



PREHISTORIC HEDGES

IN CORNWALL

(5000BC – AD450)

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Birth of the Cornish hedge / the stone age (neolithic period) / the bronze age / straight-line boundaries / climate change / the Roman invasion.

Our oldest hedges were built about 5000BC, when man needed ways of keeping farm livestock in, and wild animals out. The hedges did not need to be very high, or totally stockproof. A well-trained dog knows the limits to which livestock are allowed to stray; so a child or old person, with the dog, could do the job, day and night. A good sheepdog was, and is still, worth more than a best ox. Hobbling animals is another way of keeping them in with low hedges. At that time, families moved on when their animals had eaten the herbage around their huts, revisiting the same familiar places each year where they knew they could get food for themselves and their animals, and where there was some residual fertility from the previous grazing. Trees were cut down by stone axe, and the subsequent grazing-off of the regrowth of tree stumps and low scrub soon created rough pasturage. The family probably spent the winter on the Cornish coast, where the grass seldom stops growing, and there were shellfish and other foods from the sea and seashore. Then as spring came, the family gradually worked their way up towards the high moors inland, spending most of the

summer there, grazing the livestock on the grass which was growing there with the warmer weather. Then they grazed their way back to the coast again in the autumn.



Bronze Age stone hedge built to prevent livestock from falling over the cliff.

It is easy to picture mesolithic man returning to a favoured area of rough pasture, only to be confronted by another family, with the other man's excuse that he didn't know that it was already taken, and he had not noticed any signs of ownership. People are more successful in defending their own recognised territory than in ejecting the owner of another territory; and the more defined is

the boundary in physical terms, the easier it is to defend. Mankind prefers to use clearly visible natural landscape features, and where these do not exist, to erect boundaries. Thus each family developed its own territory. Where it was not marked by a stream, it was usually shown by boundary stones. The greater the effort by a landowner in the fencing or hedging of a boundary, the more committed he is to its defence. The more people there are in a small area, the more threatened is a person's territory and the more important are his hedges. Not only must they be substantial, but they must also appear to be cared for. An air of abandonment shouts to everybody that here is someone who may not be strong enough to defend his boundaries and territory.

With the coming of cereal crops, families needed less land for their food, and settled down in one place, always near fresh water. More of the woodland and scrub was cleared, and the areas needed to support one family unit were smaller and more valuable. More and better boundaries had to be built. Soon the huts with fields around them became a hamlet. With the increase in population, and the hedging-in of more land, man gradually became a farmer, instead of relying on hunting and gathering his food. Many of these hedges are in use in Cornwall today, among the world's oldest artifacts still performing their original function. One such, shown on the tithe map as a gurgoe (pronounced 'gurjey'), runs westwards from Chun Castle. Another was recorded in a dispute about the Miller's Meadow at St. Neot which describes the hedge adjoining the road from Treney to Paynter's Bridge as being a 'gurgey [sic] hedge or bound'.

THE STONE AGE (NEOLITHIC PERIOD)

The huge stone menhirs, quoits and stone circles were put up during this period, 4000-3500BC. With their astronomical relationships, a clear horizon without trees was needed, indicating that the place where the stones were erected had, by this time, been denuded of trees. Farming must have been so easy and successful that there was plenty of available time and labour to move these masses of stone around. With this expertise and plenty of help, the building of substantial hedges was no problem, and this is probably the time that many of our original hedges were built. For the first time there were tilled fields with growing crops that had been securely hedged around against wild and domestic animals. It must have been then that the value of rubbing-stones to protect hedges from damage by cattle scratching their itches on them was discovered.

