CORNISH STONE STILES

HOW TO BUILD AND REPAIR THEM

Stone stiles in Cornish hedges today / British Standard / tools / materials / taking down and preparing / building cattle stiles / building coffen stiles / building sheep stiles / stone hedges / turf hedges / repairing stone stiles / keeping stone stiles in good condition / kissing-gates / rights of way and way-marking at stiles.

Snippet: A stile at Summercourt was known as "Lunnon Brown", which, after nightfall, the local people were afraid to cross for fear of seeing the ghost of Ole Bett Nitty sitting there knitting.

No two stone stiles in Cornwall are exactly alike. They have a picturesque individuality that adds much to the interest and enjoyment of walking in Cornwall, almost like meeting old friends along the way. Sadly they are under threat, with changes in land use, and many have been lost along with removal of the hedges they were built into. We need a policy of conserving the regional and local differences in Cornish hedges and stiles, and encouraging the use of local stone and the craftsman's individual handling of it. The purpose of the specifications in this paper is not to standardise the stile or its stone, but to act as a guide to the principles of building a safe and stockproof stile in the three main traditional types, and to facilitate retention of our heritage of antique stiles by showing how to re-set a collapsed or worn tread.

CATTLE STILE - regrettably with addition of ugly footpath sign.

Of the many ways of creating stone stiles in Cornwall, the three main types are the Cattle Stile, the Coffen Stile and the Sheep Stile. There are other types, and many handsome and functional variations within each type. Where local traditions have provided

certain sorts of stile, and the required conditions and skills are available, these methods must be kept alive, and new stiles be built in these local ways using local stone. Stone hedges, having no earth core, and turf hedges, having no stone facings, need a slightly different procedure as in their separate paragraphs below. In slate country, stiles may be differently constructed. It should be taken as a rule that whenever a new stile is to be built, the hedger first examines the traditional stiles nearby for guidance.

COFFEN STILE. This 14th century example shows more recent replacement of the two outer treads due to excessive wear. Yardstick at left gives an idea of spread, roughly 5 -6 feet, the width through the base of a standard Cornish hedge.

The ordinary CATTLE STILE is a cattle barrier because of the height of the stile and the daylight seen below the treads. Lowland ewes without lambs will be kept in for a while. It is commonly found, is very easy for most people to use, and its maintenance is not demanding. Its design and construction are simple. The three treads are set one above two, for the user to step up and over, with five treads for higher hedges. On sloping ground, extra treads may be needed on the lower side.

The COFFEN STILE, usually given incorrectly as 'coffin' stile, is called after the Cornish word 'coffen' meaning a man-made hole in the ground. The name refers to the stile's construction with a pit, not to the ease with which men can carry a coffin across it. Although the stile sometimes has a stone shelf alongside for a coffin (or any other burden) to rest on while the bearers got their breath back, this is not the source of the name, though presumably the English word coffin is from the same ancient root. Most coffen stiles are associated with 18th and 19th century country mansions or wealthy manor farms and with churches, being convenient for ladies with their long dresses, as the stile, a fore-runner of the modern cattle grid, is walked across, not climbed. Others were built wide enough for a worker carrying two pails with the aid of a wooden shoulder-yoke. Sometimes they were built when an ancient packhorse route was converted to a footpath, after a carriage road was opened.

The coffen stile is visually inoffensive and makes for ease of frequent use by the general public, especially with toddlers and folded pushchairs, or for the elderly and the less able, so today it is the best type of traditional stile for country parks and nature trails etc. It is a cattle and lowland sheep barrier because of the number of treads and the pit under them, but does not always deter hill sheep breeds and their crosses. When built in a curve, it keeps in deer as they cannot leap straight across. The disadvantages are that it may be more expensive to build, requiring more stone and labour, and really needing the treads all to a size. In maintenance, the pit under the treads needs to be kept clear of soil build-up, vegetation and rubbish for the stile to continue stockproof. Nevertheless, in the long term a coffen stile, like the other stone stiles, is economical and problem-free.

SHEEP STILE.

The SHEEP STILE consists of steps set in to the stone face of the hedge. It is a sheep barrier because the small treads are

too close to the hedge side and too wide apart from each other for the sheep to balance themselves. It also serves as a barrier for other livestock, but is not always suitable for elderly walkers, and is less visible from a distance. Easy to maintain against stock, it needs to be kept clear of brambles and other growth to be passable for walkers. It is the only choice for keeping in hill breeds of sheep, eg Welsh Mountain, Scottish Blackface.

STONE STILES IN CORNISH HEDGES TODAY

Most of our stone stiles were built many centuries ago. They were suited to everyday use by the whole population, all ages and conditions of people, and were respected by the old-fashioned livestock. Guernseys, South Devons and Devon Longwools were the main livestock breeds of the 19th and 20th centuries, with the North Devon "Red Ruby" and Hereford or Angus crosses being kept on moorland. Nowadays Continental breeds are more common; many of these are bigger animals, they are kept in greater densities and have a more powerful urge to break out of their fields. Some of the old stiles are no longer proof against these, and there is a need for details of how to build a new stile in traditional manner with an adjustment in dimensions if necessary to keep modern cattle and sheep within bounds. To build an effective stile economically today, it should be narrower, with treads spaced suitably both for livestock control and for people to use satisfactorily. Some less able people may find a narrow stile more difficult.

Cattle stile rebuilt to keep in modern livestock, using original stone but making stile narrower.

The way that stone stiles are built depends on the type of livestock concerned, the stone used and the width and height of the hedge. These factors taken into account have been found, over the centuries, to produce stiles satisfactory for livestock and people, including night walkers, the elderly and the physically less able.

2" galvanised water pipe set in above cattle stile to keep livestock in, forming easy step-over function.

The specifications given in this paper should also be used where a stile requires repair or refurbishment, perhaps because it is in poor condition or because its dimensions will not keep in modern livestock. Often an old traditional stile can be made stockproof against cattle simply by building in a length of 2-inch (50mm) diameter galvanised water pipe parallel with and about 16" (40cm) above the highest tread. To avoid the pipe being displaced by walkers as they step over it, it should be built well into the stonework below the hedge top. Often an apparently derelict stile only needs the hedging

stonework repaired, and perhaps one tread re-fixed. These remedial works are usually much cheaper than re-building, and importantly retain the historical structure. Even if there is no choice but to re-build to a modern specification, the original stone should be re-used, and the stile re-built as near to its original appearance as possible.

