good wildlife habitat in the area over the last hundred years or so.

Wall-rue.

Pencilled Crane's-Bill.

Rinsey Cove



Time: Allow 1½ hours.

Difficulty: Moderate.

Length: 2½ miles.

Location: At Ashton on the A394 Penzance-Helston Road, take the turning opposite the Lion & Lamb pub signed for Rinsey. Where the road goes left towards Porthleven, go straight on to Rinsey. The car park is a little further on at the end of a bumpy road.

Parking: At the National Trust car park above Rinsey Cove.

Refreshments: At Ashton, food is served at the Lion & Lamb pub, or you can buy snacks from the Post Office.

The National Trust owns much of the coast here. Wheal Prosper has been used for filming a Poldark sequel and further round is Trewavas Mine perched precariously on the cliff edge but a breathtaking sight. In spring and summer the clifftops are full of flowers and attracts many species of birds and insects. If you're feeling adventurous, climb down to Rinsey Cove and explore the rockpools, take a swim or study the geology.

Wheal Prosper.

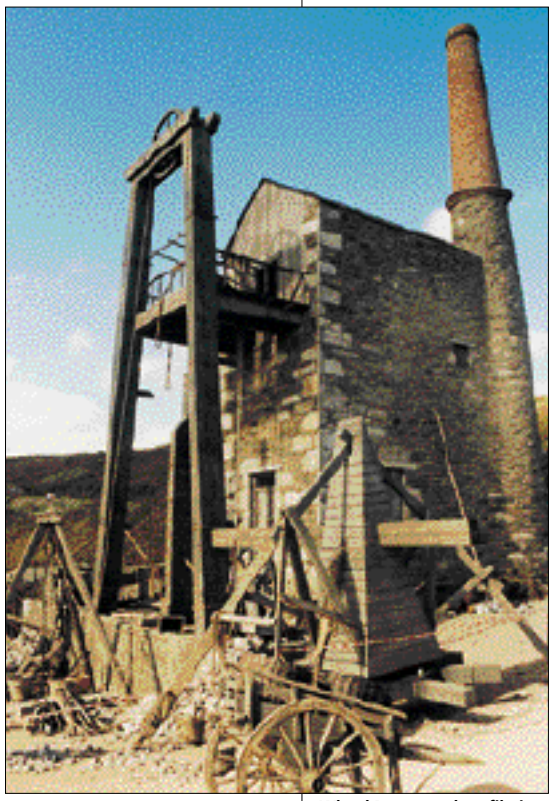
Take the footpath from the car park down towards the engine house to join the South West Coastal Footpath. On your way down look to your right for a structure known as a bat castle, perched on a pile of old mine spoil.

The bat castle sits on top of an old mine shaft and was put there for safety reasons to stop people falling in. Its design allows the resident bat population to roost in the underground workings – if you're here at twilight you're likely to see them flying about.

When you reach the engine house there's a flat area where you can sit and admire the view. On your right is Rinsey Head, with Rinsey House perched near the cliff edge and below you Rinsey Cove. When the tide is out, there's a large rock pool here known as Ray Pool, a favourite with swimmers if the sea is rough. The area of rock to its left is known as The Flat Rocks and often you'll see anglers fishing from here.

The engine house was part of Wheal Prosper.

Wheal Prosper engine house was built in 1860 with slate, or killas as it is locally known, sourced from a small quarry just up on the hillside. The granite quoins were added to strengthen the structure. The Wheal Prosper workings were over 450 feet deep and were pumped to adit level by a 30-inch cylinder pumping engine. The pump shaft in front of it has been capped for public safety. After the engine house was stabilised by the National Trust some years ago, a television company was able to reconstruct the mine site to film a Poldark sequel.



Wheal Prosper when filming a Poldark sequel in mid-1990s.

Rinsey Cove - The mining connection

Wheal Prosper's adit portal opens on the beach. It can be seen at the bottom of the steps near the end of the path going down to the beach. Looking above the adit portal, the mineralised vein can be seen snaking up the cliff; on the rare occasions when the sand has been stripped from the beach, this vein can be traced among the rocks running towards the sea.

