CHAPTER 15

CUTTING QUOIN STONES

A quoin stone is one that occurs at the ends of walls, door or window openings, etc. It is cut from good quality stone that can be cut and shaped to a specific size. A quoin stone is cut square and in rubble work it is sometimes the only cut stone in the wall. In many Irish medieval buildings a building can be dated by the tool marks from the cutting on quoin stones at the windows and doors. Cutting quoin stones is probably the most difficult or highest skill area dealt with in this book, but it is a key area and the basis on which more advanced work is built.

Dimension stone quarries can cut and supply quoin stones using modern technology. Sometimes this work is so accurate that it has to be tooled by hand afterwards to produce a traditional-looking surface – ironic when you think how much work was once involved in cutting stone by hand to produce a flat surface.

The method below outlines one of the traditional ways of working quoin stones. This varies depending on the stone, the location and the individual stonecutter or mason but, in general, it is common to most countries in the repair and conservation of stone. It is a useful skill to have and has a definite place in the repair of stone and, in particular, in the repair of old buildings. In many circumstances working quoin stones by hand is still cost-effective and more aesthetically pleasing since it does not produce a finish with the regularity and monotony of machine-cut stone.

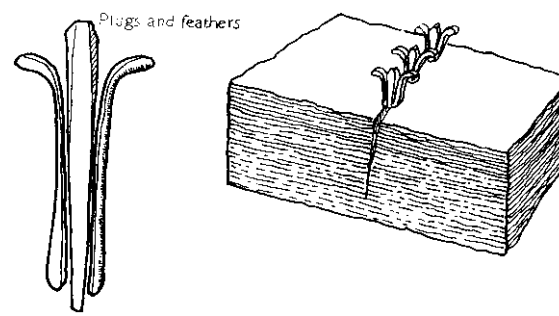
WORKING THE STONE

- Select, if possible, a block of stone as near as possible to the finished size or a little larger. If a stone has, for instance, the correct bed height but is too long you can use plugs and feathers to split it.

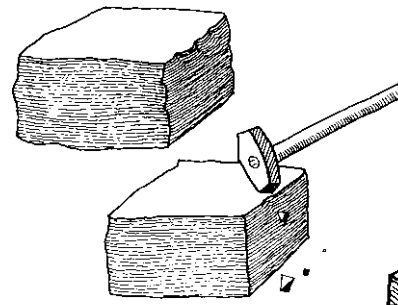
Plugs and feathers are a very old and efficient way of splitting stone that is still used today in modern dimension stone quarries. In the Mourne quarries the technique appears to have been introduced in the 1860s from Britain and plug and feather marks are an easy way to date buildings there. Before plugs and feathers were introduced, wedges had been used and still are occasionally. Timber wedges were also used, and when wet would expand and lift a stone off its bed in the quarry.

- A series of holes is drilled in a line in the stone to be split at approximately equal distances. Two feathers are dropped into each hole and the plug is then placed between them. Each set of plug and feathers consists of a central tapered steel plug and two tapered, untempered steel feathers. They are tailormade for a particular hole diameter – anywhere from 18mm to 40mm – the length increasing with the diameter.
- The plugs are driven in one at a time in sequence across the stone to ensure they all have the same bight. It is important not to drive the plugs too hard, especially the smaller ones, or they will not last long.
- You will hear the stone splitting before you see a crack joining each hole in the line. In the past the plug holes were drilled with hand-held tools, today compressed air is used. For smaller work a heavy electric hammer-action drill with a chuck size of approx 38mm will do.
- A small set of plugs and feathers, approx 20mm in diameter and 150mm long, is adequate for producing quoin stones of up to roughly 300mm high, the holes for these would be drilled about 100mm to 150mm apart.

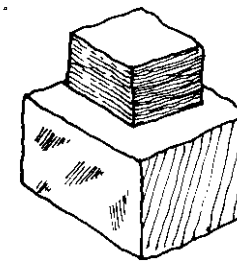
Stone is usually split with the grain or across or at right angles to it, though granite is easier to split if you follow the lie of the mica. (The illustration above shows plugs and feathers used on one side of the stone, though often they are used on three sides.)



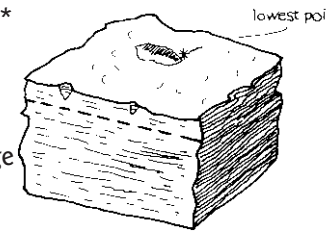
- Square the stone roughly to shape.



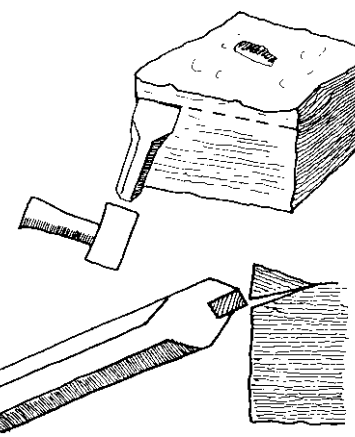
- Bank or fix the stone securely at an appropriate working height. The bank may be another stone or a stout bench.



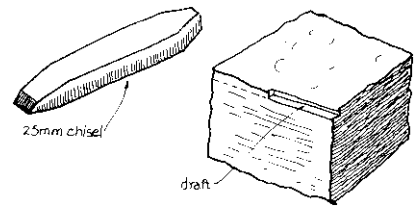
- Position the stone so that the top bed is uppermost. Find the lowest point on its horizontal bed surface (marked * below). Generally this can be done by eye but if you are uncertain use a tape and a straight edge, or a dropped square from a straight edge (a dropped square is similar to the ordinary square except that one of the arms can move up and down and is therefore good for measuring depth).