BRITISH STANDARD SPECIFICATION

The British Standard (BS 5709:2006) for Gaps, Gates and Stiles was revised in April 2006, with the main objective being "for structures to be adequately stockproof while providing good access for all legitimate users." The authors admit that "This British Standard provides specifications for gaps, gates and stiles to ensure that they cause the minimum of inconvenience to users while fulfilling the requirement for gates and stiles of substantially preventing the passage of animals ...". The word "substantially" means "for the most part" or "to a significant extent". In both meanings it is clear that the specifications are not intended to prevent the passage of all normal farm livestock. Furthermore the structure is required "to ensure the safe and convenient passage of users, as well as providing a reliable barrier to stock if required to do so.". The text does not show clearly how this can be achieved, certainly it is not achieved within the Standard as given. It recommends that stone stiles on level ground are to have only two steps 23" (580mm) high. This is not enough to keep in most types of farm animals. A third step is advised only for sloping ground. If a landowner is to satisfy the law and to keep his animals from straying, for example on to a highway, his stiles and kissing gates must be to a better specification than that in the Standard. The Standard says that "Many other designs compliant with these sections are possible". The word "compliant" has two meanings, either "inclined to agree" or "meeting rules" and the context allows for ambiguity.

Quite clearly no landowner or his staff can rely on building a stone stile to this Standard as an adequate defence in court against actions resulting from straying animals.

The Standard also recommends that there shall be no barbed wire or live electric fencing or brambles, thorns or nettles within one metre either side of the stile. The opinion has been expressed that this is unrealistic.

WOODEN STILES

Wooden stile is an eyesore not suited to the character or climate of Cornwall.

For Cornish hedges, a wooden stile is neither a traditional, economical nor practical substitute for a stone stile. The farmer has to maintain the stonework in the hedge ends, and there are always weak points where they meet the timber stile, whereas the stone stile and hedge ends support each other. In Cornwall's stony ground it is often impossible to sink the wooden posts adequately. Wooden stiles are easily vandalised and do not stand up to Cornish weather, even treated timber often having a short life. Rot sets in at the joints and where

the posts go into the ground. Moving parts, eg dog gates (which are not needed for stone stiles) warp and jam. In Cornwall's warm damp climate the stile treads become dangerously slippery with algal and bacterial slimes. Nailing wire netting on the treads of wooden stiles is dangerous as it rusts and disintegrates with sharp edges and wire-snags. With the mud off walkers' boots this creates a danger of tetanus. The Standard advises that "Where steps are likely to become slippery due to mud, organic growth, or other reason, action shall be taken to reduce the risk of users slipping." but that "Chicken wire can deteriorate, cause trip hazards and pierce dogs' paws". No alternative remedy is recommended. The construction of wooden stiles makes them difficult and often impossible for less active walkers, who are able to climb stone stiles relatively easily.

The British Standard measurements for stiles are obviously designed for the standard English wooden stile, not for the Cornish stone stile. While it is possible, although costly, to build a stone cattle stile to these dimensions, it is not necessary, as a stone stile by its nature is easier and safer to climb, giving the confidence of strong, substantial support, and usually the option for users of tackling it in their own ways. Wooden stiles demand certain actions and have the inbuilt drawback that as they age, the steps become weak and wobbly. They require efficient grip in the hands and wrists and normal knee and hip-joint action to be safe and comfortable while negotiating their high, flimsy structure. Cornish stiles by comparison are literally a walk-over, long-tested for use by historically some of the most severely rheumatic people in Britain. Many traditional Cornish stiles can even be shuffled over sitting down.

TOOLS

Cornish shovel, long bar, pickaxe/mattock, wooden rammer (a half-pickaxe handle is ideal), spirit level (30 - 50cm, 12 - 20 inches long), line and pegs. Where there are roots and top growth, slasher, hatchet/billhook and bow-saw are needed. For setting the stile treads, the spirit level is essential, unless you have a very good eye.

Tools for building stone stiles: Cornish shovel, long bar, heavy hammer, mattock, eavel.

MATERIALS

Stile treads are of granite or other suitable hard rough rock found in the locality. Greenstone ("elvan"), serpentine and other very fine-grained rocks can be too smooth and become slippery in wet weather. Sandstone and some other sedimentary rocks may be fragile and prone to frost-damage or to crack under uneven settlement pressure. Shale and slate for stiles need to be selected with care, with the strength of the stile in mind. Nearby stiles are probably the best guide. The stone must be hard enough to take weathering and the wear of centuries of foot-traffic. Extra hedging stone and some proper rab or stone fill is likely to be needed. Usually there is suitable local stone available, perhaps not easily located but very well worth the trouble to find. Where the stile is on or abuts farm land the farmer is likely to have a stockpile of hedging stone put by, which may include treads from stiles demolished when hedges were removed. In recent hedge removal both hedge and stile may have been simply buried along their site and there might be the possibility of disinterring them.

Filling should be with good rab (clay with content of shale, decomposed granite etc) which is usually present as subsoil. Don't use topsoil containing humus and plant matter which shrinks as it decays. Filling must be rammed hard in thin layers behind each course to prevent future movement and ultimate collapse of the hedge end and stile.

If economics or lack of stone dictate, rather than use the highly unsatisfactory and uneconomical English wooden stile, the stile should be built with reinforced concrete treads (lintel beams) which will weather to the traditional over-all appearance of stone, give a good foot-grip, and soon blend in with moss and lichen. They should be rough-cast or set with granite chippings on the upper surface.

Almost any shape of stone will make the tread of a Cornish stile, provided it has one flat face. For cattle and coffen stiles to a modern specification, each tread should measure at least 2ft (600mm) long over all (shorter than in typical traditional stiles). By building a cattle or coffen stile to 16" (40cm) finished width at ground level, costs are reduced and the stile is more stockproof. Treads may be any depth provided that their sides are reasonably parallel and there is enough strength to take the weight of cattle standing on the tread with their front feet to look over the stile; a big bovine can weigh as much as a ton. As a general rule stile treads, especially with daylight below, should be not less than 7" (18cm) deep, and at least 6" (15cm) wide to allow adequate foot-hold. For sheep stiles, the stones used for treads should be at least 6" (15cm) wide and 2ft (60cm) long, and again of adequate thickness. Before building, all treads should be inspected for flaws which might crack and cause eventual collapse.

New grounders (large foundation boulders) should be at least 16" (40cm) in one dimension and half that in each of the other dimensions, but should not be too big or too oddly-shaped as several will be required to make stable supports at about 10 - 12" (25 - 30cm) above ground level, on which to bed the ends of the treads. Coffen stiles require most of the grounders to be of this height, to be set into the trench with their tops at ground level.

For foot-stones for cattle and sheep stiles, any suitable rock with one flat side at least 1ft (30cm) square may be used.

CATTLE STILES. Three treads and two foot-stones are needed for hedges below 5ft (1.5m) high on level ground. Five treads and two foot-stones are required for hedges higher than 5ft. At least one extra tread is needed where the downhill and uphill sides are at very different levels. Some extra hedging stone is needed, particularly grounders, for the internal faces of the gap.

COFFEN STILES. Coffen stiles can only be installed on level ground, otherwise people would slip on them in wet weather, and in some situations the pit would soon silt up. The number of treads depends on the width of the hedge at its base. For hedges up to about 5ft (1.5m) high and the same across the base, four tread-stones (two acting as foot-stones) are needed. For wider hedges additional tread-stones are required. Extra hedging stone, including grounders, is needed for building the pit and internal faces. Hedges less than 4ft 6" (1.4m) wide at the base are too small for a coffen stile, as animals can jump across too easily.

