

The Georgian Group Guides

Nº1

WINDOWS



A Brief Guide to the Conservation and Repair
of Windows in Georgian Buildings

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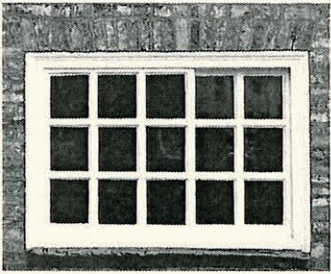
The UK's market leader in the renovation and upgrading of sash windows

COVER PICTURES, CLOCKWISE, FROM TOP LEFT: BAROQUE WINDOW FROM THE ORANGERY AT KENSINGTON PALACE; REGENCY CANTED BOW FROM NORTH LONDON; SASH WITH MARGIN LIGHTS; OCTAGONAL GLAZING IN A WINDOW OF 1835.

No element does more than fenestration to enhance the character of Georgian buildings; this is no less true of modest terraced houses and country cottages than of grander, multi-windowed piles. Yet in recent years the defacing of Georgian buildings with inappropriate modern windows has become commonplace.

This leaflet aims to help reverse the trend. It is not designed as a technical manual – a list of further reading can be found at the end which provides more information on technical and historical aspects of the window – but as a general guide for homeowners thinking of repairing or replacing their windows. Before starting any repair of Georgian windows, consult the Conservation Officer of your local District or Borough Council. And remember, if your house is listed – or in some cases even if it is unlisted but in a Conservation Area – you may need Listed Building Consent or planning permission from your local council before any alterations or repairs can be undertaken.

HISTORY

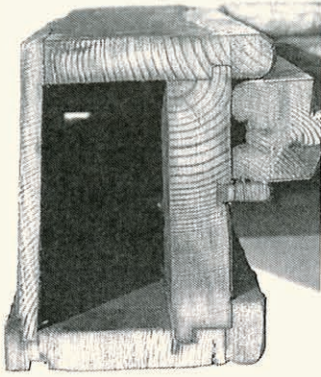


YORKSHIRE SLIDING SASH, WHICH OPERATES FROM SIDE TO SIDE.

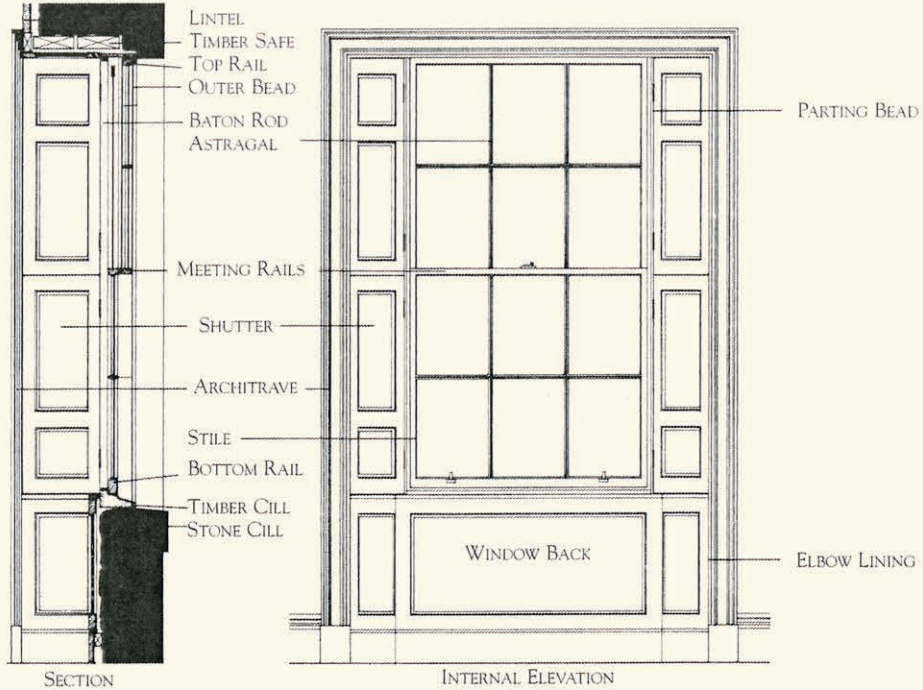
Vertical sliding sash windows appeared in Britain during the 1670s, probably deriving from the simpler horizontal sliding sash known in England as the 'Yorkshire sash'. Being better suited to the British climate and allowing more light into fashionable Georgian interiors, the sash window quickly replaced the vertically-divided casement window prevalent during the seventeenth century. In the earliest examples of sash, the window was only 'single-hung', i.e. only the lower light was provided with pulleys, the upper frame being pegged or immovable. But by the mid-eighteenth century double-hung sashes (see cover) were most common.

