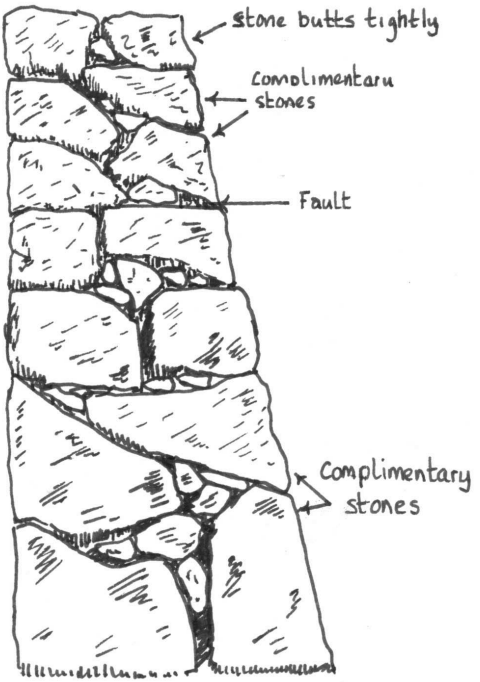
MASTER CLASS

Foundations - part 2

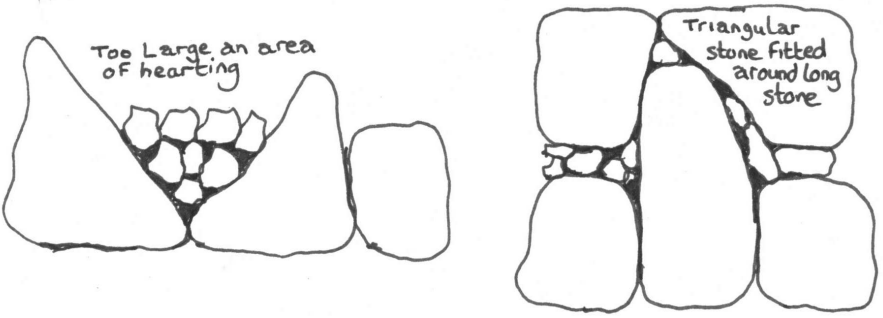
In the last edition of Stonechat the basic principles of building foundations out of reasonably regular shaped stone were dealt with. Here we take a look at what to do with essentially triangular shaped stones.

In part 1 the need for adjacent stones to butt up against each other with as much of their internal edges touching as possible was dealt with. This reduces the chance of stones being forced out of the wall. Triangular stones can present a problem in achieving this



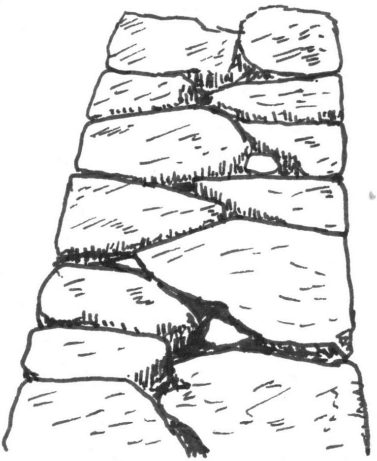
The diagram left, taken from a photograph of some foundations constructed out of oolitic limestone, illustrates how to deal with these. The ideal is to find a stone to match the slope of the triangle, butting tightly with it. This is not always possible and the important thing is not to place two triangular stones next to each other. Try to ensure that the stone next to the point of a triangle runs well into the wall, with the stone on the other side of the triangle well butted to it. The fault shown in the diagram is perhaps a minor one, but it could have been avoided. Far worse would have been to have two stones placed adjacently so that their only point of contact is at the face of the wall. This will leave a large 'v' shaped void immediately behind this point. Whilst this can be tightly filled with hearting it still provides an opportunity for pivoting as pressure from within the wall will be exerted on this point, and as the sides of the stone are not touching the point of contact can easily be forced apart.

Compared to having a more regular stone alongside it there is also less solid wall for the next stone to sit on regardless of how well the hearting is packed (next page, top left).



Triangular shapes have a useful application where a stone has been used on the other side of the foundations, stretching well into the wall. They can provide a reasonable method in helping to build around it (above right).