SHEEP STILES. A minimum of 4 treads and 4 foot-stones are required, i.e. a foot-stone is required at the base and on the top of each side of the hedge, with at least 2 treads in between on each side. The hedge thickness is immaterial. Extra hedging stone is not likely to be needed by a good hedger, unless the existing stone is very small, when larger stones will be needed for securing the treads.

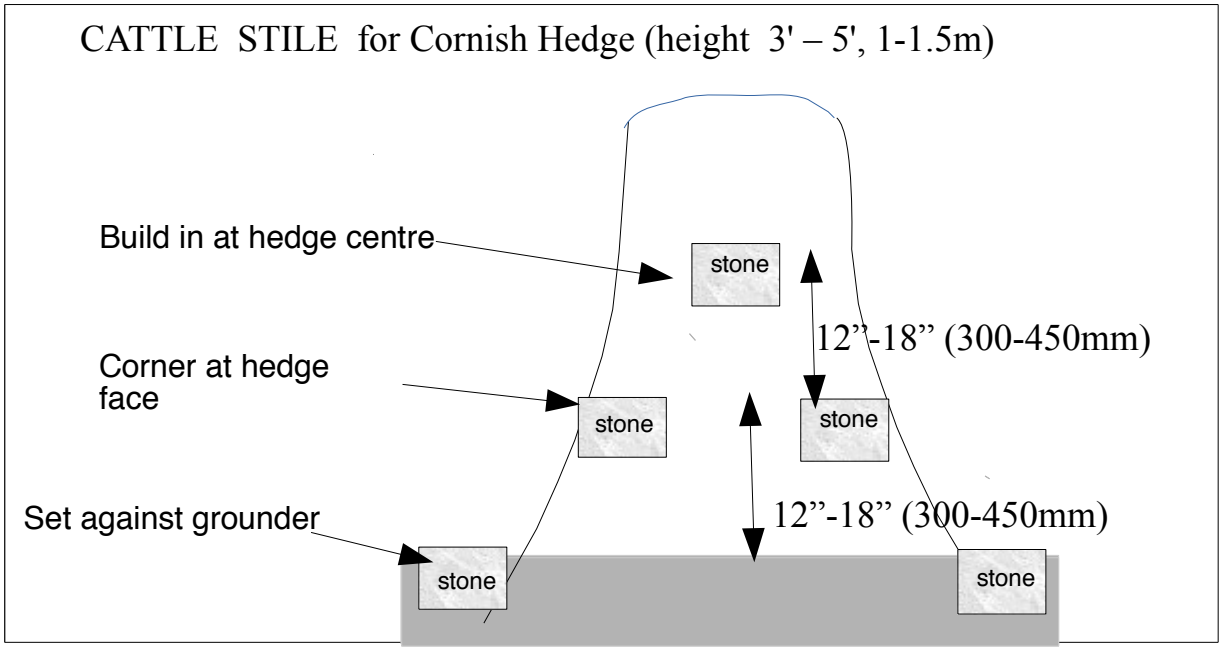
BUILDING OR TAKING DOWN AND PREPARING THE HEDGE

If the stile is to be set into a hedge being newly built, care must be taken in siting the stile appropriately at a position where it is convenient for access and the path, and not in an ill-drained boggy place. The grounders of the hedge ends at either side of the stile gap, and the lowest treads of the stile, are set while laying the grounders of the hedge, and the upper treads are set in place as the courses of stone rise to the required height.

If the stile is to be built in an existing hedge, begin by cutting off all top growth to the width of the gap to be made. The correct width is crucial to the efficiency of the stile. Open up the gap in the hedge by carefully working down from the top, removing the stones course by course and laying them out in order. Shovel out the fill into a separate heap, removing and discarding vegetable material. Grounders that support the hedge to each side of the gap must not be loosened, otherwise the hedge structure will be weakened.

BUILDING CATTLE STILES

Taking down the hedge to build a cattle stile, the gap should be about 12 - 18" (30 - 45cm) wider than the length of the treads, or the longest tread if these vary, to allow for bedding in the tread-ends. Open up the gap down to the tops of the grounders. If the existing grounders are not more than about 10" (25cm) high they are best left in place as a firm base for the first tread. Otherwise continue taking down the gap to ground level. Sometimes an existing grounder will serve as the first tread for a cattle stile, if it is at least 18" (45cm) long and its top is roughly flat and level at not more than 16" (40cm) above ground level. Grounders that are too high for this should be carefully removed, or if only slightly over-sized or lumpy may be dressed appropriately. If the original grounders were not suitable and have been removed, begin by laying the new grounders in a row across the foot of the internal faces of the hedge ends exposed by opening the gap. These grounders are set with their front face upright. The gap between the opposing two rows of grounders equals the finished width of the stile, ie for a modern stockproof stile not more than 16" (40cm). Without disturbing the external stone faces of the hedge, make certain that the stones on the four corners are well keyed in. They should be chosen of a size and shape to provide a firm rest for the treads at not more than about 10" (25cm) above ground level, depending on the depth of the tread to be used.



Where the ground on each side of the hedge is at the same level, the first treads are laid level with each other, one on each side of the hedge. Each is rested on grounders at each end so that its upper edge is 12 - 16" (30 - 40cm) above ground level, and with its vertical outward face level with the outside of the hedge where it lies. At least 6" (15cm) at each end of the tread must lie on the stone beneath. For a stile that will have heavy public use, 12 inches (30cm) or more of tread should rest on the supporting stone each end. For livestock control, the tread-height should be not less than 16" (40cm).

On sloping ground the first tread on the lower side of the hedge is laid with its top at the level of the ground on the higher side of the hedge. On a steep slope this may mean setting a row of small grounders across the gap first, levelled at the right height to take the tread laid on them with its top at the right height. If the slope is very slight, a slightly raised foot-stone may answer instead. If there is any slope at all, the bottom treads should be filled in below and between them to prevent rainfall run-off from funnelling downhill through the gap beneath the stile.

Where the difference in ground level is more than about 16", the extra treads are built in on the lower side at 12 - 16" (30 - 40cm) vertical spacing. Each tread should be bedded so that it is level along its length, and with its upper surface inclined very slightly towards the centre of the hedge; the inside edge is set lower by about ¼" (6mm), to give a firmer footing and make the stile easier to get over. The spirit level is used for this as the eye can deceive. Not to take enough care on this point is a common fault which cannot be rectified later, and with slight settlement the tread may end by slanting downward away from the hedge so the user's foot is liable to slip dangerously.