Most of the hedges were built of *moorstone*, that is, granite and other rock found naturally as stones or boulders in the fields. Traditionally they were removed by hand about once every



Moorstone boulders 'rising', with Bronze Age clearance hedge in background.

generation, clearing the soil to a depth of about 200mm (9"). The author knows, first-hand, of two farms, one in Pembrokeshire and one in Cornwall, on each of which a large coffin-sized granite boulder was described by the farmer, independently, as having risen each year by an average of about 5 mm (1/4") during their lifetimes. The speed of this rise to the surface, and above it, is faster the more often the land is cultivated over and around the stone. How does this reconcile with the usual need to dig down to find archaeological remains? Presumably because the remains are lost during

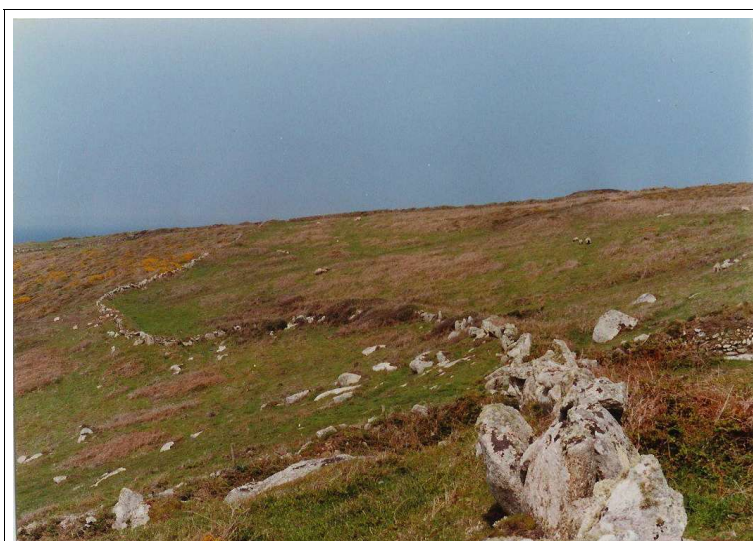
successive periods of non-cultivation, when soil builds up, whereas cultivation tends to dissipate it. Often older hedges have been gradually enlarged by routine clearance of the stone that continually 'grows' in the field.

Many of the hedges have a large proportion of stone in them leading to the wrong idea that the small size of the fields was always due to the hedges being constructed as a convenient place to put the stones gathered up from the surface of the field. In fact, where the land is especially stony, the hedges are wider and higher, but it is not necessarily that the fields were made smaller. These first fields were typically less than 0.1 hectare (one-quarter acre) because they were cultivated by hand. If the field was too big the weeds would grow again at one end before the farmer had dug or weeded to the other end. Some of these fields, in West Penwith and on Bodmin moor, still exist, and there are many traces of their hedges all over Cornwall. The hedge around a circular field is about one-fifth shorter than if the field were square or oblong. This roundish shape was more important in stony places, when it made for the shortest distance to carry the stones to the edge of the field. So the pattern developed, with the original hamlet sited where there was a reliable water source, with tiny fields reaching outwards from the hamlet into the surrounding grazed rough land. This arrangement was sometimes interrupted by rocky outcrops, emerging springs, steep slopes and other local physical aspects of the land.

The small size of the fields allowed them to be rooted over by pigs, almost as good as ploughing. The Cornish word *sogh* signifies both 'pig snout' and 'tip of ploughshare'. Cattle, brought in from the open land outside the fields, were put into a field for night protection. Their feet 'poached' the land and their dung and urine manured it, bringing goodness and fertility from the common on to the field. The modern farmer uses a similar technique in reclaiming land by feeding cattle with hay or silage from ring feeders sited on the rough land, and the prehistoric farmer may have had enough hay or straw to do the same. The poaching and pig-rooting left the ground in an easy state for primitive tools, so the neolithic farmer could both fertilize and cultivate his arable land for cropping in proper rotation, including a periodic return to grass. With a stocking rate of one cow to 5 acres (2 hectares) and prehistoric farm sizes of about 36 acres (15 hectares), the amount of dung deposited on the land was not a lot by today's standards but encouraging for the plant varieties grown then.

As the neolithic period advanced towards the bronze age, Cornwall developed as the natural cross-roads of European sea routes north-south and east-west. Our links by sea continued to be the main line of trade and cultural exchange until the road and rail improvements in the 19th century. Interestingly, stone is used in a similar way in hedges along the Atlantic coastlines from Galicia in north-west Spain up to the Orkney Isles.