The back of the beach is a geologist's delight. Visible is an exposed 'roof pendant', which occurs when hot molten granite comes up through sedimentary rock and metamorphoses or bakes it. The vertical bands you can see are distorted slates next to the granite intrusion.

Bear left from the engine house, taking the bottom path along the clifftop with the sea on your right. Just before you reach a Cornish hedge is a marshy area that attracts birds and butterflies. At the hedge, go over the stile. The path then takes you uphill a short distance and through a gap in another hedge to Trewavas Head.

Ahead you'll see a large sea stack known as The Bishop (or Camel Rock) above the next cove with Porthleven behind.

The Small Pearl Bordered Fritillary.
These lavishly patterned butterflies are easily spotted flying around bluebells in late May and early June. If you miss this opportunity, then try again in August when the second brood emerges.

The Clouded Yellow.
Britain is as far north as this butterfly can survive. Arriving here on southerly airstreams in May or June and breeding to produce a second brood. No stage in its life cycle was known to survive the British winter until 1999/2000, when caperpillars were seen feeding throughout the winter. This may be a sign that that climate change is shifting their range northwards – a phenomenon recently observed with other butterfly species in Europe.

Coastal wildlife

This part of the coast is a brilliant place to watch for birds and butterflies – you might be lucky enough to spot unusual species blown off-course by the gale force winds. Offshore look for seals, dolphins and basking sharks.

An amazing 23 species of butterfly have been recorded here, including the Silver-studded Blue, the Small Pearl-bordered Fritillary, the Green Hairstreak and the Grayling.

The Naval Air Station at Culdrose often use this stretch of coastline for air sea rescue practice and you may be lucky enough to see a helicopter drop its rear wheel on the Bishop's nose.

Continue along the coastal path past The Bishop to the highest point of the headland. At the top where the path forks, bear left across an area of old mine spoil. This spectacular section of the coastline has plenty of wow factor, as you walk round Trewavas Head the view in front of you is a tribute to the ingenuity and skill of the Cornish engineer. The Wheal Trewavas engine houses have sat precariously on the cliff edge here for at least 150 years and are crying out for preservation. The engine houses are in a dangerous state so please don't get too close.

These now empty buildings once housed steam pumping engines, needed to drain copper lodes that coursed out under the sea. You may see Culdrose helicopters in action here again as they attempt to land on the circular platform to the right of the nearest engine house. This platform was the site of the capstan used for lowering the heavy pumping gear into the shaft. The great mining historian AK Hamilton Jenkin in his book Mines and Miners of Cornwall tells the well known story of the Christmas feast that was laid out on trestles underground, however the sea broke in and flooded the submarine section of the mine. As there was no loss of life reported, it was thought the tale was more folklore than truth.

The Bishop (or Camel Rock).

Trewavas Mine.

Part of the cliffs here have been designated a Regionally Important Geological Site (RIGS) because of their mineralogical importance. The mine spoil here contains mainly sulphides, as well as arsenopyrite, chlorite, mica, pyrite, tristramite and other minerals.

Beyond the mine buildings, Porthleven is tucked round the coastline just before the long sandy beach at Loe Bar. Let your eye follow the coast further to the right, this is the Lizard, Britain's most southerly point on the mainland. The coastline between here and Lands End is notoriously dangerous and hundreds of ships have been wrecked here over the centuries, due to the combined dangers of rocks and wreckers.

Trewavas Mine.

Saving lives at sea

On 28th December 1807, the frigate HMS Anson was wrecked off the Loe Bar. Although the vessel was not far from the shore, around 100 men drowned as they tried to swim to safety. This incident and others led to the passing of an Act of Parliament permitting the construction of Porthleven harbour (the Prince of Wales harbour), a safe refuge that took 15 years to build (1811-1825). Encouraged by Helston's MP Mr Grylls, another local man Davis Gilbert played an active part in promoting the 1808 Act allowing bodies cast up by the sea to have a Christian burial. The burial registers after the Act give an idea of the extent of human lives being lost.