In making up the courses of stonework on the internal faces of the gap, good support must be provided for the ends of the treads. The load of each tread should be taken preferably by a single stone twice as wide as the tread, or by more than one stone with the larger ones supporting the edges of the tread, thus spreading its weight. Good, tight support is needed on each side of the tread-end to avoid future tilting. If circumstances force use of the original hedge-fill for bedding-in the stonework, special care has to be taken (because it has always acquired some humus in it) to ram it very hard into place behind each stone to avoid future voids as the hedge consolidates with time and weather.

The run of each course of stone should be level, and follow the courses of the existing hedge sides, and you should work first from the downhill side of the hedge. Select your stone by eye to interlock well with its neighbours, and break the joints by placing each stone above the notch between stones in the course below. Smaller stone always weakens a hedge; therefore stone is never broken with a hammer to suit the builder. In an old hedge (perhaps 4,000 years old) the stones are likely to have been re-used several hundred times in its ongoing repair; to break them is an insult. In Cornish hedging, a habit of often breaking stone is a sure sign of bad workmanship.

This cattle stile originally of three treads and a foot-stone has been raised by adding another stone tread at the top of the hedge against modern livestock.

[Photo: Mark Kelmanson.]

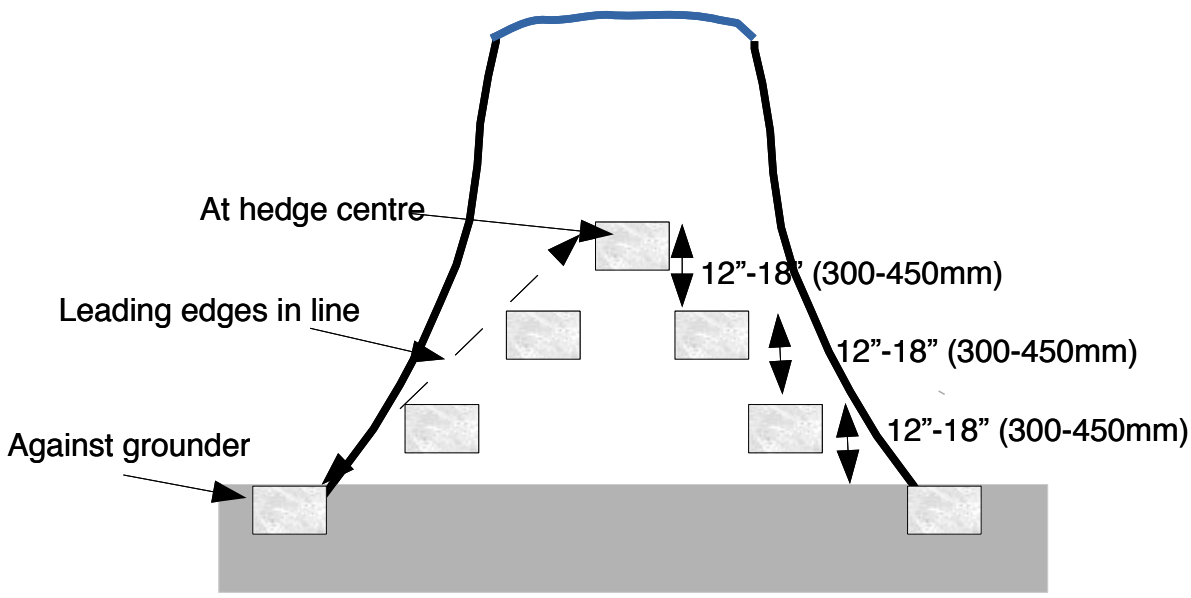
The two internal faces of the gap are built up vertically as the work progresses, with a small batter resulting in the top of the gap being slightly increased, perhaps 4 - 6 inches (10 – 15cm) wider at hedge top. The usual batter for the end of a Cornish hedge is not needed, as the two internal faces are cross-braced by the treads. A piece of field turf about the size of a door knob is inserted into crevices between the stones where these allow; this helps the hedge structure to knit together quickly. Future roots of plants will anchor the fill against rain erosion, and help to hold the hedge-end together.

Cattle stile built of slate with top tread set vertically as step-over function. The slate used appears too thin and the lower tread is poor with a frail edge.

For cattle stiles in hedges 3 - 5ft (1.0m - 1.5m) high, three treads are needed. The top tread is located along the centre line of the hedge with its top surface 12 - 16" (30 - 40cm) above the level of the top surfaces of the two lower treads. To be more stockproof the higher measurement is recommended. The top tread must be perfectly level in both directions, along its length and across its width. Extra care must be taken to bed it in firmly.

For cattle stiles in hedges over 5ft (1.5m) high, five treads are needed. Having laid the first (lower) tread on each side of the hedge, the position of the top tread needs to be located, on the centre line of the hedge and with its top surface 3 - 4ft (1 - 1.2m) above ground level. Measure vertically down from this height to a point level with the tops of the lower treads. Half this measurement gives the height of the top of the intermediate tread. To set the intermediate tread the correct distance into the hedge, take a line from the front edge of the lower tread to the position of the front edge of the top tread, and place the front edge of the intermediate tread to this line. The stonework courses on each side of the gap are continued, taking extra care to bed-in the intermediate and top treads firmly to avoid future sinking or tilting.

CATTLE STILE for Cornish Hedge (height 5'- 8', 1.5 - 2.5m)



In cattle stiles where the top tread is more than 10" (25cm) wide or less than 6" (15cm) thick, it is turned 90 degrees so that its narrow edge is upward as a sit-on/step-over function, not a step-on function. In wide low hedges this variant improves the stockproof quality of a stile without adding to its inconvenience. The top of the step-over tread is raised higher than a normal step-on tread, to about 20" (50cm) above the top of the lower tread. This height is dictated by the width of the stile; if narrow, the step-over may have to be a few inches lower, in a wide stile there is more room to swing the leg. The lower treads may have to be set further into the hedge, to allow of easy stepping over. The gap between the inside edge of the lower tread and the outside face of the step-over tread should not be more than 4 - 6" (10 - 15cm).

The internal faces of the gap are made up to the top of the hedge with courses of stone as in the rest of the hedge, and a layer of thick turf or heavy stone is laid over the top course. Care should be taken to ensure that the turf will knit in rapidly, and it may need to be pegged down, because walkers will use it as a handhold. Heavy stones are better than turf but must be properly bedded down because walkers will pull on them, or use them as a seat to rest themselves or a standpoint to view the landscape, and the stones must not dislodge under this assault. The finished height of the turf top is domed, with the centre 16" (40cm) above the level of the top course of the stones. In a low hedge where the top tread comes near the hedge-top, a very large thick stone laid on the top of the hedge-end at each side of the stile makes it easier to use, and well-secures the tread.

This shows what can happen if foot-stones are not firmly bedded in. The foot-stone shown here has sunk at the right-hand side and needs to be levelled up as it makes the stile very awkward to use especially when wet and slippery. Good building saves remedial work later.

