The Georgian Group Guides

No 10

ROOFS

A Brief Guide to Georgian Roofs and their Treatment

INTRODUCTION

This short guide is intended as a general outline of the historical development of the Georgian roof — its basic form and structure, as well as the materials and subsequent additions which go to make up one of the most characterful elements of the Georgian house. It also includes basic do's and don'ts to remember when repairing or altering your roof.

Before you begin any repairs or restoration always consult an independent expert. Your local District or Borough Council Conservation Officer, or a national organisation such as English Heritage, The Georgian Group or the Society for the Protection of Ancient Buildings, should be able to help in choosing reliable and experienced craftsmen and suppliers.

HISTORICAL DEVELOPMENT

Whereas pre-Georgian buildings invariably included prominent, high roofs, fashionable Georgian homes were designed so as to ensure that the roof itself remained hidden from view at street level — the roofline being placed parallel with, not at right angles to, the high, street-front parapet. Many Georgian houses were provided with 'M'-shaped roofs with valley gutters — the double pitch being needed to span the many rooms which ran away from the costly, and thus narrow, street front. These 'M'-roofs have since caused many structural problems. Their valley gutters are all too easily choked with rubbish and debris, with the result that water penetrates into the house below.

A wide variety of roof coverings were used in the Georgian period: true slates, clay tiles, stone slates, timber shingles, thatch, copper and of course lead. Whatever covering you discover, it is always best — both aesthetically and structurally — to replace failed elements with the same basic material.

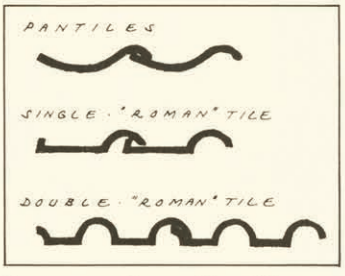
TILES

Clay tiles have been with us for centuries. The simplest clay tile, the peg or plain tile, is rectangular and almost flat — although often with a slight double camber to help shed water. Traditionally-made examples, however, have an individual character and patina which modern mass-produced products fail to recapture. From the mid-19th century onwards tiles with regular, crisp edges were mass-produced by machine.

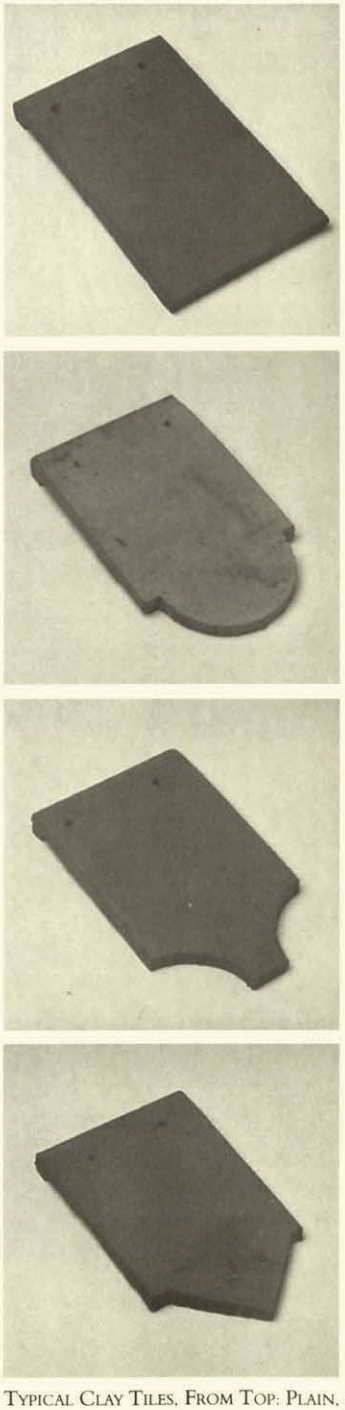
Plain tiles are punctured by two nail holes, used for fixing the tile to the wooden roof battens. Others can be provided with 'nibs', right-angled projections from which the tile can hang on the batten, which were originally formed by pushing the clay forward with the thumb. The pantile was a later, early 18th century development: an S-shaped, nibbed product which could be interlinked with its fellows without the aid of wooden pegs or iron nails. Pantiles should not be confused with so-called 'Roman' tiles, whose semicircular or elliptical projections produce a far more regular and mathematical pattern than the gently-curved pantiles. Also of semicircular shape were the special ridge tiles manufactured to cap the ridges at the top and hip of the roof.

