

## Roofs for the Long Haul: Slate, Clay Tile, and Metal Shingle

By Bernice Oberland

Part of what makes historical houses so interesting is their roofs, and often what makes a historical roof special is the traditional material that covers it – especially slate, clay tile, and metal shingles. Since these three roofing types are perhaps the most long-lived of all materials – yet completely different in characteristics – we'll look at what makes each appropriate for a particular project, budget or just personal taste.

### Slate

When it comes to natural roofing materials, slate is what comes to most people's minds. Slate is stone, of course -- technically any one of several sedimentary rocks that occur in what are called the slate belts of the Appalachian mountain range. The beauty of slate is that when it is quarried in blocks, it can be split along its bedding planes into very thin but very durable sheets that make a highly durable, fireproof, and attractive roof.

Though slate has been used on American roofs occasionally since the 17<sup>th</sup> and 18<sup>th</sup>, century, most colonial-era slate was actually imported – principally from Wales. The picture began to change, though, in the 1850s. Railroads made transportation of building materials much more effective as well as affordable, bringing slate to markets far beyond a few miles from the various slate belts. Coupled with this was the rise in fashion of the Gothic Revival and, especially, the Second Empire styles after 1860. Heavily promoted in their day by the new wave of architectural pattern books, these styles were based upon models in Europe and did their best to recapture the look of the original roofs, which were often slate. The double-pitch mansard roof of the Second Empire style was a particularly ideal showcase for the decorative qualities of slate.

By the late 19<sup>th</sup> century, Victorian house styles such as the Queen Anne seized upon slate not only for its quality as a roofing material, but also for its potential for textural and color variation. Using decorative hex or pointed butts created interesting geometric patterns when laid up in carefully connived courses. Even better was introducing one of the colored slate types – typically red, green, or purple – for added dazzle.

The heyday of the slate roofing industry was the period from about 1897 to 1914 when there were as many as 200 quarries in operation. Though quarry output may have started to decline after World War I, interest in slate roofing clearly remained strong during the building boom of the 1920s as evidenced by the creative ways the material was used. Generally, slate roofs are divided into three types.

In **standard** slate roofs, such as the one shown here, the slates are smooth-faced and have consistent dimensions that produce a uniform roof. Whether the roof is plain or patterned, like the Queen Anne example, it's still a standard roof – by far the most common type.

The next type is **textural**. Here the slates vary in thickness, have uneven tails, and usually combine colors in seemingly random pattern. Though in fact carefully planned, textural roofs evoke the haphazard accretions of a medieval building and became very popular for houses in the Tudor and English Revival styles.

The third type is the **graduated** slate roof. In this type the roof is laid with the largest and thickest slates and the most exposure at the bottom, and then graduated up the roof as the dimensions get smaller. This produces a foreshortening effect that enhances the drama of a large roof, so that while graduated roofs do appear on houses, they most often pop up on large institutional buildings or ecclesiastical structures. No pun intended, college buildings are also likely to have graduated slate roofs.

## Clay Tile

Clay roofing tiles are just about primordial, dating back to before written time in the Far East. Of course they were widely used in the ancient world of classical Greece, Rome, and Egypt. There's wide evidence of early clay tiles in colonial America, from the Dutch settlers of the Hudson valley to the Spanish and French builders in California and Louisiana. Though early tiles were time-consuming to make by hand and always heavy, their big advantages in urban areas were their resistance to fire, low maintenance, and long durability.

Clay tiles were falling out of fashion for roofs by the 1830s, but they enjoyed a resurgence in the 1850s – again due to the vogue for European buildings, in this case the Italian Villa style. But what really gave clay tiles a boost was first the Centennial Exhibition of 1876, which featured several tile roofed buildings. What also helped was the perfection of tile-making machinery, which was becoming common by the 1880s. Clay tile also went hand-in-hand with the Romanesque style popular during the late 19<sup>th</sup> century.

By this time the industry was producing several styles of tiles that are generally divided into two types: **pantiles** and **flat tiles**. Pantiles are basically any tiles with a rounded or cylindrical form, ranging from the Spanish S tile shown here on the left, to the half-round, tapered Roman or Greek tiles. In contrast, flat tiles are all generally flat, but beyond this they may incorporate many variations of decorative and mechanical design. Flat tiles can be simply a flat, thin slab of clay, much like a slate or shingle, or they can incorporate mating ridges at top and sides that allow them to interlock, as in this example in the middle. More sophisticated versions of this concept are English and French shingles, such as the one shown here on the right. That's just the basic field tiles. Completing a roof with historic tile types usually requires specialized tiles to cover ridges and corners, and to make transitions.

Clay tiles held their popularity for large buildings in the 1890s, but the material really found a niche in the early 20<sup>th</sup> century for houses built in Romantic Revival styles – Spanish, Mediterranean, Renaissance, and Mission Revival. Perhaps surprisingly, clay tile was also highly popular for the buildings of the Arts & Crafts movement. For a design ethos that valued natural materials used honestly, clay tile was not only a good fit with the philosophy but one that offered a lot of design possibilities. Here we see pantiles creating a wonderful pattern on the large pyramidal roof of the poster child house of the movement: the bungalow.

Color, is one of the design advantages of modern clay tile roofing. A lovely example is an Arts & Crafts-era school near Philadelphia, where the glaze colors not only vary like turning leaves in fall. They're also graduated in saturation as they go up the roof, being heavier and darker at the bottom, lightest at the top. Another advantage of clay tile is its total plasticity. Clay can be molded into almost any shape, and indeed these flat tiles were formed to look almost like steam-bend wood shingles.

## Metal Shingles

Sheet metal has been used for centuries for flat roofs and later, standing seam roofs. However, by the 1860s, someone had the bright idea to combine the affordability of sheet metal with the beauty of slate and wood shingles, and came up with metal shingles. Actually, advertising of the time was not shy about promoting the idea that these products eliminated the need for a skilled carpenter to install them. Nonetheless, metal shingles were very popular in some areas from the 1880s to the 1910s and many of them are still hard at work today.

The typical metal shingle of the late 19<sup>th</sup> and early 20<sup>th</sup> century is about the size of a roofing slate, but instead of being flat it is embossed with some sort of raised pattern. While often decorative, the embossing has the practical purpose of helping the thin sheet metal hold its shape and adding the

appearance of thickness to the shingle. Seams along the edges interlock with the adjacent shingles and maintain the integrity of the roof.

Raised patterns in vaguely architectural designs, such as Gothic and Eastlake, were recognized across the country by the 1910s, and were sometimes favorites in one locale or another – even a marketing ploy by manufacturers. For example, the maple leaf was used by a couple of Canadian producers. Of course, today there's a whole industry based upon metal shingles for contemporary styles and buildings, but a handful of manufacturers also still make a historic pattern or two specifically for the restoration market.

Never ones to let a good idea go, metal roofing manufacturers couldn't help but notice the popularity of clay tile in the 1910s and '20s. So, it was a logical next step to come out with a sheet metal simulation of pantiles for the ersatz Spanish and Mediterranean look. While the bulk of the original manufacturers are long gone, there is one producer who will make them on special order. Like sheet metal in general, metal shingles and tiles are remarkably durable if they are kept painted – generally with the same paint as metal roofs. Likewise, asphaltic patching materials and coatings are not recommended because they can react with the metals.