FOOT-STONES. A foot-stone should be set in the ground at each side of the hedge after all the treads have been built in, and the site has been tidied up. Each foot-stone is set with its inner edge to the baseline of the hedge, butted against the grounders if such are in place, and with its longer side parallel with the hedge. It is set with its upper surface at ground level but with the outside edge tilted slightly up by about ½" (12mm) above the level of the soil. The seating must be well rammed, guarding against the foot-stone tilting, which in wet weather can cause the user's foot to slip dangerously. If the first tread of the stile is more than 14" (35cm) high, raising the foot-stone 1 - 2" (40mm) above ground level gives a good step-off. On soft, wet ground a sunken grounder beneath the foot-stone will help to maintain its setting.

SHEEP. Young lambs of lowland breeds of sheep are kept in by a cattle stile if netting or wire grid is mounted vertically between the top tread and the ground. When cut to the right size, it needs no special fixing.

BUILDING COFFEN STILES

For coffen stiles, to find the width of the gap to take down, add together the proposed

finished tread width plus half the height of the hedge plus 24" (60cm), or the length of the longest tread plus 12" (30cm), whichever is the greater. Take the hedge down to ground level, and excavate to 18" (45cm) below this.

The excavated pit should be rectangular, 18" (45cm) deep, the full width of the gap, and extend about 12" (30cm) outside the line of the existing stone sides of the hedge, that is, outside the nearer and further openings of the stile-to-be. The sides of the pit must be vertical, and the floor must be level and rammed hard. To reduce future trimming maintenance, a layer of builders' black damp-proof membrane should be spread over the whole floor of the pit, secured beneath the stones around the walls, and covered with a 1" (25mm) layer of infertile subsoil.

This coffen stile unusually has a step up on one side to allow for a drop in ground level.

New grounders are now laid around the four sides of the pit. As a coffen stile's treads do not brace the hedge ends, these need to be battered for strength as in normal hedge-building. Hedge ends always need to be especially well and strongly built. With the weight of the hedge above, the stonework becomes subject to outward pressure as the hedge weathers and beds down. To counteract this pressure, the sides of Cornish hedges are shaped with a batter profile in an inward curve somewhat like the sides of a lighthouse. A traditional rough guide is to set the grounders at the same angle as the head of the Cornish shovel to its handle, but this should be a little more with a modern shovel.

When building a coffen stile, first the grounders along the internal faces of the hedge-ends to either side of the pit are laid, slanting them back at this angle. Where each tread-end will rest, the grounder should be well-shaped and not more than about 10 - 12" (25 - 30cm) high. The grounders on the other two sides, across the openings, are laid without batter, with their top horizontal and their vertical inward-facing side along the line of the outside of the hedge. These grounders also should be about 10 - 12" (25 - 30cm) high, giving a level bed for the foot-stones. They must be set very firmly, with the fill well rammed behind them. If the tops of the grounders are uneven, filler stones should be placed to level the course.

When this firm horizontal course has been laid across the opening at each end of the stile, the foot-stones are laid on it. They should preferably be of the same dimensions as the treads, at least 6" (15cm) across the upper surface and 6 - 8" (15 - 17cm) in depth. They are laid with their upper surface level with the ground, and their inner edge placed along the line of the outside of the hedge and vertically above the face of the grounders. At each end the foot-stones resting on top of the grounders must extend into the hedge, beyond the opening of the pit, by at least 6" (15cm).

At this stage of the work make a ramp of stones, not less than 4" (10cm) wide, for hedgehogs, having fallen in as they do, to climb out at one corner, allowing the animal to reach the top of the foot-stone. Put a ramp at each end of the stile, to give a choice of direction or create a highway.

The treads are laid with their upper surface on a level with the upper surface of the foot-stones, ie at ground level, leaving 14 - 16" (35 - 40cm) of clear space between each tread (and between the treads and the foot-stones), and 18" (45cm) from the upper surface of the treads to the floor of the pit, leaving up to 10 - 12" (25 - 30cm) space below the tread. Care must be taken to bed the treads securely with their upper surface level both lengthways and widthways, using

large stones around the ends of the treads to prevent any future movement, and with not less than 6" (15cm) of each end of the tread embedded into the hedge end.

When all the treads are firmly set in, the course of stone above them is laid with large stone above the tread-ends, and the successive courses are laid level across the internal hedge-ends. The inwards batter is followed to one-quarter (25%) up the height of the hedge, at which point the curve has set in by about one-eighth (15%) of the hedge's height. Then the batter is reduced, typically setting in by one-tenth (10%) of the hedge's height at halfway up the hedge, then vertically to the hedge top.

Coffen stile built with a curve to keep deer in. Worn treads show great antiquity.

Example: For a coffen stile in a 4ft 6" (1.4m) high hedge, the batter is set in about 7" (18cm) in the first 12" (30cm) of hedge height from field level, then about 5" (12cm) in the next 12" (30cm). The remaining courses are set up vertically so that the width of the gap at the top of the hedge equals the width at ground level plus 24" (60cm), i.e. 12" (30cm) outward batter at each side of the gap. For example, with a finished tread width of 12" (30cm) at ground level, the gap will widen, with the batter, to a width of 3ft (90cm) at halfway up the hedge. Thus the widest part of the stile is from half of the height of the hedge upward, allowing the user carrying a bag or child to pass through.

So, when the treads are in place, the internal faces of the gap are built up. In setting the batter, the aim is a smooth inward curving slant. Particular care must be taken to dovetail the four corners where the new internal stonework meets the original stonework of the hedge sides, making the cornerstones so solid as to resist vandalism or cattle rubbing. From halfway up the hedge the courses are laid without batter, placing the face of each course vertically above the one below. The size of the stone should diminish in the succeeding courses, which should follow the original coursing in the hedge sides. The hedge ends are domed with fill and topped with turf above the top course of stone. The pit must be left clear of debris.

An experienced hedger may build a coffen stile on a curve, or to a right-angle or zig-zag. This prevents farm stock from seeing through the stile and jumping across, but is more expensive to build. This might be worthwhile, as being more reliably stockproof, and it is essential against deer. An excellent example of a traditional curved coffen stile can be seen on a public footpath at Godolphin House (grid ref: 597/309).