The tragedy enticed a Helston cabinetmaker named Henry Trengrouse (1772-1854) to design ship-to-shore life-saving equipment. His work has saved many lives – modern versions of the rocket launchers, rocket lines, life-jackets and the bosun's chair (later becoming the Breeches Buoy) continued in use until being replaced by helicopters in 1988.

Breage and Germoe men had the reputation of being the most savage of all Cornish wreckers. Any vessels failing to get to the sheltered waters of Mount's Bay, or into a harbour, risked being driven onto reefs and sands. Wreckers were skilled at plundering any ship, as well as vessels limping into port. The plunder of foreign vessels attracted some government attention, in case international relations were upset.

Etching of HMS Anson wreck, by WE Deey and H Trengrouse, showing how the crew might have been rescued if Trengrouse's life-saving equipment had been available.

"From wicked rocks and shelving sands,
from Breage and Germoe men's hands,
Dear Lord deliver us"

Kittiwake.

Great Green Bush Cricket.

Bird's-foot Trefoil.

Sea Campions.

Thrift.

Just before the first chimney of Trewavas Mine, go left, which takes you inland over the upper side of the area of mine spoil and towards Trewavas Farm. Go left over a stile (mind the electrical fencing) and take the path straight ahead, with the farm to your right. At the two gates, go through the left gate into the field. The return path then takes you across the top of this field. Below you towards the sea is the path you've already walked along. At the end of the field go over a stile. From here the path follows the wall, and soon you'll see Rinsey House ahead of you. Wheal Prosper engine house is soon also in view again, with magnificent views across Mounts Bay – one of the world's most beautiful bays.

The path begins to curve inland and soon you'll come to the hamlet of Rinsey. Here the path is walled between the cottages, then joins a tarmaced road. Follow this round to the left, then go left down the lane back down to the car park.

At this point you can join Walk 6, by following the coastal footpath over Rinsey Head and down to the sandy beach at Praa Sands.

Wildlife on Rinsey Head

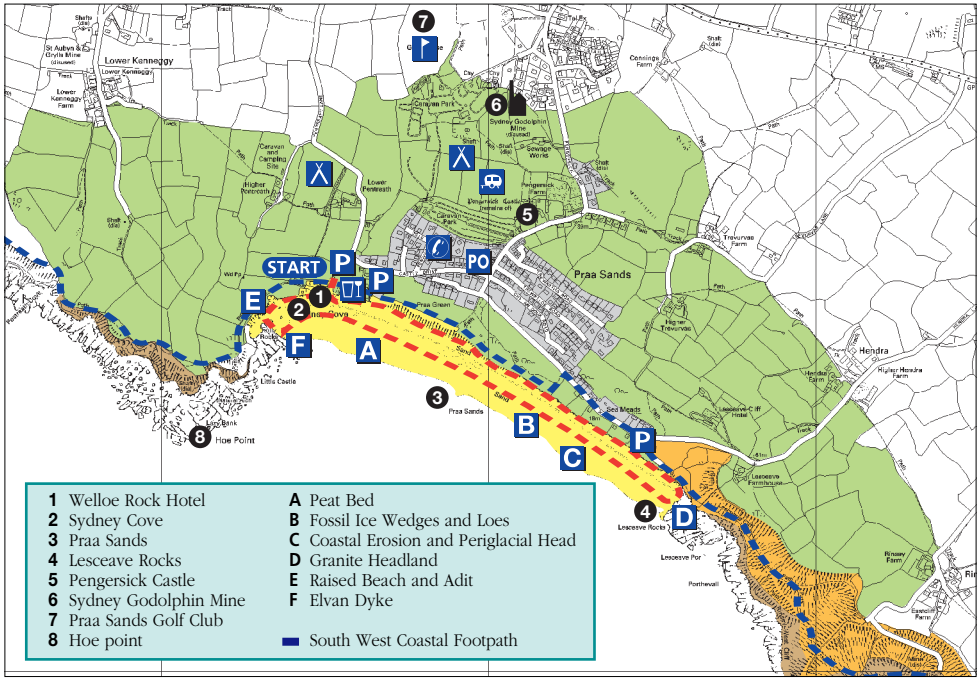
Rinsey Head is a mosaic of coastal maritime heath and grassland. The heathland is mainly Ling, Bell Heather, Tormentil and Gorse. In late summer, look for reddish strands with pale pink flowers strewn across gorse bushes, these belong to the parasitic plant Dodder.