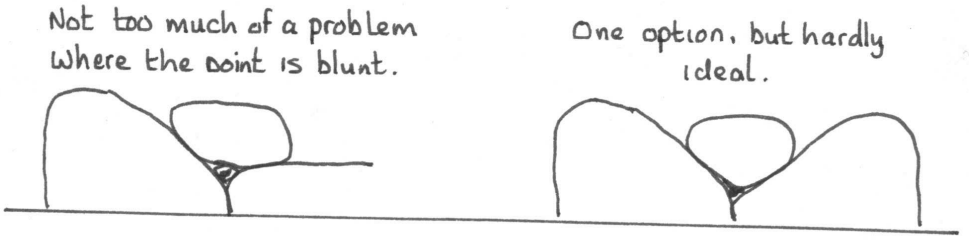
Whilst this has the inherent weakness brought about by the use of such stones it can be preferable to using a much smaller stone opposite the large stone as seen in part 1.



Where many of the foundations are essentially triangular a very good end result can be achieved as can be seen the diagram above, taken from a photograph of carboniferous limestone foundations from the 1992 Fflintshire competition.

Occasionally it is necessary to use a foundation stone with a triangular face. A normal rule of thumb is not to have two next to each other as this will tend to force them apart. Whilst this might be essentially true in a well built foundation where the stones are tightly butted together such a problem is minimised and it does allow for a good stone to be placed on top of them (provided the

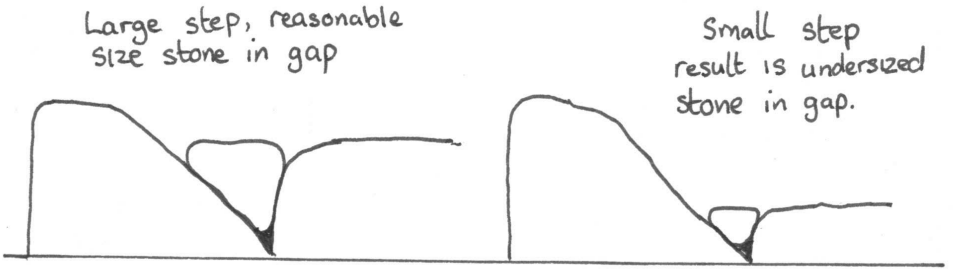
resultant 'v' is not too angular).



Whilst not recommended this method is one option. The nub of the problem with these foundation stones is not so much the integral strength of the foundation itself, rather the problems of building on it.

With boulder type stones this problem is often relatively easily overcome as they have rounded points. Careful selection of a suitable flat and thinner foundation alongside it can usually make the placing of the first building stone relatively easy. The same principle applies to other stones where the point is not particularly sharp.

The major problem with triangular faces occurs where they have a relatively sharp point. There is no ideal solution to this. One approach is to use a stone with a good square edge alongside them, leaving a reasonably large step. This enables the placing of a reasonably large stone (assuming it exists!!) in the 'v' to level off for the next building stone. The stone placed in the 'v' should run into the wall as much as possible. If the step is too small then the stone used will be too small at this point in the wall.

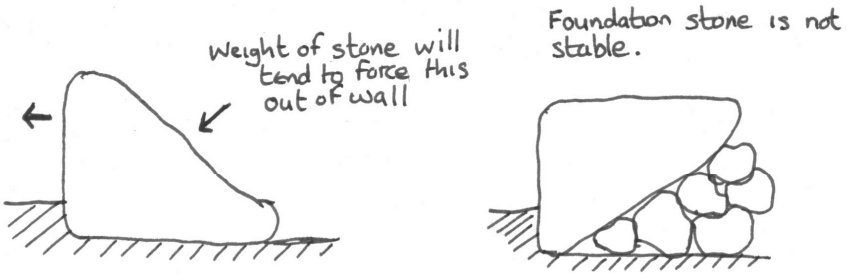


These stones almost inevitably necessitate the use of smallish stone low down in the wall and it is this stone that is likely to provide a weakness in the wall, rather than the foundation stone itself.

A further problem exists in that sloping stones are difficult to build on. Finding a suitable stone to sit on this slope and provide a level surface for subsequent building can be problematic. In any case

the stone(s) sitting on this slope will not be entirely stable should any movement in the wall occur. Generally they should be avoided unless there is no alternative.

Triangular stone should never be used with the diagonal running from the face into the wall. Here the weight of the wall on top of the foundation is likely to force it out of the wall, and it will not be particularly stable if inverted and would lead to the foundation essentially consisting of hearting.



This also applies to any stone where the outside face is deeper than the end within the wall. It is tempting to prop the back of the stone with wedges in order to provide a better surface for subsequent building, and/or a better batter.

This problem and more will be dealt with in part 3, looking at foundations which have sloping rather than triangular aspects, bulges, batter and alignment and horror of horrors vertical stones.

Sean