BUILDING SHEEP STILES

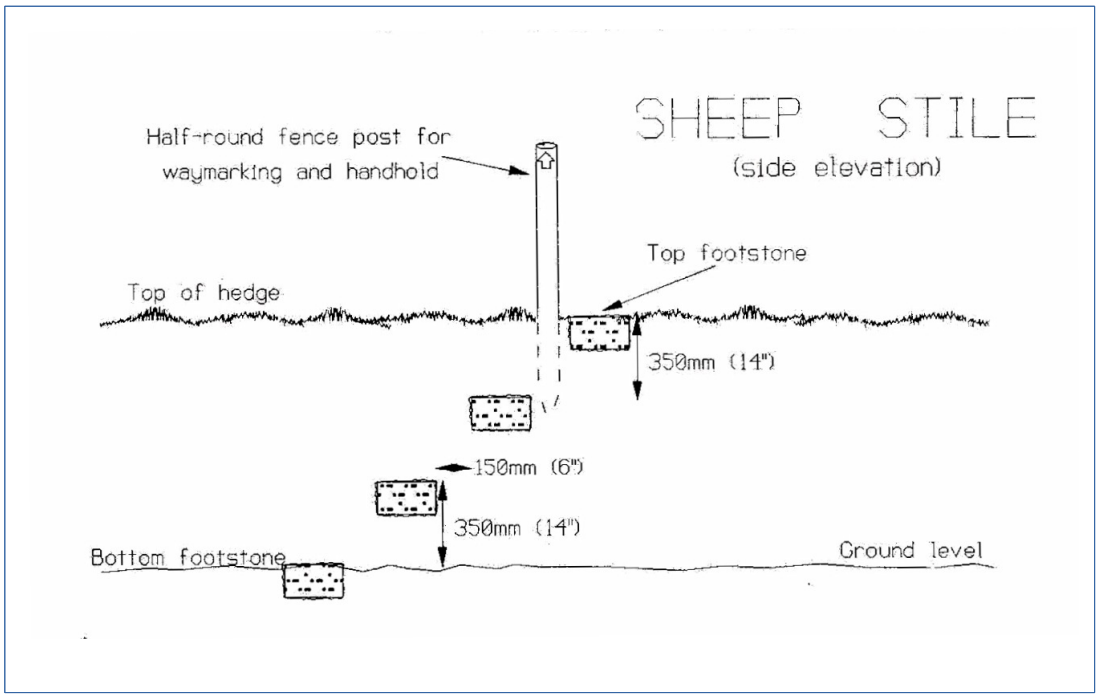
For sheep stiles, the top width of the gap required is theoretically the sum of all the tread widths, not counting foot-stones. For example, for a sheep stile with three treads set into each side of the hedge, each tread stone 7" (18cm) wide, the measurement for the top of the gap would be 7" x 6) = 42" (18cm x 6 = 1.10m). The hedge is taken down only as far as the seating for each succeeding pair of treads, ie a slanting, triangular gap, stepped at equal intervals like a

flight of stairs, each step the width of two tread-stones. In practice the size of the stone in the hedge side will affect how neatly the gap can be taken down, and if the treads are not all of the same width the stepping may need to be adjusted as the work progresses. The principle is to take down as little of the original hedge as possible (allowing that the original is well-built and in good repair). At the lowest point the gap is down to the top of the grounders, unless these are more than about 10" (25cm) high, in which case one grounder will need to be removed at the bottom of the gap and replaced with a smaller one, or set further down into the ground, to accommodate the lowest pair of treads at the correct height.

Sheep stile with three treads.

Where the ground both sides of the hedge is level, the treads may be built in opposite each other, and the two sides of the hedge are kept level with each other as the work proceeds. Where more convenient, especially on sloping ground, instead of going down in the reverse direction on the other side the treads may continue along the length of the hedge. In this case only the facing of each side of the hedge is taken down for the length needed, leaving the other side intact until the first side is built. The length of hedge-face taken down on each side of the hedge is calculated by adding together the widths of the treads to be set on one side of the hedge only, and adding on 6" (30cm) for each tread. For a hedge with three treads set into each side of the hedge, each tread 7" (18cm) wide, the top measurement of the length taken down would be (7" x 3) + (6" x 3) = 39", (18cm x 3) + (15cm x 3) = 99cm. As before, the part taken down is stepped to retain as much as possible of the original hedge face.

The first tread is placed with its top surface 14" (35cm) above ground level and laid firmly on the grounder. The tread should be 6 - 10" (15 - 25cm) wide and not less than 6" (15cm) thick,



and it projects out from the hedge 10 - 12" (25 - 30cm). For hill sheep, the lesser dimensions are advised. The over-all length of the stone varies, but should not be less than 24" (60cm). Not more than one-third (33%) of its mass should protrude to form the tread outside the hedge face, and a stone that thickens towards the inner end is ideal. The tread should slope slightly downwards into the hedge so that the outer edge is ½" - 1" (13 - 25mm) higher than its surface at the hedge face. The other way, across its width, the tread must be level. Use the spirit level. Much care must be taken to build in each tread with well-laid stones below and above so as to make sure that no tread will move on settlement of the hedge or become loosened with use. Otherwise, the tread may eventually slope downward away from the hedge, so the user's foot is liable to slip off dangerously.

Six-tread sheep stile. The slight slope upwards of the outer edge of the step from the hedge face can be clearly seen on the upper steps.

Photo: Mark Kelmanson.

Having placed the lowest tread on the near side of the hedge, next place the lowest tread on the far side. In most hedges, other than massively wide ones, the treads will overlap in the centre of the hedge and have to be "staggered", that is, not laid end-to-end exactly opposite across the hedge, but laid with the inner part of their length lying side by side. While there may be room to lay the first pair end-to-end, there will not be room as the width of the hedge narrows with the batter higher up, and the spacing of the treads will go wrong. The level bottom of the gap needs to be wide enough to accommodate the lowest pair of tread-stones laid side by side across the hedge, each projecting on its own side of the hedge as detailed above. They are wedged tightly in with stones well rammed with fill, and secured with heavy stone on top, locked in with the original stone at the end of the gap and with the courses on the face of the hedge. On the next step up, on each side leaving a space of 6" (15cm) between the rear edge of the tread and the forward edge of the tread below, the next pair of treads is well bedded in the same manner on the stone facing of the hedge and locked in with good stone.

Level courses of stone are re-built into the hedge, matching the style, including batter, of the original hedging, excepting that larger stones are set over the treads to secure them. Each succeeding pair of treads is laid when the courses reach a height of 8 - 10" (20 - 25cm) above the previous pair. When building in non-opposing treads in one hedge face, again each tread is set with its upper surface 14" (35cm) above the upper surface of the lower tread, and 6" (15cm) distant; that is, there should be 6" (15cm) clear between the forward edge of the lower tread and the rear edge of the upper. The tread is built in and the hedge courses raised in the same manner as for the other arrangement.

Further treads are added until the top treads are within 12 - 14" (30 - 35cm) of the top of the hedge. Then a treated half-round fencing post should be firmly set in near the top tread on each side (see sketch), flat side of the post facing outwards and painted with the yellow way-marking arrow because sheep stiles are difficult for walkers to locate; also the posts give a useful hand-hold in going over the top of the hedge.

The top of the hedge is then re-built, with a level foot-stone set each side of the hedge top

not more than 14" (35cm) above and 6" (15cm) distant from the top tread. Spare stone should be used to provide a level hard surface about 12" (15cm) wide between these hedge-top foot-stones, otherwise green growth may make them difficult to use. Finally a foot-stone is laid in place at the base of the hedge on each side. Their seating must be well rammed to guard against uneven sinking. They are placed level, with their tops about ½ " (12mm) above the level of the ground.