In contrast to modern metal or plastic windows, there was never a standard Georgian window or pane size. An arrangement of six panes over six was, however, widespread from c.1700 onwards. While early panes were almost square, it is common to find that later examples emphasise the verticality of the window, especially during the late eighteenth century with the fashion for elongated first-floor windows. Individual panes were thus generally taller than they were wide, in accordance with the theory of the 'golden section'. As the eighteenth century progressed, the manufacture of larger panes of glass became easier and glazing bars became thinner. These bars were moulded in a variety of ways, the robust ovolo form gradually giving way to the lamb's tongue, ogee and other, more slender, mouldings.

ANATOMY OF A WINDOW

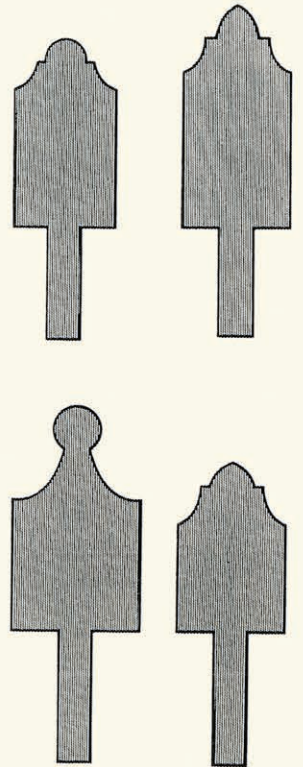


CROSS-SECTION OF A SASH BOX, FROM WILLIAM WILKINS'S ST. GEORGE'S HOSPITAL OF 1826-9, NOW IN THE BROOKING COLLECTION (LARK GILMER).



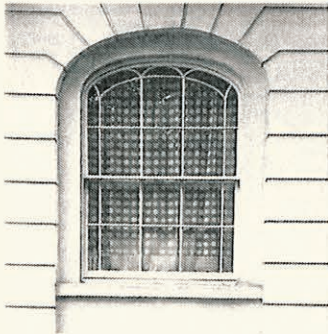
GEORGIAN GLASS

A vital component of the Georgian window was, naturally enough, its glass. Yet this feature is often the first casualty of window repair or replacement. It is important to try to save Georgian glass wherever possible, whether it is crown glass (cut from a blown disc) or the less expensive muff, cylinder or broad glass – cut from an opened-out cylinder. Crown and muff glass are not machined totally flat, in the manner of modern sheet, plate or 'float' glass, but catch the light in a variety of fascinating ways; the effect they produce contrasts sharply with the dull uniformity of plate glass, which by 1900 had largely replaced the older, less exact forms. Crown glass was also occasionally punctuated by 'bull's-eye' indentations, representing the point where the pontil – the rod which held the glass while it was spun out – was disengaged from the original glass circle. These imperfect panes were generally reserved for windows in rear elevations and were not arranged in the manner of modern 'Georgian-style' bottle-glass bows, which are both historically inaccurate as well as aesthetically unappealing. Crown glass is now difficult to find, but some manufacturers do produce a tolerable substitute (see Useful Addresses): even 'greenhouse glass' is preferable to modern plate varieties in replacement sashes and casements. Government Guidance (PPG 15) states: "Great care should be taken to protect old glass during building works. If it is necessary to repair the window frames, they should be reset." Make sure that if your windows are taken away to be repaired, the original glass is not destroyed in the process of repair.



VARIOUS ASTRAGAL MOULDINGS.

MARGIN LIGHTS IN A SOUTH LONDON STUCCOED TERRACE.



DRAUGHTS, NOISE AND HEAT LOSS

In recent years, plastic (uPVC) and metal windows have become more widespread as a result of intense marketing. In particular, the understandable wish to reduce fuel bills has been used as an excuse to rip out existing Georgian sashes and to replace them with plastic or metal products incorporating double glazing. Such double glazed windows not only diminish a Georgian façade but also represent the least cost-effective method of insulating a house. There are a number of other, less costly, alternatives that can be used instead.