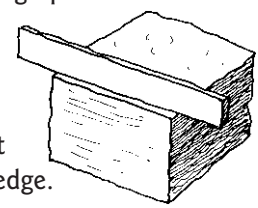
- Mark the lowest point on the face of the stone at one end and scribe across the length of the face, keeping below any secondary depressions or damage on the bed.



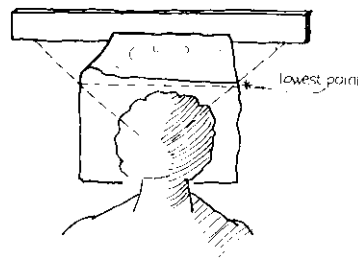
- Pitch just above the scribed line.



- Cut a draft or a margin to this line using a 25mm chisel. Remove with a punch any excess stone that might damage the chisel. It requires skill to cut the draft accurately. Place a steel straight edge on the draft to check for accuracy. It should sit without rocking and without showing any light underneath and this takes practice to accomplish. A rusted steel straight edge is useful because it will leave a mark on any high points of the draft that need to be reduced.



- Sit a straight edge securely on this draft.
- Stand on the far side of the stone and sight the near unworked edge with the straight edge.
- Assess the lowest point on this near edge and mark it at one end (marked * below).



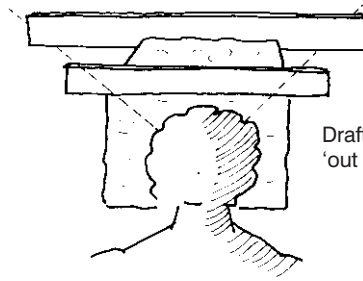
- Without moving your head, sight this mark to the opposite edge on the same face of the stone.
- Join these two marks using a scribed line.

An alternative method is to use a second straight edge and simply bone in from the first. However, sometimes you will have to hold the second straight edge against an uneven vertical face on the stone and this can be awkward.

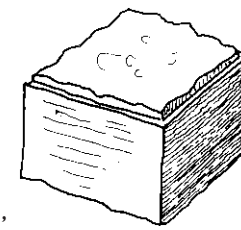
Either method requires great accuracy or the work will have to be repeated.

For large stones this third method is helpful:

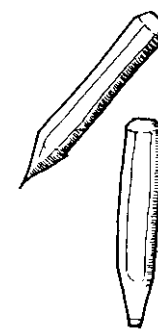
- Cut a small table or rebate at three corners, all below any damage on the bed. Place the same size block of wood in each (say 40mm x 40mm x 40mm). Cut the last table, being careful not to cut too deep. Place the fourth block of wood in this and bone in with straight edges, gradually reducing the table under the fourth block.
- Cut the second draft and bone in with two straight edges when finished.

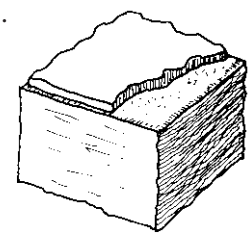


- Cut the two end drafts now to connect the first two – all edges are drafted out of twist with each other and should bone in in any direction.
  There are many variations on taking a surface out of twist. One is to cut the first long draft, followed by an end draft, then the next end draft is boned in and finally the last long draft is cut.



- Remove the excess stone between the drafts by punching. The surface needs to be flat but slightly rough so that the mortar can adhere, but there is no need to continue working this to a fine finish.
- The face is now squared off the bed, using a steel square to mark it out. The height of the quoin stone is measured down from the top bed and drafts are cut and boned in as before.





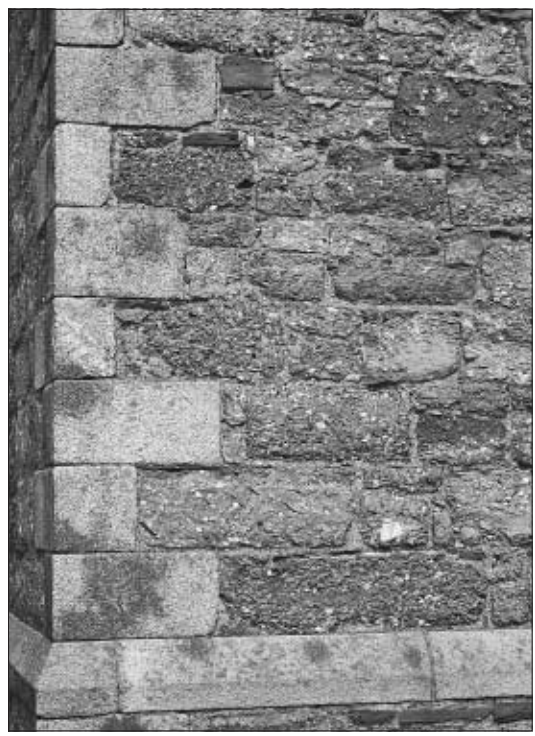
- The next bed is worked to the same method, and finally the ends are worked. Only the back of the stone can be left unworked and even this is sometimes dressed down reasonably flat.

The final finish on the stone is important and there are many variations to choose from including those shown in Chapter 16: Surface Finishes. Rubble work is often left rough or simply punched.

DOs AND DON'Ts

Do wear safety goggles when cutting.
Do bank stone securely.
Do choose a stone that can be worked economically.
Do take your time when boning in.

Don't use a chisel to remove excess stone.



Conglomerate red sandstone with granite quoins, County Wexford.