The concept that land might be owned by a single person did not exist in prehistoric times. One man, or woman, was the boss, was there by merit and only stayed in that position by common agreement. Land was owned by the community, the family protected their boundaries, and the tribe protected the general area. Inheritance was within the family and it was quite usual for a brother, married daughter, or cousin, as part



Prehistoric stone hedges can be recognised as they meander sinuously across the landscape. An ancient boundary hedge is known as a gurgoe (pronounced gurjey).

of the extended family, to inherit a farm in place of the eldest son, as it was a question of competence. The tribal law was for the land to stay in the closer relationship of the extended family, rather than in the wider tribe. This rule by family consensus meant that the field boundaries were the business of the whole family, and that part of the family which had the job of looking after the hedgebanks had the rest of the family to answer to. Members of the family had to help on each other's farms during harvest, illness, or whenever a helping hand was needed. This family pride, passed down from generation to generation, made sure that the heritage in the land and hedges was kept up to scratch. In the same way, the land outside the fields, the common land, was the property of the family as a whole. When the prehistoric farmer's children grew up there were several openings for them. The first was to stay at home, requiring the farm to get bigger or more productive, which often meant building new hedges to subdivide larger fields. The second was to build a house on the outer edge of the farm, and rob the farm of some of its land and common grazing, an alternative which relied on more subdivision and agreement within the extended family. The third was to diversify, to learn another trade such as flint-knapping, and to carry on living at the farm, building another house. The fourth was to make or get a farm near enough to share some of the day-to-day farming problems. The last choice was to leave the family area altogether and, as many Cornish have done ever since, to 'go foreign and get a job'.

THE BRONZE AGE

At about 2000 BC, the tin and copper in Cornwall started to be made into bronze. Being able to use metal for farming revolutionized tillage and harvest. There were wooden ploughs now with harder-wearing metal tips, better hoes for weeding the cereal crops and easier sickles for cutting corn. The Cornish shovel got a metal tip, so it lasted longer in hedge building and other work. Use of bronze meant that more fields could be tended by one family within the seasons of the year. It also became worthwhile to cultivate and crop poorer land because less human energy was needed to get a meagre crop, so there were more fields and more hedges. Having separate fields was a form of insurance against crop failures because successive sowings in different fields spread the risks. These early fields were still circular or squarish because they had to be ploughed by the ard, a primitive plough pulled by an ox or pony, in both directions criss-cross, as a chisel plough is used today.

The Cornish countryside in 2000-1200 BC was cultivated intensively - probably more so than today - in the then warmer climate. Bronze Age remains tell us that the landscape was populated by small hamlets situated about half a mile



Bronze Age fields at Boswednack.

apart on the poorer land, and closer on the more fertile soils. There were probably 3000-5000 separate hamlets in Cornwall. The distance between each hamlet is remarkably constant and the number per square mile rarely falls below eight or rises above twelve. The population must have been close to the maximum that the land could support, as is demonstrated by the cropping of many cliff fields, still identified by their hedges today, which are so difficult to cultivate that they have not been tilled since. There would be an area with hedges around the homestead of about 36 acres. Probably 6 or 7 acres were cropped, differently each year, the rest being grazed to build up fertility.

Outside was generally the poorer common land, uncultivated, which varied with the kindness of the ground but would be up to about 300 acres (120 hectares).

