



Figure 4.82 The placing of a sedimentary stone into a building. The bedding planes should be at right angles to the thrust imposed on them. (From reference 75)

It occurs as sporadic lenticular masses and is derived from pieces of drifted wood buried in isolation which did not pass through a peat phase and thus were not coalified, but underwent decomposition and retained their cellular structure.

Jet was known in the Bronze Age. The Romans thought very highly of it and they established a jet workshop in York. It has since been widely used for personal adornment and jewellery. It was very popular in Victorian times for mourning jewellery.

Much folklore is attached to jet and it is said to protect against the evil eye, against serpents and dogs. It cures toothache, hysteria and epilepsy. It is also a love token and if a woman was given water into which jet had been dipped and she remained continent she was pure. It shatters during acts of infidelity. Proof of these properties has yet to appear in scientific literature.

Special considerations

Placing stone 'in bed'

The bed and the bedding plane are unique characteristics of sedimentary rocks. A block of stone from a quarry can be placed in a building in one of three attitudes in relation to the bedding (see Figure 4.82).

There is now no doubt that stone will resist weathering far better if it is 'in bed' than if it is oriented in any other direction. In effect the thrust on the stone should be at a right angle to the bedding, (see Figure 4.82) and this also seems to apply to having the stone the right way up. In many sedimentary stones the bedding is immediately apparent, but in stones taken from rocks which are massively bedded and wide-jointed the bedding direction may be difficult to determine by eye. Therefore, the way-up of the stone should be marked on each block removed from the quarry face and the mark should be maintained on the stone until it is finally fixed. The disastrous consequences of ignoring the bedding are all too easily seen (Figure 4.83). Even when stones are markedly cross-bedded way-up criteria should still be applied. The phrase 'built on cant' is used particularly in Scotland for stone which has been placed with the natural bed in a vertical position. It was noted that this stone wastes very quickly.⁷¹

The importance of placing blocks of building stone 'in bed' was recognized by the Romans when they built Rome. Blocks of travertine, an excellent building stone when laid on its bed, were sometimes set the wrong way and had speedily to be replaced '... the rostra in the Forum are an example'.⁷² The lesson seems to have been forgotten. Many times a stone is thought to be unsuitable or of poor quality or to

decay easily because due consideration was not paid to the bedding planes of the stone.

Freestone

Any stone, specifically those taken from sedimentary rocks, that can be freely worked in any direction is commonly referred to as a freestone. The term does not give any indication whatever of the nature of the stone. When used in the southern part of Great Britain, a freestone will almost certainly be a limestone, while in the Midlands and northern England it will be a sandstone.

Incompatible stones

Although different types of stones for building may be mixed with impunity, associations of some stones used without due regard to architectural detailing may lead to associative decay. This applies especially to limestone and sandstone association. If a limestone in a building is placed above a sandstone, it will normally be found that the sandstone will decay.

Limestone is essentially calcium carbonate, which is only slightly soluble in pure water. However, water which contains carbon dioxide, which most rain water does, will dissolve calcium carbonate to form calcium bicarbonate, which only exists in solution. Thus when rain falls on the limestone surfaces of building stone some calcium carbonate is dissolved into the water in the form of the bicarbonate, which is unstable. When it reaches the sandstone below, the rain water is absorbed, and, as the water evaporates, calcium carbonate is redeposited within the interstices. The grains of the sandstone are forced apart and the stone disintegrates. This process does not operate when sandstone is used above a limestone because the silica grains of the sandstone are virtually chemically inert. Associative decay has been noted widely in Bristol, which is sited in an area where the Pennant Grit and Carboniferous Limestone were both readily to hand.

If there is no alternative but to use the two types of stone, careful architectural detailing should endeavour to ensure that rain water is thrown clear of the sandstone.

Soiling by wax

Sandstones, many limestones and marbles are absorbent. Surfaces of these stones which are subjected to constant touching, rubbing or smoothing will absorb grease from human hands, sometimes to a significant degree. The wax will oxidize and darken on exposure to air, as will all polishes.

Most igneous and metamorphic rocks, because of their close, tight-grained nature do not suffer. Normally it is only the surface which is dirty. Integral