Most 18th century roofing tiles carried no maker's name; they were generally produced locally — and anonymously — by individuals or by small workshops. Thumb and finger prints are often the only clue to the identity of the maker; occasionally, too, you may be lucky enough to find a hand-incised date on the tile.

The manufacture of traditional plain tiles almost stopped completely in the 1930s. Today, thankfully, the industry has been comprehensively revived. Most traditional clay tile manufacture is now centered on the southeastern counties of



PANTILES AND ROMAN TILES *(MICHAEL THORNTON / TRADITIONAL HOMES)*



TYPICAL CLAY TILES. FROM TOP: PLAIN, CLUB, FISHTAIL, ROUND RIDGE *(WILLIAM BLYTH)*

Kent, Sussex and Hampshire, many of whose buildings still display fine examples of the tile-maker's art. Your local authority Conservation Officer can provide you with names of local suppliers of traditionally-made clay tiles.

SLATES

WESTMORLAND SLATES LAID IN DIMINISHING COURSES ON A FINE EARLY 18TH CENTURY 'M'-SHAPED ROOF IN BURY ST EDMUNDS, SUFFOLK *(STEVEN PARISSIEN)*

Slate used as a roofing material was a common feature of slate-producing areas by 1700. Roof slates were not introduced into the capital and other major cities, however, until the mid-18th century. British slates — fixed by nailing into battens — come in four basic varieties: blue-grey slates from the Lake District; grey slates from Mid-Wales; blue or rarer plum red slates from Northwest Wales; and grey-green 'Delabole' slates from Cornwall.

Imported slates are becoming increasingly common in Britain. However, while they are sometimes cheaper, their lifespan may be significantly shorter than British products; additionally, they may weather in a different manner from adjacent, native examples.

In some areas — for example, in the Lake District — slates (and stone 'slates') have traditionally been laid in diminishing courses, the size of the slate decreasing the nearer you get to the apex of the roof. This visually appealing arrangement transfers much of the weight of the roof covering to the strong outer walls, rather than to the fragile roof apex, and also provides a greater surface area from which the rainwater can run off — into the gutter or thrown well clear of the wall. Welsh slates, on the other hand, are often of uniform size. Whatever arrangment you find, it is always best to follow the local pattern.

STONE 'SLATES'

Stone slates are usually (though not always) found in areas with good local stone, and little or no slate or clay tile manufacture. They can vary greatly according to locality, from the old red sandstone slates of Herefordshire and Worcestershire, through the pale, fossil-riven Purbeck slates from the Dorset coast, to the perenially popular limestone slates — in particular the fawn-coloured Collywestons from the East Midlands and the golden Cotswolds from the Oxfordshire/Gloucestershire border. Some stone slates are made by being exposed to frost, allowing them to be split into workable sizes; others are simply mined and dressed to the requisite lengths. By the mid-20th century the mining of stone for traditional slates had almost ceased. Reassuringly, however, quarries are now reopening as the enthusiasm for historic roof coverings is rekindled.

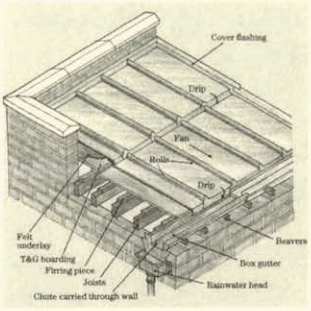
LEADWORK

RAINWATER GOODS CAN ALSO BE OF COPPER: HERE IS AN EXAMPLE OF THE 1780S. FROM THE BROOKING COLLECTION

Sheet lead began to be used to make decorated 'heads' — used (instead of gargoyles) to catch rainwater from the roof and to disperse it in downpipes — in the 15th century. By the 17th century the decoration of both rainwater heads, and of the lead cisterns installed at ground level to hold the rainwater, had become very ornate. A good number of the bulkier cisterns were made not by hammering or cutting sheet lead into various patterns, but by actually casting the tanks in sand beds impressed with carved moulds. Cisterns and rainwater heads are often of great help in determining when the building was completed, since the date is often prominently inscribed as part of the design.