Is there a cheap solution to the problem of draughts and noise?

Yes. The best and cheapest solution is to introduce draught strips which fit unobtrusively into narrow grooves in the stile or which fit in place of the parting bead. Both draughts and noise can be reduced by this method. There is little point in fitting costly double glazing until this has been tried.

What about heat loss?

There are still a number of methods of ensuring against heat loss that are cheaper than double glazing. A clear perspex blind will do the job well; if this is not available, try a plain sheet of lightly-framed glass screwed behind the window that can easily be removed in the summer. Remember that heat is lost not so much through layers of glass as through cracks round the edges of the window rails; thus repeated skins of modern glass not only represent an expensive method of heat insulation but also fail to solve the key problem.

Is secondary glazing any use?

Secondary glazing – where sliding or hinged glass panels in timber frames are fitted behind the window – is not necessarily incompatible with the historic character of a building and is certainly cheaper than installing a new, double-glazed unit. Such a solution is cheap, provides effective heat, sound and draught insulation and can be easily installed by a competent joiner. It can be removed if a subsequent owner prefers to live with the original window alone. However, care must be taken to ensure that any divisions in this glazing are hidden behind the meeting rails or the glazing bars of the sash and that the secondary glass is not smaller than the glazed area of the original window.

Should I double-glaze individual panes of my Georgian sash?

The Georgian Group does not recommend this option. Individual panes of some early eighteenth century windows can sometimes be double-glazed, since the rebates of the thick ovolo mouldings are wide enough to accommodate the resultant 'glass sandwich'. Remember, though, that even with such windows the increased weight of the sashes may prove too great for the sashcords and the weights and you may need



TYPICAL SIX-OVER-SIX PANE SASH. COMPARE WITH THE UPVC REPLACEMENTS BELOW AND OVERLEAF.

UPVC REPLACEMENT WINDOW
SUBTLY DISCORDANT.



to dismantle the whole sash box to replace them. And the resultant visual effect is often dark and reflectant.

Individual double glazing should certainly not be installed in any circumstances on Georgian windows with slender glazing bars, which cannot take two panes. Note, too, that sealed double-glazed units can fail where the glass sheets are bonded.

Are shutters effective in providing insulation?

Yes. Check to see if there are shutters surviving in the shutter boxes at the sides of your windows. (On occasion you may even find the rarer vertical shutters, stored at the bottom of the window). If so, you will have no need to install further insulation. Additionally, shutters are an effective security device. Remember that Georgian rooms were not designed to be wholly airtight: modern sealed insulation systems installed in them often lead to condensation problems, since the room is not able to 'breathe' properly.

WINDOW REPAIR

It is important to remember that the failure of one of the component parts of a timber sash or casement does not necessitate instant replacement of the entire window. Undoubtedly problems can occur in the timber parts of Georgian sashes, just as with other types of window; yet virtually every part of a Georgian window is easily renewable. The key point to remember is that as much as possible of the original fabric should be kept. An original Georgian building is always more valuable – historically and financially – than a replica.

Is repair of the timber parts of a sash easy?

Yes. The lifespan of a timber sash window, if in need of some repair in a specific section, can be prolonged by 'piecing in' new sections of wood in the affected areas, inserting small fungicidal plugs into predrilled holes in the wooden frame or simply replacing the whole of the decayed element, e.g. installing a new stile or sill. With the last option, it is best to get an expert to use treated timber for the repairs. Simple problems like a painted-shut or swollen sash can be easily solved with the right tools – not a screwdriver, but a razor or plane respectively.

Can sashcords be replaced, too?

Yes – easily. Access to the weights can be obtained by prising out the 'pockets' (or 'pocket pieces') at the bottom of the pulley stiles on each side of the window or shutter stile. However, given the weight of the sashes and the complexity of the task, it is preferable for re-cording to be done by a joiner. (N.B. A sash may be stiff or immovable simply because the pulley has broken or rusted or has been overpainted). Sashcords can be purchased from most ironmongers or builders' merchants; they are very cheap and can be of jute, cotton or nylon.

THESE PLASTIC REPLACEMENT WINDOWS PAY SCANT RESPECT EITHER TO APPEARANCE OR THE MECHANICS OF THE ORIGINAL GEORGIAN SASHES.