The paths around mine buildings support a rich variety of wild flowers. These include Subterranean Clover, which pushes its seedpods into the ground. Look for the National rarity Hairy Bird's-foot Trefoil and Bird's-foot, both so named because their seed pods splay out like avian feet. Other plants growing here are Wild Thyme, Sea & Musk Stork's-bill, Yellow & Blue Forget-me-nots and Common Violet.

Rinsey Head is home to one of Cornwall's largest breeding colonies of Kittiwakes. You might also see Black Redstarts, Wheatears, Skylarks and Song Thrushes. Amongst the cliff vegetation 5 species of ant and 4 species of grasshoppers and crickets have been found, including the magnificent Great Green Bush-cricket.

Praa Sands Beach from Rinsey Head.

Praa Sands



A stroll along this mile of sandy beach is exciting at any time of the year. It's a great place for sunbathing and swimming on a hot summer's day. Or in winter get well wrapped up, face the elements and blow away a few cobwebs. When the swell is good, you'll see surfers out on the waves – so bring your gear! There is a range of cafes, beach shops and a pub, as well as a choice of accommodation. Praa Sands is within the Cornwall Area of Outstanding Natural Beauty and is a Regionally Important Geological Site.

Time: Allow up to 1 hour.

Length: 2 miles.

Location: Praa Sands is well signed from the A394 Penzance-Helston Road. From the crossroads turn down to Praa Sands.

Parking: There are three car parks at Praa Sands. Roadside parking is not permitted.

Refreshments: Praa Sands offers a range of shops and a pub (though the choice is limited in winter).

Peat bed.

Praa Sands c1930 – few building here date from before this time.

Point A: Peat bed

Near the café is a black platform of 1,300 year-old fossil soil sticking out from the base of the dunes. Pollen analysis shows records the existence of Alders growing nearby – evidence of the submerged forest that once grew in Mount's Bay.

Point B: Fossil Ice wedges and loess

During the last Ice Age, the climate at Praa Sands was similar to Siberia today. In winter it was so cold that the soil surface cracked and then filled with loose materials. Today these are visible as pale vertical structures in the cliff known as ice wedges.

Around the ice wedges is an 18-inch layer of earthy material known as loess. This was created 17,000 years ago, carried by winds over what is now the Irish Sea, picking up fine particles from the surface of glacial ice lying and then deposited them elsewhere.

Head and WW2 pill box on beach.

Point C: Coastal erosion and Periglacial Head

If you were here in the 1970s, the wartime pillbox at the back of the beach would have still been on the top of the cliffs. Coastal defence works attempt to stop further erosion, but the winter gales can be very destructive and this is no easy task.

The cliffs behind the pillbox are made from an earthy sediment known as Periglacial Head. In the last Ice Age, Mounts Bay was dry land and the ground was frozen all year. In summer, the surface thawed out a little and this allowed pieces of frost-shattered rock to slide down onto lower ground, gradually building up in layers.

Granite showing large white feldspar crystals.

Point D: Granite headland

The cliffs at the eastern end of the beach are made from a 280 million year-old rock called granite. Once a molten mass inside the earth's crust, it contains large white crystals of feldspar which are amazingly well preserved considering this mineral rots in the presence of water to form china clay.