Lead, copper or zinc flashings are an essential part of the roof, helping ensure that the structure remains dry and safely protected by excluding water from the vital junctions between the roof covering and the gutters, dormers and walls.

They should be examined regularly, and professionally inspected every five years. Today many lead flashings are replaced in zinc — which, though it has a shorter lifespan than lead, is cheaper, and still lasts far longer than other alternatives to lead. Cracks in both lead and zinc sheeting should not be soldered shut: this will simply prompt further cracking in the near future.



ANATOMY OF A LEAD ROOF *(COURTESY TRADITIONAL HOMES MAGAZINE)*

MAINTENANCE AND REPAIR

GENERAL ROOF REPAIRS

If you are contemplating roof repairs or alterations, it is helpful to bear a few simple rules in mind. Firstly, do not alter the roof so that it projects further (either higher or further forward) than that of its neighbours. Secondly, ensure that any repair or addition is in keeping with the existing forms and materials. If there is any original roof structure left, take care to see that this is preserved: you may not want to retain it, but subsequent owners of the house may wish to do so. It is also worth taking the opportunity of roof repair or maintenance while access is easily available to inspect every element of the roof structure. Roof inspections (both external and internal) should be carried out every year — preferably after the autumn gales. And, of course, never neglect fallen or slipped slates or tiles: what can take minutes to repair can, if left alone, result in serious long-term damage to your home — which will probably include an outbreak of dry rot. More damage is caused to houses from water penetration than from any other single factor.

While much of the fabric of your house may be Georgian, or indeed post-Georgian, the roof structure may actually be pre-Georgian. If so, contact the Society for the Protection of Ancient Buildings (see Sources, below) for advice and information on how to repair old timber roofs.

Roof repair is such a tricky problem that it is always worth consulting a recognised expert — a qualified surveyor or architect — before you begin. This can prevent costly mistakes being made later on. Additionally, remember that, whatever type of material you use to cover your roof, if your house is listed — or even if it is in a Conservation Area — you may need some form of local authority consent before you proceed. Detailed procedures for roof repairs can be found in the excellent Edinburgh New Town Conservation Committee manual and in other works cited in Further Reading, below.

TILING REPAIRS

Secondhand slates can be used to repair a slate roof, as long as they have not deteriorated or softened too far and their nail holes have not been over-enlarged. (Many clay or slate tiles tend to 'delaminate' with age — the water penetrating the tile and causing it to split into layers.) However, it may be more cost-effective to buy a few new tiles, rather than spending weeks attempting to find suitably matching examples. If using either new or secondhand examples that are not exact matches, try and position the replacement tiles in areas which

are not easily visible. Alternatively, try and scatter them about the old tiling so they do not form an instantly-recognisable 'patch'.

When replacing tiles or slates, ensure that the new tiling matches the existing work in texture, size and colour as far as possible. On an eminently practical note, remember too that tiling repairs can be dangerous for passers-by — so make sure that no-one is in the line of fire when tiles become dislodged and fall to the ground. (Be careful, too, of those who are working on the roof itself: roof structures are often more fragile than they look.)

If you have to replace all the existing tiles or slates, it may be helpful to lay down roofing felt first. This gives added weather protection. Take care, though, to ensure that the felt and the overlaid material is properly ventilated, otherwise condensation-related problems will occur. And felt may not be necessary (and may actually prove quite unsightly) if the tiling — say, on a front porch — is visible from below. Felt underlay is also generally inappropriate for most stone roofs, since stone slates are often physically bedded in mortar.