A PARTICULARLY UNSYMPATHETIC WINDOW REPLACEMENT AND LOSS OF SURROUNDING MOULDINGS.

Some sashes built or repaired in the later nineteenth century may be fitted with a metal chain in place of a cord; as with cord, in any repair the chain must be kept tense.

What about glazing bars?

Individual glazing bars can be replaced; again, though, this ought to be done by a competent joiner. Some of the original bars may still remain in the window, providing an example of the correct moulding for the new ones. Otherwise, new moulded bars can be made up by competent joiners who can set up their machines for a small order – not from large national window firms, who, on the whole, can provide only their own standard approximations. On no account stick false, two-dimensional plastic strip bars onto the surface of the glass as a substitute: they fulfil no functional rôle, they look inauthentic and after a short exposure to rain and frost the glue will fail and the bars fall off.

Aren't plastic or metal windows just as good as wooden sashes?

No. The need for the repair or replacement of Georgian windows should never be used as an excuse to install plastic, steel or aluminium products: these bear little relation to the originals and are wholly unsuitable. Georgian windows are recessed behind the exterior wall and the panes are similarly recessed behind the window frame. By contrast, most modern windows are fitted flush with the exterior wall surface and the panes are fitted flush with the frame. This destroys the pleasing effects of depth and shade in a Georgian façade, especially as the new windows rarely possess lower sashes more deeply set than the upper sash, in the fashion of a traditional window. In a recent case concerning the substitution of modern plastic windows for Georgian timber sashes, the Planning Inspector judged that the new windows were 'discordant... incongruous and unacceptable' on account of 'the large flat areas of glass, the imitation plastic glazing bars sandwiched between the panes and the absence of the three-dimensional effect which is a characteristic of sash windows'.

Plastic vertically-sliding sashes are also unsuitable for use in a Georgian façade. The plastic 'glazing bars' inserted between the double panes of these windows are clearly discernible as shams. Also, the installation of standard-sized modern windows often necessitates the demolition of the original brick arch and much of the window surround in order to fit the new, larger window into the wall.

But don't plastic or metal windows last longer?

It is not true that timber sashes are more fragile and vulnerable than modern metal or plastic products. An independent study by the Northern Consortium of Housing Authorities concluded that installing softwood sashes was a more cost-effective option than providing metal or plastic replacements. Metal windows corrode and, in the case of iron, expand. Metal is also a poor insulator and internal condensation is more likely to occur when they are fitted. In addition, they only come in a limited range of colour coatings, which themselves have been known to deteriorate as pollutants build up. Plastic windows come in only one colour – white,



THIS IS NOT ACCEPTABLE...



NOR THIS...



...AND CERTAINLY NOT THIS.

which tends to discolour rapidly with age.

The double-glazing salesman may say that he guarantees a life expectancy of some years for his products. Remember, though, that most Georgian timber windows have lasted for two hundred years or more, whereas studies indicate that modern plastic windows can fail after only twenty years – and the fittings in as little as five years.

Are stained hardwood sashes an acceptable substitute for Georgian softwood windows?

Stained or varnished hardwood windows are becoming more common. They are certainly better than plastic or metal examples but are still historically incorrect and look incongruous in a Georgian façade. Try to avoid them. If you have to use them, make sure they are painted.

When should Georgian windows be wholly replaced?

Replacement of windows should be a last resort, when repair of individual parts, or the installation or insulation method, has proved impractical or insufficient. If fitting a new window, bear in mind the advice given by the Government in PPG 15: 'The insertion of factory-made standard windows of all kinds, whether in timber, aluminium, galvanised steel or plastic, is almost always damaging to the character and appearance of historic buildings'.

If you have a traditional joinery firm in your area, they should be able to make you a good replacement sash. Some local councils produce lists of recommended suppliers or repairers in their area; even if they do not, always ask your local Conservation Officer for names of reliable firms.

Never forget the legal requirements necessary for any window replacement. In particular, remember that Listed Building Consent from a local authority is needed for any alteration to a listed Georgian building that goes beyond normal repair. If in doubt about these requirements, you should again contact the Conservation Officer of your local District or Borough Council.

What happens if I go ahead and install modern windows in a listed Georgian house without consent?