News of the invention of the turn-wrest plough, the precursor of the mould-board plough, is likely to have arrived before the Roman occupation. The turn-wrest plough was like the ard, but with an enlarged symmetrical plough-share so that by leaning the plough one way or the other, the soil was pushed to one side or the other. The concept was so useful that the traditional wooden turn-wrest plough was still being used

at the Tywardreath ploughing match in 1840. For the first time, the plough could be used one-way, as in modern ploughing, instead of criss-crossing the field. Because of the extra effort involved, certainly a pair of oxen at least would have been needed, requiring more room to turn at the ends of the field, so the best way of using the new plough was to have fields that were long and narrow. These were called, in Cornish, *lyln* or *lene*, meaning a strip of land. This was later called a *stitch* by the English and the new name was adopted by the Cornish. Some writers use this word to mean only the plots laid out systematically when the collective arrangement is called *stitchmeal*. Others use it to describe a plot of about one acre, being often detached from other land. Traces of these prehistoric field systems can often be best identified by looking at aerial photographs, especially those taken with the rising or setting sun.



Bronze Age hedge showing kinks where adjoining hedges, once forming the very small rounded fields, have been removed.

STRAIGHT - LINE BOUNDARIES

The knowledge of laying out straight-line boundaries was well established by 1300 BC as is shown by the reave systems of boundaries on stone hedges laid out in a rectangular grid over large areas, for example the Dartmeet parallel reave system covers over 3000 hectares and stretches over four miles from Holne Moor, Buckfastleigh to Dunstone Down. There are similar straight-line boundaries in Cornwall on Bodmin Moor and in West Penwith.

The great question as yet unanswered, on the basis of the reave field system on Dartmoor



Bronze Age hedge still adequate for Guernsey cattle.

and in Cornwall, is whether the other common-field systems originate at about the same time of agricultural prosperity in the second millennium BC? Or was this peculiar parcelling up of land invented three times, in the bronze age, and again in the post-Roman and yet again in the Tudor periods? An answer may be that the same idea continued all along, but that different landowners decided whether the stitches should be hedged or not, and how they related to cottages in the hamlet, depending on the social and economic conditions prevailing at the



Iron Age hedge.

time. Also, it is likely that some original basic layouts of stitches were modified with their hedges and cottages as time went on. So the hedges around stitches may be from the bronze age, post-Roman or Tudor periods, or somewhere in between. The rare gold hoard of the middle bronze age (c. 1200 BC) from Amalveor, in Penwith, was discovered in a Cornish hedge which formed part of an already extensive field system. Answers may come when the modern ways of dating prehistoric remains are used to date things found under the bottom of hedges.

Most of the hedges between the stitches had a base width of 1m-1.3m, meaning that the hedge was also the same height. This is in fact similar in size to some of the prehistoric hedges in use today, in West Penwith, to keep in traditional Guernsey cows without needing barbed wire. These are small herds of about 40 cows which the farmers are able to train to respect these low hedges in fields, many of which are still 0.5ha-1.0ha in size, having changed little since prehistoric times. An alternative view is that they were similar to hedges in East Cornwall which are less than 1 metre high and topped with a cut-and-laid thorn hedgerow

The land that was not hedged around into fields included areas of common land. What remains of this is a direct inheritance from our prehistoric past and has survived millennia of attack by farmers and landowners. Prehistoric man got his fuel for cooking and heating from the common. As the population expanded, the demand for fuel increased, and with the smelting of tin, the pressures on common land grew. Some commons lost so much top soil with the turf over the centuries that the land became not worth ploughing, the Woon Gumpus common at Pendeen is a good example.

CLIMATE CHANGE

Unfortunately the climate changed about 1200BC, when the weather got colder and wetter. Many upland hamlets, where the soil is always less fertile and the weather less clement, were abandoned at about this time. One of the best preserved prehistoric hamlets is that of Leskernick (grid ref 183/800) almost in the middle of Bodmin Moor, possibly five or six thousand years old. It is best reached from Westmoor Gate but is still a two-mile walk each way, not to be attempted in misty or changeable weather without a compass and map, for fear of being pisky-led. Obviously it was occupied during the times when the climate was warmer, possibly similar to that of Penzance today, then abandoned when the weather got colder. More easily reached is Roughtor, with its free car-park (grid ref 138/819) less than a mile away. There is a wealth of prehistoric remains on Roughtor but they are somewhat fragmented. They include neolithic hut foundations, field systems, stone cairns and rampart defences. In West Penwith a typical example of the bronze age is the disused farm at Trewey-Foage, which has not been cultivated since then, and the layout of the fields and hedges has not changed during the 3000 years since. It has been submerged in heather and gorse and preserved for us to see today. Most of the Cornish hedges are still there as gurgoes, though now eroded to only a foot or so high. The prehistoric hamlet at Bodrifty, Mulfra still has its