Rotten battens should always be replaced, as should any of the old iron nails which have have rusted away. Any new, replacement battens are best pre-treated against fungal attack, and fixed with stainless steel nails. New fixing nails for slates or tiles should preferably be non-ferrous: made of copper or, if this is unobtainable, of stainless steel — not iron or galvanised steel. If rare oak pegs were used and still survive, try and find a local builder or supplier who can replace like with like.

CONCRETE PANTILES DISFIGURE THIS FORMER METHODIST CHAPEL OF 1811 *(STEVEN PARISSIEN)*

Concrete tiles are quite unsuitable for historic buildings, both in aesthetic appearance and the weight they bring to bear on a roof structure not intended to take such loads. A recent judgement by a Department of the Environment inspector noted that 'The stark and brash appearance of the concrete tiles' in question bore 'no resemblance to the mellowed and weathered appearance of second-hand clay pantiles'. The new tiles also contrasted unfavourably with the old brickwork below. As the inspector in this case — which concerned the re-roofing of listed farm outbuildings — sensibly concluded: 'conversion of traditional buildings must entail care, trouble and expense if their character and appearance is to be retained'. (Details of this case, a prosecution won by Newark and Sherwood District Council, can be found in *Context* magazine, June 1990.)

Cement fibre 'slate' or reconsitituted stone tiles may initially appear a more acceptable substitute for the real thing than concrete products. The effect, however, is often equally unsightly. Such tiles inevitably look too new and, even if they have been provided with artificial 'weathering', too obviously machine-made. And this effect will not necessarily disappear with weathering, as many of the lichens which give so much character to old roofs will not grow on these modern hybrids. Artificial products which purport to mimic real slates never convince and are always unacceptable.

When repairing failed tiling, it is never a good idea to try and bed your new tiles in mortar (unless this was originally used for stone 'slates'), nor to cover the lot with tar, bitumen or a similar finish. None of these methods necessarily stops water penetration: if a roof needs repairing, no amount of 'sealing' — which generally results in a visually unsightly mess, and prevents the tiles being used again — will help eradicate the basic problem.

Methods of repairing or replacing stone-tiled roofs can be found in Adela Wright's recent guide to traditional materials, which also includes a list of modern suppliers of roofing slates and stone slates, while an excellent guide to timber roof repairs can be found in James Boutwood's SPAB Technical Pamphlet. (For both of these works see Further Reading, below.)

NOT ONLY IS THE REPLACEMENT GUTTERING ON THIS STONE HOUSE IN DEVON OF WHITE PLASTIC, BUT THE NEW DOWNPIPE DOES NOT EVEN REACH TO THE GROUND —SPEWING WATER DOWN THE NEIGHBOURING WALL, WHICH IS ALREADY BEGINNING TO FAIL *(STEVEN PARISSIEN)*

LEADWORK AND GUTTERING

The failure of lead roofs often stems from a simple problem — usually involving the incorrect fixing of the original sheets, exacerbated by the subsequent contraction and expansion of the metal. After a number of years, roofing lead — exposed as it is to great variations in temperature — will distort to an extent where it is of little practical use. It is then time to replace it. The Lead Development Association (see Sources, below) can advise on methods of repair, and on local suppliers. Whatever you do, never use bitumen or other 'sealants' to repair cracks in leadwork; they fail to solve the problem in the long term, and are also difficult to remove at a later date. And always ensure that the lead sheeting has sufficient ventilation below — otherwise rapid corrosion can occur. Details of the treatment of leadwork and of other roof repairs can be found in the Edinburgh New Town conservation manual (see Further Reading, below).