STONE HEDGES

Stone hedges, except where the stone is very large, are usually built the same way as Cornish hedges, the sides similarly battered for strength and longevity. The difference is that the fill, instead of earth, is of stones of varying size. In building a stile into a stone hedge the stones used for filling have to be of suitable size and weight to support and tightly wedge the treads. Where stone is small and/or rounded, a flexible lime-cement mortar (1 measure of lime to 1 cement and 6 sand) may be used, extended into the core of the hedge, to bed the tread-ends firmly into the stone fill. In other respects the above specifications for stiles in Cornish hedges are appropriate.

TURF HEDGES

Turf hedges contain little or no stone. All three types of stile may be built but stone-work is required for the stile faces into which the treads are inserted, the quoins and for the pit of coffen stiles. A lime-cement mortar (1:1:6) should be used. In extreme cases where no stone is available, rendered concrete blocks may be used but these, although effective, are non-traditional and disliked. In other respects the above specifications are appropriate. To be effectively stockproof, turf hedges should be fenced and the fence should be specially secure where it joins the stile, bearing in mind that barbed wire should be kept away from the stile itself.

Safe support of cracked tread with a reinforced concrete block saves expense of replacing tread, retains original stone and avoids unsuitable replacement with wooden stile.

REPAIRING STONE STILES

Stone stiles are remarkably enduring and a well-built stile can stand for hundreds of years without needing attention. Even with less well-built stiles, the most they might need is re-alignment of a tread which has tilted, replacement of a tread which has cracked or worn very shiny, or some re-building of the hedge-ends at the sides of the stile. As little as possible of the original historic stonework should be taken down or disturbed in order to re-lay the offending tread, and it should be replaced exactly as before. The remedial work follows the same procedures with regard to stability as for building a new stile, as given above.

Sometimes an older stile will need a

slightly raised half-tread or foot-stone added if the field level has sunk away on the downhill side. Total collapse of a stile is unusual, unless the whole hedge has been neglected and cattle-damaged or vandalised to the stage of ruin. In this case the stile should be re-built as it was, using the same stone, and if necessary fitting a 2" galvanised water-pipe above it for stockproofing.

The aim with refurbishing stone stiles is to preserve their original structure and character, doing as little work to them as is commensurate with making them safe and stockproof. Usually it is simply a case of levelling a tread or a foot-stone. Except where the tread is broken or has become dangerously worn, the same stone should be re-set, in the same place.

KEEPING STONE STILES IN GOOD CONDITION

Properly-built and well-maintained stone stiles last for centuries with neither rot nor rust corrupting. In the longer term, stone stiles are far more economical than wooden stiles. The only regular maintenance a stone stile needs is trimming of growth where necessary (which similarly applies to wooden stiles). Although thorns and brambles may help to keep stock in, overgrown stiles cause walkers to try to find another way. Away from the path they get into difficulties, and may cause damage in trying to regain the route. The landowner/occupier usually has the responsibility to maintain stiles on a public footpath, and he is likely to be responsible for mishaps to walkers deterred from passing over a stile.

While this is easy for walkers, it is a shame to see stiles like this fall into disrepair with the current decline of stock-farming. The top tread of this fine old cattle stile has fallen (seen on right, slanting down) but could easily be replaced in position.

Usually a walk along the footpath during the winter, trimming out the stiles with a hook, is enough. In some places the luxuriant bramble growth needs extra attention in the summer. This can be prevented by making the extra effort to cut brambles through the root beneath the knobbly growing point. Where the footpath is frequently used by lightly-clad walkers, nettles may be a problem. Despite the wording in the British Standard against thorns, brambles and nettles, the law recognises that much depends on the frequency, type and volume of use of the public footpath. People who walk through ordinary farmland should hopefully be more able to cope with the normal countryside hazards. Maintenance (apart from safety works) should be avoided during the nesting season for birds and other wildlife, March to August inclusive.

Cattle stiles need the spaces between and below the treads kept clear of vegetation for the stiles to be visually effective against farm stock.

For coffen stiles, the pit beneath must be kept clear, and the sides of the stile trimmed. If growth is allowed to fill the pit, animals are tempted to run across and might get jammed or break a leg.

Unobtrusive kissing-gate built into a Cornish hedge in a traditional style using local stone. An iron gate would suit the climate and the traditional Cornish ambience much better.

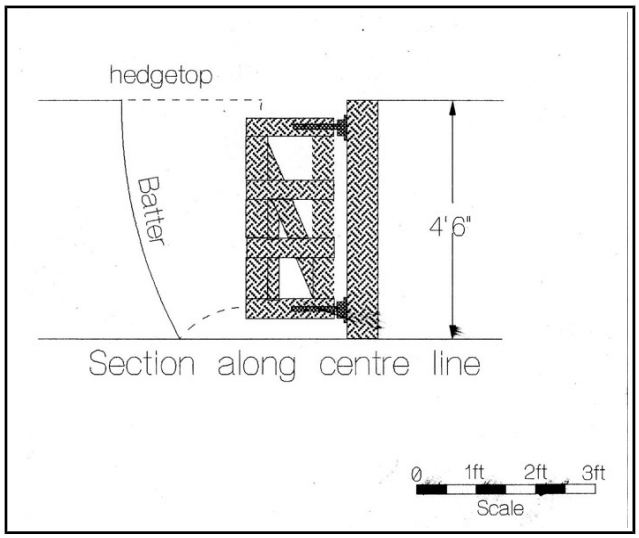
For sheep stiles, the hedge sides and top have to be kept trimmed clear of bramble and tree growth for the stile to be usable by walkers.

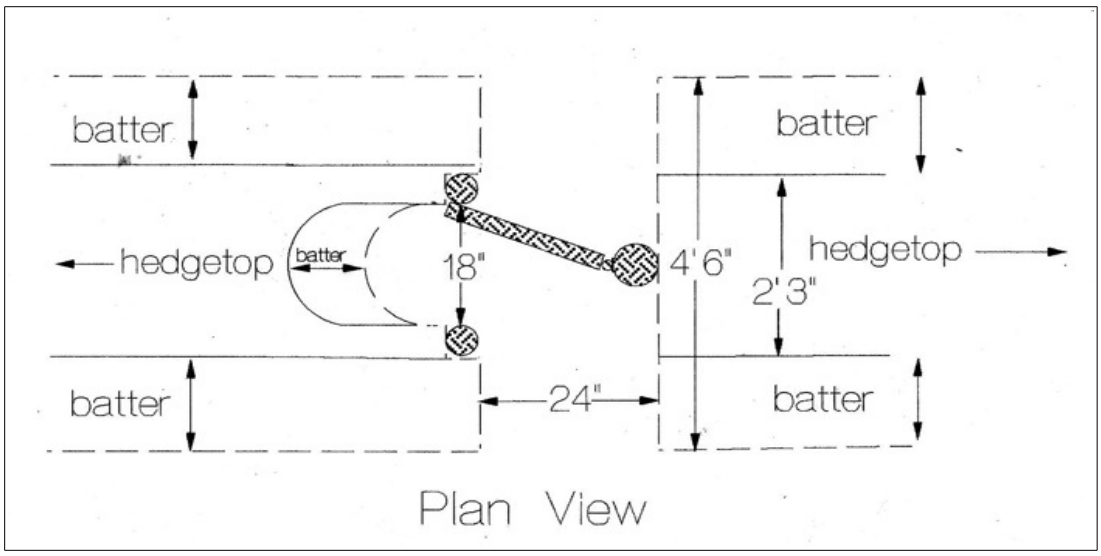
KISSING GATES

Kissing gates are sometimes fancied to be superior to stone stiles but, while they keep in large adult cattle, the standard designs often fail to keep in lambs of hill breeds of sheep, young calves and small ponies. Unfortunately such gates will be thought to be stockproof for a time and then suddenly an individual animal will escape leading to a road accident.