A growing number of local authorities are now keen to pursue enforcement action against the unauthorised insertion of unsuitable modern windows into listed or otherwise protected buildings. This can place the house owner in an embarrassing financial position, particularly if he or she has installed bespoke plastic windows which, once removed, cannot be resold. It is the householder, not the window supplier, who will face enforcement action and have to bear the expense and inconvenience of making good the damage.

Georgian timber sashes need regular painting but often cost less to install than plastic or metal examples and can be easily adapted to provide good effective insulation for your house. Their substitution by unsympathetic modern windows, at considerable cost, not only damages the appearance of your house but can reduce its value.



THIS UPVC REPLACEMENT MAKES NO ATTEMPT EVEN TO MIMIC A SASH.

Ventrolla®

SASH WINDOW RENOVATION SPECIALISTS

VENTROLLA – PROVIDING SASH WINDOW SOLUTIONS

Georgian properties are naturally rich in character and architectural features. Not least amongst these is the sash window, which has played an important role in the structural design of period properties and listed buildings over the centuries.

Unfortunately, the effects of years of wear and intensive use inevitably take their toll on even the most solidly crafted of original windows, with the result that rotting, coupled with draughts and rattles, can become problematic to the homeowner.

Help is at hand in the form of Ventrolla, who provide a specialist window renovation service specifically geared towards conserving and improving sash windows. Following a detailed inspection and assessment of the condition of each window, Ventrolla provide a bespoke and comprehensive window repair and upgrading service, at the end of which rotting timber will have been repaired and draughts and rattles virtually eliminated. Furthermore, Ventrolla's award-winning window upgrading system improves energy efficiency and reduces the effects of external noise to levels comparable with double-glazing.

For further information on Ventrolla's national sash window renovation service contact 0800 378 278.

USEFUL ADDRESSES: GLASS

The Glass and Glazing Federation
44 Borough High Street, London SE1 1XP Telephone: 0207 403 1177
The Worshipful Company of Glaziers
9 Montague Close, London Bridge, London SE1 9DD Telephone: 0207 403 6552
James Hetley & Co.
Glasshouse Fields, London E1W 3JA Telephone: 020 7790 2333
The London Crown Glass Company
21 Harpsden Road, Henley on Thames, Oxon. RG9 1EE Telephone: 01491 413227
Draughtproofing Advisory Association
P O Box 12, Haslemere, Surrey GU27 3AH Telephone: 01428 654011
Storm Windows Ltd. (secondary windows)
Unit 7, James Scott Road, Halesowen, West Midlands B63 2QT
Telephone: 01384 636365
British Woodworking Federation
56-64, Leonard Street, London EC2A 4JX Telephone: 020 7608 5051

See also the historical displays in the Science Museum, London SW7,
and The Pilkington Glass Museum, St. Helens, Lancashire.

FURTHER READING

The Care and Conservation of Georgian Houses ed. Davey, Heath (1978)
A History of Glassmaking R. W. Douglas and S. Frank (1972)
The Origin of the Sash Window Henty Louw, *Architectural History* vol.26 (1983)
Sash Windows English Heritage (1989)
uPVC Windows: The Facts Hertfordshire County Council (1990; available from
Chester-le-Street District Council, Co. Durham DH3 3UT)
The Historic Home Owner's Companion Matthew Saunders (1987)
Looking after your Sash and Case Windows: a Short Guide for Homeowners
Historic Scotland
The Repair of Wood Windows Andrew Townsend and Martin Clark for SPAB (1991)
Planning and the Historic Environment (PPG15) DoE (1994).
Framing Opinions, Timber Sash Windows, Draught Proofing, Energy Saving
English Heritage Leaflets (1997)
Plastic Windows in Historic Buildings Georgian Group (2003)
Several planning authorities produce supplementary planning guidance or advice on
window conservation. *The Conservation and Renewal of Timber Windows*,
by David Wrightson for Rochford District Council (01245 437675) is especially good.

The Conservation Officer of your local District or Borough Council will be able to advise you on suitable local joiners and window manufacturers.

The Georgian Group (registered charity 209934) exists to save Georgian buildings, monuments, parks and gardens from destruction or disfigurement; to stimulate public knowledge of Georgian architecture and Georgian taste; and to promote the appreciation and enjoyment of the Classical tradition. To join the Group or find out more about our work, contact us at 6 Fitzroy Square, London W1T 5DX, telephone 020 7529 8920, or visit our website (www.georgiangroup.org.uk).