Gutters and downpipes leading to and from rainwater heads were for much of the Georgian period made of softwood, sometimes lined with lead. By the end of the 18th century, however, many were being made from cast iron. If you can, always replace failed cast iron sections with pieces in the same material and shape. In some cases cast (not extruded) aluminium or copper can prove an acceptable alternative. It is always, however, worth having a rare timber gutter replaced in wood; if you encounter one, it will probably be constructed of elm. Modern plastic gutters may be cheaper, but are often visually offensive as well as more susceptible to damage; nor is it really known how long they will last. And when fitting new metal downpipes, make sure that they are spaced far enough from the wall to allow the water to run down the pipe, rather than the more vulnerable masonry, in the event of a leak. This will also allow for easy repainting — and regular repainting is vital if the metal is to be properly protected from rust.

Remember, too, that it is vital that your guttering system is fully maintained and in perfect working order. Any failures may prompt serious structural harm as a result of water penetrating or saturating the masonry behind. Valley gutters are special areas of concern; it is important that they are kept free of rubbish or other impediments. One simple way of checking whether you have any gutter failures is to have a look round the outside of your home when it is raining strongly: any problems will be immediately, and wetly, obvious.

Some roofing may originally have been executed in copper rather than lead. In this case, although replacing like-for-like is always the better policy, lead sheets may be cheaper.

GUTTERING SHOULD ALWAYS BE KEPT FREE OF PLANTS AND DEBRIS *(STEVEN PARISSIEN)*

SHINGLES

Fewer and fewer Georgian houses now retain their original wooden shingle roofs. If, however, you find your house still has one, try and replace any failed shingles with copies made of oak (or, failing that, imported sweet chestnut), fixed with copper nails. (Cedar shingles are rarely the correct size, or the correct texture and colour, to use in this context.) It is particularly important with this form of roof covering to ensure that there is sufficient ventilation to the roof — otherwise serious decay can occur.

THATCH

A thatched roof on a rural Georgian property can greatly enhance the building's character and value. It is therefore important to get any thatching repairs right. Ensure that you are using the correct type of material for

your region — whether it is 'Norfolk Reed' (made from water reeds), 'Devon reed' (from long straw), sedge, or other, rarer thatching materials. Details of the approaches and methods to be followed when re-thatching old properties can be found in the SPAB's excellent technical guide on this subject (see Further Reading, below).

Chimneys

With the installation of central heating, many chimneystacks and flues are now redundant. However, it is important to leave them in place. The demolition of a chimneystack can completely alter the visual balance of an individual facade, or even of a whole street; additionally, subsequent owners may want to use the fireplace again — and find that they are unable to. Chimneystacks also often serve an important structural function, anchoring the walls and internal divisions; thus any demolition can cause serious structural weaknesses. When altering the Georgian or Victorian home for modern requirements, always ensure that any changes you make are fully reversible by later generations.

Ensure, too, that your chimneystack and chimneypot are well maintained. Any collapse will endanger not only your roof, but the rooms below. Full details of the repair of chimneystacks are given in G B A Williams' SPAB Technical Pamphlet (see Further Reading, below).

The Mansard Roof

Mansard roofs (named after the late 17th century French architect François Mansard) can be defined as those which have two, differently-pitched slopes on each side — enabling additional accommodation to be inserted behind the lower, steeper slope.

Mansard roofs are a highly attractive feature of a house, and are certainly infinitely preferable to a flat, asphalted covering with a vertical pitch. Their spatial qualities, however, are frequently abused by less sympathetic architects and builders. Often the lower 'pitch' is executed to rise almost vertically, its tile-hung exterior hiding what is effectively an additional floor — but one which, by posing as a roof, can comply with building height regulations. Such solutions can ruin the appearance of a house, making it look top-heavy and ridiculous, while also causing undue weight to bear on the structure below.

A Hipped Mansard Roof on a Fine, Brick-built Kent House of c.1704. *(Steven Parissien)*

The Dormer Window

Great care, too, must be taken when designing dormer windows to give light to any new accommodation being planned for the roofspace. Dormers should reflect the style of the building as a whole, and should mirror the size, disposition and spacing of the windows and bays below. They should also be given pitched roofs if this configuration is appropriate for the style and context of the building. The shape of dormers, however, varies widely from region to region; it is thus best to talk to your local Conservation Officer before attempting to add or to repair them.