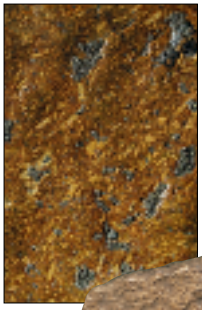
Lesceave Rocks is a good place to find seaweeds, sea anemones, crabs and stranded fish in the numerous rock pools.

Point E: Raised beach

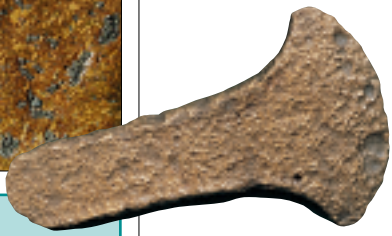
At the western end of the beach is Sydney Cove. In the cliffs here is a man-made drainage tunnel (adit) created to dewater a now disused mine. Within the adit roof are pebbles rounded by the action of the sea. This is evidence that just before the last glaciation around 100,000 years ago the sea level was higher than it is now.

Point F. Elvan dyke

Amongst the rocks at the bottom of the cliffs is a red-brown ridge of rock sticking out into the sea. This feature is a Site of Special Scientific Interest (SSSI) because of its geological importance. It was formed 270 million years ago when molten rock forced its way up through a vertical crack from deep in the Earth's crust. Take a closer look and you'll see that the white feldspar crystals are all lined up in the same direction.



Red-brown elvan showing feldspar crystals all lined up in the same direction.



This Iron Age Axe was found on Praa Sands beach. Today it is on display in Helston Folk Museum.

The Australian plane crash

On the 2nd June 1943 a RAAF Sunderland plane crashed 300 yards off shore at Praa Sands. As the men struggled out of the sea, they were met by two men, soon followed by women carrying steaming cups and jugs of tea.

The plane had been on a sortie over the Bay of Biscay. Despite the engines catching fire and injuries to the crew, they had kept the plane airborne by throwing everything moveable overboard to lighten the plane.

This particular crash was famous because the crew of eleven men destroyed three, possibly four, out of eight German fighters in 45 minutes of terrifying action. Secretly guns had been fitted to protect the underneath of the plane, this proved a crucial part in their survival. The RAF Chief of Air Staff described the incident as "one of the finest instances in the war of the triumph of coolness, skill and determination against overwhelming odds…"

The RAAF Sunderland on the beach.

The crew of the RAAF Sunderland.

Two men were drowned off Praa Sands in 1905 when the French Brig Noiselle went aground carrying a load of pig iron.

In 1956, wooden barrels of cement were washed ashore at Praa Sands, presumed to have come from the wreck of the Yewcroft, which went down off Cudden Point. Once wet the cement hardened and was useless, but the wood was easily removed and re-used. The hardened cement insides can still be seen around Praa Sands and Newtown.

Smuggling

Up until the late 1700s, smugglers openly landed their cargoes on beaches or in harbours. But after the end of the war with France in 1815, runs were more secretive as coastguards became efficient, driven by the reward of prize-money for capturing smuggled cargoes.

In the dark of night, smugglers dropped their contraband overboard, anchored a certain distance below the surface. Later the goods were collected and brought ashore. Land parties included flashers who signalled that the coast was clear – sometimes using the pan of an old flintlock pistol to give the flash, but favouring a special lantern that could direct light. Batmen were armed with sticks (cudgels) to stop interference with the operation. Once ashore contraband goods were taken to a safe place on the backs of ponies or men. The going rate for each man was 1 shilling a night, plus a 5 shilling bonus if the run was successful.

Goods were landed at Praa Sands. At the west-end of the beach is a tunnel that once lead to the house at Pengersick said to be the birthplace of the smuggler John Carter, the self-styled King of Prussia.

The portuguese Windfall

In 1526, Sir William Godolghan teamed up with Thomas St Aubyn of Clowance and John Milliton of Pengersick. They hired 40 men and seized silver, jewellery, cloth, copper and musical instruments from the wreck of the St Anthony at Gunwalloe on the Lizard. The ship belonged to King John III of Portugal who was unable to recover his goods. Instead, the £18,880 windfall greatly boosted the fortunes of the three families.