huts and some of its fields with their stone hedges. Another is Chysauster near Gulval. Maen Castle, near Land's End, appears to have been already farmed to its agricultural margins by 500BC as shown by the hedges, their ruins still being prominent features today. The importance of agriculture was reflected in the illustration of vine-leaves and an ear of wheat or barley on the British gold slater coin of 50 BC.



Hut circle, Iron Age village at Bodrifty.

The natural regression of the land to scrub and woodland was prevented by the grazing animals from farms in the nearby lowland. Peat growth was hastened by the wetter climate and this caused impoverishment of the pasture. The natural growth of trees in the abandoned parts of the Cornish landscape was counteracted by the needs from the emerging tin industry, each ton of tin requiring at least ten tons of wood in its production. This resulted in the moorland that we are familiar with today.

THE ROMAN INVASION

During the first century AD, the Romans took over and occupied large areas of Britain. They had an arrangement whereby the provinces were self-governing, and providing they paid their taxes they were not interfered with. Administration and trade was centred on the new town, London, which was built up into a walled garrison and government centre of over 120 hectares, twice the size of Roman Paris. As London had, and still has, few natural resources of its own, it had to survive and grow by making profit out of someone else's raw materials, thence the state-run Roman coin mint in London. So each British tribe had to give up a percentage of the corn, meat, wool and other crops as tax. There was also a poll-tax and land-tax based on a land census when details of ownership and yield were recorded, which would clearly have involved boundary hedges. Probably the Roman government managed to get their hands on goods worth between one-quarter and one-half of the Cornish economy, much the same level as today's taxes. So agricultural production had to be increased, existing fields managed more intensively. Some of the rough land was re-enclosed with hedges and farmed. The Roman author Diodorus wrote in about 100AD that the Cornish were 'remarkably civilized due to their frequent contacts with merchants of other lands. They extracted the tin, ground down the ore and smelted it into ingots'. The Romans controlled the sale of tin from London and their gold, silver and copper coins circulated in Cornwall. An example of Romano-British industry was the settlement at Duckpool, Morwenstow which specialised in secondary metalworking, including the casting of lead, pewter and possibly copper alloy objects. Pewter was also manufactured and exported from St Just-in-Penwith. There is evidence of lathes for turning metal.

The courtyard houses at Chysauster, Carn Uny and Porthmeor belong more to the Romano-British period than to the Iron Age. Undoubtedly there was a lot of overlap and it is certain that stone tools were still being used for many jobs. Fortunately Chysauster is easy to visit and the restoration of the hamlet's walls gives a good indication of how people lived then. The surrounding field systems were examined by archaeologists in 1984, when the land was being cleared for modern potato growing. The plan shows the layout of the prehistoric fields around the hamlet. Dating by pottery and radiocarbon enabled the pollen sequence to be dated. Analysis of pollen buried 0.5m (20") below ground suggests that land tillage and cereal growing started at about 4000-3000 BC and

had continued, off and on, ever since. The plan shows the intricate pattern of tiny fields, many the size of a couple of tennis courts, which probably had their heyday between 2000 BC and 250 AD, with hedges being built and taken down as climate and farming methods changed. Visiting Chysauster today, the two fields on the right on the footpath to the prehistoric hamlet show dimly, after the recent bull-dozing for modern farming, the remains of the ancient fields. Sixty courtyard hamlets contemporary with Chysauster have been discovered in Cornwall, typically within their own field systems and hedges, only a few are enclosed with a defensive rampart. In most instances the field systems have been obliterated by later farming, including the mediaeval open-fields and hedged stitches. Careful examination of hedge lines on 1:2500 maps can identify their remnants.