Dormers are always to be preferred to skylights, especially on main elevations. Skylights can so easily ruin the visual appearance of the whole building if used unwisely, their blank simplicity providing a painful contrast with the aged roof covering and masonry. If there is simply no alternative to the installation of skylights, try and ensure that they are hidden by the parapet from street views, or installed on rear or hidden roofs, and that they at least reflect the size, proportions and disposition of the windows underneath.

SOURCES OF INFORMATION

Clay Roofing Tile Council, Federation House, Station Road, Stoke-on-Trent ST4 2TJ, tel. 0782 747256.

Lead Development Association, 34 Berkeley Square, London W1 6AJ, tel. 071 499 8422.

Master Thatchers' Association, 34 Bradford Rd, Toddington, Beds, tel. 05255 3610.

National Federation of Roofing Contractors, 15 Soho Square, London W1V 5FB, tel. 071 734 9164.

Research and Technical Advice Service, English Heritage, Keysign House, 429 Oxford St, London W1R 2HD, tel. 071 973 3000. Expert advice on how to proceed with repairs.

Roofing Tile Association, 60 Charles Street, Leicester LE1 1FB.

Royal Institute of Chartered Surveyors, 12 Great George Street, London SW1, tel. 071 222 7000. Advice on skilled and indepedent surveyors.

The Society for the Protection of Ancient Buildings, 37 Spital Square, London E1 6DY, tel. 071 377 1644. Sound advice on building history and structural repairs, including an invaluable range of advice sheets.

The Tiles and Architectural Ceramics Society, c/o room H317, H Block, Centre for the Arts, Leeds Polytechnic, Calverley St, Leeds LS1 3HE. Can supply a list of traditional tile manufacturers.

Traditional Homes magazine, Victory House, 14 Leicester Place, London WC2H 7BP, tel. 071 437 9011. Useful articles available in back numbers.

FURTHER READING

M A Aston, ***Stonesfield Slate*** (Oxon Museums Service, 1974)

F Bennett, ***Roof Tiling and Slating*** (1935)

Christopher Brereton, ***The Repair of Historic Buildings*** (English Heritage, 1991)

Alec Clifton-Taylor, ***The Pattern of English Building*** (Batsford, 1962)

Alec Clifton-Taylor and A S Ireson, ***English Stone Building*** (Gollancz, 1983)

Pamela Cunnington, ***Care for Old Houses*** (A & C Black, 2nd ed 1991)

Davey, Heath, etc ***The Care and Conservation of Georgian Houses*** (Edinburgh New Town Conservation Committee / Butterworths 3rd, ed. 1986)

C Dobson, ***Slating and Tiling*** (Langley, 1957)

English Heritage, ***Mansard Roofs*** (EH guidance leaflet, 1990)

Lead Development Association, ***Lead Sheet in Building*** (1978)

P M Sutton-Gould, ***Decorative Leadwork*** (Shire, 1990)

Laurence Weaver, ***English Leadwork*** (1909)

Westminster City Council, ***A Guide to Roof Alterations and Extensions*** (1989)

Adela Wright, ***Craft Techniques for Traditional Buildings*** (Batsford, 1991)

SPAB PUBLICATIONS (available from the Society for the Protection of Ancient Buildings, 37 Spital Square, London E1 6DY, tel. 071 377 1644):

James Boutwood, ***The Repair of Timber Frames and Roofs*** (Technical Pamphlet No.12)

Peter Brockett and Adela Wright, ***The Care and Repair of Thatched Roofs*** (Technical Pamphlet No.10)

G B A Williams, ***Chimneys in Old Buildings*** (Technical Pamphlet No.3)

The Georgian Group exists to save Georgian buildings, townscapes, monuments, parks and gardens from destruction or disfigurement, and to stimulate public knowledge of Georgian architecture and Georgian taste. The Group offers a yearly programme of visits and educational events; applications for membership can be obtained from the Group office at 6 Fitzroy Square, London W1T 5DX, tel. 020 7529 8920. The Group is a registered charity (no.209934) and benefits from Covenants.

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