Pengersick Castle.

Pengersick Castle

A little inland is Pengersick Castle. Built for refuge and defence, its four-storey tower dates back to c.1550 and was part of an extensive fortified Tudor mansion. The top floors were domestic and the ground floor was defensive. Above the main doorway is the drop-slot through which burning oil and other substances were poured on unwelcome guests.

The families that lived here were among the most celebrated in Cornwall and beyond. Important marriages connected them with other dynasties including the Killigrews and Godolphins. Around 1535, William Milliton married Honor Godolphin and the marriage celebrations included the refurbishment of Pengersick House. After their only son was lost at sea, the property was divided between his 7 sisters. None of them had enough of the property to preserve it as a home and the estate fell into disuse. Over the following hundred years a significant part of the estate came under the control of the Godolphins.

Pengersick has a reputation for black magic, sorcery and wickedness – perhaps the rumours spread by wreckers and smugglers to discourage visitors. The ghost of a black-robed monk has been seen – could this be the Hailes Abbey monk denied his tithes in 1330 from Henry Pengersick? The bedroom in the tower is said to be Britain's most haunted room and is still regularly visited by ghost hunters.

The history of the site goes back before the Tudor mansion. A Mediaeval Apothocarian Garden is believed to have existed here and this is being recreated using contemporary plants listed by Aelfric in 995 AD.

Opening times (01736) 762579.

Britain's most haunted bedroom!

Tin processing: Stamping and separation

Before 1600, the majority of tin came from working alluvial deposits by a process known as tin streaming. This involved digging a drainage trench into the proposed workings and then diverting a watercourse to the workings so that the streamer could wash the gravels in the valley floor and separate out the tin. Much of this 'stream tin' could be smelted without further treatment. Where the tin was mixed with granite, the tin gravels needed crushing *(stamping)* in a stamping mill.

A stamping mill *(*or *stamps)* consisted of a series of large upright poles, known as lifters, shod with iron and held in a frame. In front of these was a horizontally set axletree in which were set a series of cams. The axletree was rotated by a waterwheel built into one end of the axle. As the cams rotated they lifted corresponding caps fitted to the lifters, raising them and allowing them to fall freely. The tin gravel to be stamped was fed under the lifters and crushed into sand *(pulp).*

Prior to about 1600, the tin ore was stamped dry. Sir Francis Godolphin I, drawing on Dutch and German expertise, introduced modifications. Water was directed under the stamp head and gratings were added in front of the stamp heads, the size of the holes matching the size of the crystals of tin locked up in the rock. Once the grains were crashed small enough, they would splash through the holes in the grating. This enabled the waste to be separated from the tin more easily as the grains were of a uniform size.

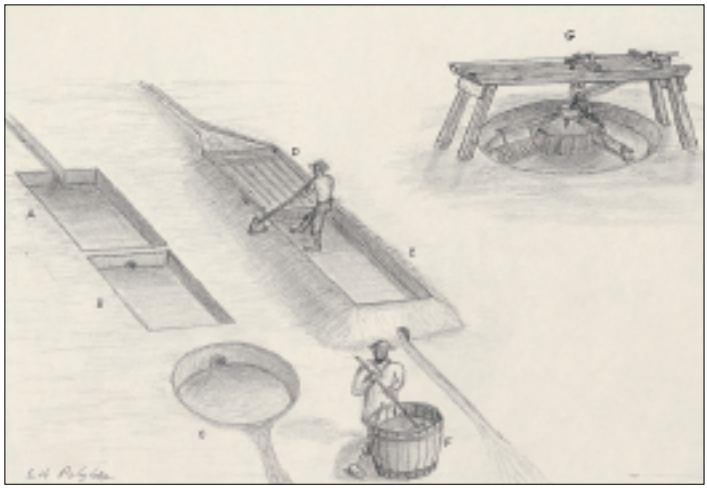
Once stamped the pulp flowed directly from the stamps into pit A. Being heavier than the waste, the purest of the tin oxide settled into this pit. Smaller tin particles together with most of the waste were carried into pit B. The finest waste particles along with a proportion of very fine tin (known as *slime*) were carried onto Pit C. The remainder flowed away as waste.