Castle Gotha at Trethurgy, near St Austell, was built and rebuilt between 100AD and 400AD. It looked like a courtyard hamlet but with a circular wall and ditch around it. It was recognised recently because part of its rampart had survived as a field hedge; there were no remains of an earlier Bronze age house there, which suggests that there had been a re-organisation of the farm structures with a realignment of field boundaries. Another British hamlet at Reawala, near Camborne, was excavated as a rescue dig before being built over. Finds included a rotary quern (grindstone for hand-milling grain) from Tregonning Hill, gabbrionic pottery from the Lizard, pottery from Dorset, Devon and Oxfordshire and a spindle whorl (weight for hand-spinning wool) of Kimmeridge shale from Dorset. Wheat and oats had been grown. Again, part of its rampart has been preserved as a 2m high field hedge. These little hamlets, with their enclosing rampart, are thought to have been numerous between about 500BC to 400AD, perhaps as dense as one per square mile. The larger of these defended hamlets, eg Castle-an-Dinas at Goss Moor and again at Gulval, Caer Bran at Sancreed, Gear Camp (Mawgan-in-Meneage), Castle Canyke (Bodmin), and Warbstow (Bury) probably continued to be tribal centres, doing local administration for the Roman authorities up-country. The remains of the ramparts exist today mainly as parts of field boundaries. Those around the actual homesteads were probably robbed and vanished with changes in the buildings.

The increased demand for food was met, in part, by improved designs of plough which were able to till heavier lands and to make a better job of the traditional areas. There is dispute as to when different types of plough came to Britain, but it is now generally believed that the Romano-British plough had a proper coulter and mould-board which actually turned a furrow over, similar to the modern plough. This has two advantages, the grass, now underneath, rots into compost and the new soil surface, on top, is free of vegetation which would compete with the growing of the farmer's seed. With more intensive cropping, there was a greater need to have good and secure hedges. The Romans introduced many new crops into Britain including rye, cabbage, parsnip, carrot and celery. Fruit trees, including apple, pear, plum, cherry, mulberry and walnut, brought about the planting of orchards with their hedges, some of which have survived. Gardens were important, not only for vegetables for the table, but for growing medicinal herbs including belladonna, opium, colchicum, henbane and wormwood. Some of these can still be found growing in Cornish hedges.

The Romans built defensive ramparts of earth or rubble held between facing sides of piled turf, with similar measurement proportions to turf hedges built today, as high as the width of the base, with the top width half the height. The Antonine Wall across the Scottish Lowlands was about 4m wide at the base, and 3m high, giving a 2m walkway on top with a verge of about 0.5m at each side. The constructional details are similar to those of building a turf hedge today, even to the extent of getting proper turf from some distance away when the local turf was not good enough. Troops were given special training in turf-hedge building, and their practice earth-works still can be seen on Llandrindod Common in Wales and at Cawthorn in North Yorkshire. It is likely that the Romans used a shovel, similar to the Cornish shovel, called a 'pala', still used in many parts of southern Europe and known today in Italy as the 'vanga'. They also used a straight two-handed scythe, the 'falix faenaria', and a slasher, the 'falcastrum'. A bill-hook, 'falix arboraria' was found at Pompei,

where there is a *launder* made with tin shown by analysis to have come from Ding Dong mine in West Penwith.

Before the Romans left they invited Anglo-Saxons from northern Germany to settle in Kent to repel other invaders from across the North Sea. The result was similar to the old story of putting a fox in the hen run to keep the rats out. These mercenaries, when they had accomplished the task of fighting for which they had been hired, turned against the hand that fed them. This was a well-known phenomenon of the fourth and fifth centuries, throughout the Roman world. Indeed mercenaries and their invited relations and friends were a major reason for both the rise and the fall of the Roman Empire. The result was that Angles, Saxons and other German and Scandinavian tribes overran the eastern half of Britain in the fifth and sixth centuries, forcing the British into the western half of Britain.

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