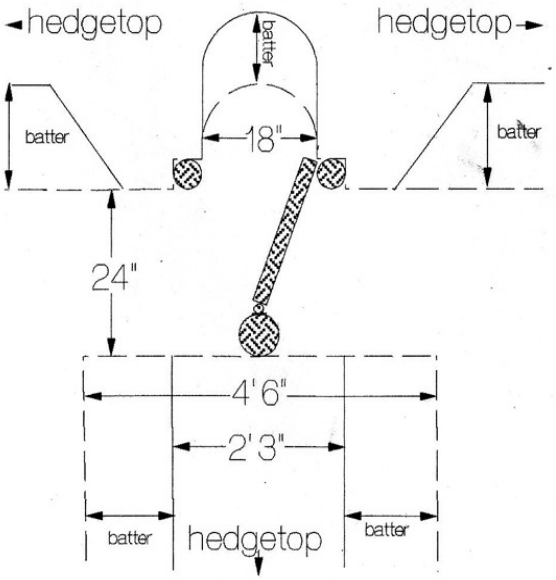
The design given here fits in with the traditional landscape and the hedge batter helps deter livestock from getting out as it narrows the space for them to place their feet.

A kissing-gate such as this might be built in addition to the existing stile, where it is necessary to provide alternative access for less able people, without materially altering the landscape or removing the ancient and historically important stile. Most Cornish stone stiles are relatively easy for the partially-disabled, and people who are disabled in the hands will generally prefer to use the stile rather than to handle a gate.





Looking down into the gap showing the batter built into the curved hedge containing the kissing-gate. Built in traditional style with undressed stone fitted together.



Gate at hedge junction

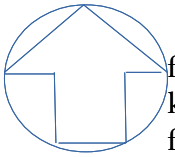
RIGHTS OF WAY

Stiles are normally linked with rights of way, usually public but sometimes private. Unless written down in property deeds held at the Land Registry, private rights of way are difficult to agree on, and may easily become the basis of quarrels between neighbours. When private rights of way are being agreed, it should be set down on paper who is responsible for looking after the stiles and especially who is responsible if animals get out over the stile and cause damage to a third party. Sometimes the nature of the livestock needs to be defined, for example a stile may be stockproof for lowland breeds of sheep, but not for hill breeds. Here the services of a professional land agent may wisely be sought. A restriction might be put on the permission to use the stile. There must be agreement as to whether or not the right is assignable or extendable to someone else, or whether it is attached to property, as in access to a dwelling house, which may be assignable to a new owner of the house.

The farmer or land manager is responsible for maintaining stiles on rights of way unless there is substantial written evidence otherwise. The responsibility for preventing farm livestock from straying usually depends on the animal keeper. Stiles are often preferred by landowners and animal keepers because there are no gates to be left open by the occasional irresponsible walker. Nobody wants to be the reason why farm animals get on to a road and cause a traffic accident.

In some parishes, there are arrangements whereby the parish council looks after some or all of the stiles. It is in the public interest that the work is carried out in an effective manner by following the detail contained in these instructions, first seeing if the old stile only needs refurbishing. Complaints may only mean that the vegetation needs trimming out or that one of the stone treads needs attention. Our stone stiles are an ancient heritage and continuing local pride in retaining them is vital to their future.

WAY - MARKING.



This is useful for walkers in preventing them from losing their way; and for the farmer, in keeping walkers from straying off the footpath. Way-marking must be kept to the minimum and is only necessary where the stiles cannot easily be seen from each other. The painted arrow should be neat and unobtrusive. The colour yellow must be used to distinguish the footpath from a bridleway or byway. A golden or corn yellow looks better than an acid lemon yellow.

For cattle stiles, an easy way is for the yellow arrow to be painted on the vertical surface on each side of the top tread, the arrows being angled towards the route of the path in whatever direction it takes on the far side of the stile. For coffen stiles, the way-mark may be painted on the face of a hedgetop cornerstone at one side of the stile, or, if this is likely to be covered by vegetation, on a short post set in the top of the hedge. For sheep stiles the yellow arrow may be painted on the posts set in on the hedgetop as a hand-hold.

For way-marking to remain useful, the arrows should be repainted every five years or so, depending on the exposure of the site.

Titles of papers available at www.cornishhedges.co.uk

Advice for Working on Roadside Hedges	How Old is That Cornish Hedge?
Advice for Trimming Roadside Hedges	Literature Sources
Building Hedges in Cornwall	Mediæval Hedges in Cornwall (450AD - 1550)
Building a Turf Hedge	Modern Hedges in Cornwall (1840 - present day)
Butterflies, Moths and Other Insects in Cornish Hedges	Mosses, Lichens, Fungi and Ferns in Cornish Hedges
Check-list for Inspecting New or Restored Hedges in Cornwall	Pipe-laying and Other Cross-country Works Involving Hedges
Check-list of Types of Cornish Hedge Flora	Post-Mediæval Hedges in Cornwall (1550 - 1840)
Code of Good Practice for Cornish Hedges	Prehistoric Hedges in Cornwall (5,000BC - 450AD)
Comments on the © Defra *Hedgerow Survey Handbook* (1st Edition)	Repairing Cornish Hedges and Stone Hedges
Comments on the © Defra *Hedgerow Survey Handbook* (2nd Edition)	Repairing Turf Hedges
Cornish Hedges and the Climate Crisis	Restoring Biodiversity in Cornish Hedges
Cornish Hedges in Gardens	Risk Assessment Guidance for Working on Cornish Hedges
Cornish Hedges on Development and Housing Sites	Roadside Hedges and Verges in Cornwall
Cornish Stone Stiles - How to Build and Repair Them.	The Curse of Rabbits in Cornish Hedges
Gates and Gateways in Cornish hedges	The Life and Death of a Flailed Cornish Hedge
Geology and Hedges in Cornwall	Trees on Hedges in Cornwall
Glossary of some Cornish Words used in the Countryside	Unusual Old Features in Cornish Hedges
Hedges in the Cornish Landscape	Who Owns that Cornish Hedge?
How to Look After a Cornish Hedge	Wildlife and the Cornish Hedge