Pit A was subdivided into 2 parts, the *head* and the *tail.* This was then carried to the *buddle.* The tin dresser stood in the buddle and spread the tin ore, a shovel at a time, at the top of the *jagging board* D. A stream of water passed evenly over the jagging board and carried ore down into the buddle E. Here the tin dresser lightly scraped his naked foot over the tin in the buddle, this action raised the waste to the surface, and this was then carried by water to the back of the buddle.

The tin at the top of the buddle was set aside, while the rest of the buddle was retreated several times. Once the desired quality was reached, the buddled ore was then put into the *keeve* F. Filled one third with water, the tin ore was introduced a shovel at a time, while it was stirred *(tozed)* with a shovel. Once almost full, the stirring ceased and the sides of the keeve were beaten by boys with mallets to settle the tin leaving a thin film of waste on the top which was skimmed off and rebuddled.

The contents of pits B and C were further processed in slime buddles to extract the very fine tin.

By the mid-19th century, processing was by the semi-automated round buddle G, which in turn was replaced by the shaking table in the early 20th century.



Early Tin Dressing.

Balmaiden at Maiden Stamps Godolphin, 1910/20.

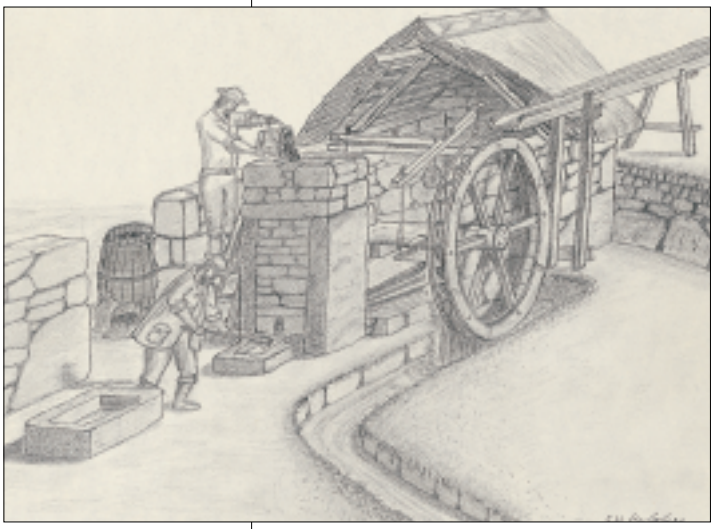
1938 Great Work miners.

The art of blowing

The name Blowing House comes from the building that housed the furnace used to melt the tin oxide. Each ingot usually weighed about 3cwt. As the ingots cooled they were stamped with the owner's mark. In the case of the Godolphins it was a rampant Dolphin. No Dolphin marks survive, but it was probably very similar to the rampant dolphin depicted on the lead guttering at Godolphin House.

Once smelted the tin was taken to a coinage town to be coined. The term *coin* comes from the French *quoin* for corner, as the corner of the ingot was partly cut then struck off as a test for purity. Helston was the nearest coinage town to Godolphin. Coinage took place here twice a year, but as output grew was increased to four times a year. Once coined, duty was paid on each ingot, the money going towards the cost of running the stannary parliament.

The blowing houses were primarily used for smelting stream tin, which produced a particularly pure tin metal. As quantities of mined tin increased, larger coal fired furnaces were developed. Deeper mined tin contained impurities in the form of sulphides, which needed further refining, so eventually the blowing houses became obsolete.



This illustration shows part of the wall and roof removed to reveal the furnace *(castle)*. The castle was built of granite *(moorstone)* and lined with clay. Black tin was brought to the blowing house in sacks, while the charcoal was brought in packs and tipped into a barrel to improve the quality and quantity. Fuelled with charcoal, the furnace was blown by bellows driven by the waterwheel. Once alight and warmed through, the furnace was loaded layer upon layer with charcoal and black tin. As the tin melted, it flowed out of the hearth eye into a trough called the *float*. The molten tin was then ladled into stone moulds.

Cat 'hot mark' of John Coke.

The cat eating the dolphin

Each smelting house had its own *hot mark,* which was registered in the Owners' Tin Sign Book at Lostwithiel. John Coke was stewart for the Godolphin Mines and smelting house, giving him responsibility for blowing all the tin. One night at dinner, Lady Margaret Godolphin whispered a cryptic message to her husband, Sir Frances Godolphin I, that "the cat is eating the dolphin". She'd discovered that Coke was marking quantities of their tin with his own hot mark.

Minerals

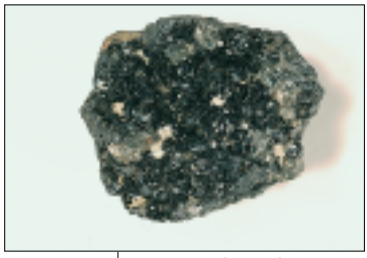
Minerals are found in veins (or *lodes*) within the granite and were formed as the molten granite cooled around 270-290 million years ago. Mineral veins can extend hundreds of feet down and their width varies from 20 inches to 30 feet or more. Try to imagine a sandwich stood on its edge, the bread being the granite and the filling being the mineral vein.

After the granite and mineral lodes were formed, the granite was eroded exposing the mineral lodes. Tin was washed free and deposited in riverbeds, the heavier tin particles settling below the granite sand. This was known as stream tin and was the first to be exploited by early tinners.

Lode mining came later and was first carried on in the form of open works on exposed lodes. As the workings became deeper, drainage became a problem. This was eventually overcome by driving a drainage tunnel *(adit)* on the lode from a much lower point on the hillside. This allowed all the lode material containing tin above the adit to be removed without the problems of water. When it became necessary to work the deposits below adit level, a shaft was sunk and the water was pumped up to the adit. Early on, these shallow workings were pumped with simple hand pumps, while some mines used waterwheel driven pumps. As workings became much deeper, greater power was needed and this coincided with the invention of the steam-pumping engine.

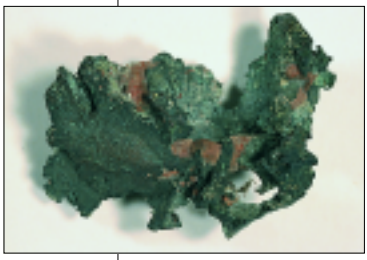
Water power

A leat was a manmade canal that brought water usually to the site of a waterwheel. Waterwheels fall into three basic categories: undershot, breast and overshot. The undershot wheel had a series of paddles set around the circumference and was driven by a flow of water running underneath. The breast and overshot wheels both had buckets set between the outer rings of the wheel. These wheels were fed by a launder that filled the buckets and thus turned the wheel. The overshot was fed from the top, while the breast wheel was fed from around axle height. Few undershot wheels existed in Cornwall, as they required a large volume of water to flow under the paddles. Breast and overshot wheels were more common as they made use of the smaller sources of water available. Storm water was also channelled into the leats and not a drop was wasted.

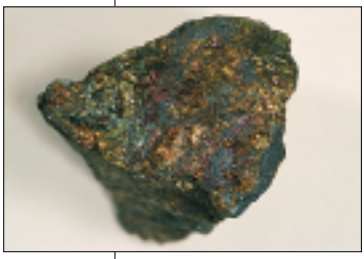


Cassiterite (tin ore) sample.

Local tin samples.



Native copper sample.



Peacock copper ore sample.

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Jane Buchanan
Colin Butler
Janet Chapman
Dr Colin French
Kerrier District Council
Jean Paton
Phil Richardson
(Bat Conservation Trust)
Vivienne Treloar

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Stephen Polglase Collection
John Evans Collection
Helston Folk Museum
Royal Institution of Cornwall
Penlee House Museum &
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