

**THE DEVELOPMENT OF THE WINDOW IN
IRELAND *c.* 1560 – 1860, WITH AN ANALYSIS OF
THE IMPLICATIONS FOR CONSERVATION**

VOLUME ONE: AN HISTORICAL SURVEY

**VOLUME TWO: CONSERVATION PHILOSOPHY, INVENTORIES
AND DOCUMENTATION**

VOLUME THREE: ILLUSTRATIONS

VOLUME ONE

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LIST OF ABBREVIATIONS USED

Add	Additional manuscripts
BM	British Museum
<i>CARD</i>	<i>Calendar of Ancient Records of Dublin</i>
<i>CSPI</i>	<i>Calendar of State Papers, Ireland</i>
DCA	Dublin Corporation Archives
<i>DHR</i>	<i>Dublin Historical Record</i>
HMC	Historical Manuscripts Commission
IMC	Irish Manuscripts Commission
IAA	Irish Architectural Archive
<i>IGSB</i>	<i>Irish Georgian Society Bulletin</i>
<i>JKHAS</i>	<i>Journal of the Co. Kildare Historical and Archaeological Society</i>
<i>JCHAS</i>	<i>Journal of the Cork Historical and Archaeological Society</i>
<i>JHC</i>	<i>Journal of the Irish House of Commons</i>
<i>JRSAI</i>	<i>Journal of the Royal Society of Antiquaries of Ireland</i>
NGI	National Gallery of Ireland
NLI	National Library of Ireland
<i>NMAJ</i>	<i>North Munster Antiquarian Journal</i>
OPW	Office of Public Works
PROI	Public Record Office of Ireland / National Archives, Dublin
PRO	Public Record Office, Kew
RHK	Royal Hospital, Kilmainham
RIA	Royal Irish Academy
RIAI	Royal Institute of the Architects in Ireland
SPAB	Society for the Protection of Ancient Buildings
TCD	Trinity College Dublin
UAHS	Ulster Architectural Heritage Society
<i>UJA</i>	<i>Ulster Journal of Archaeology</i>

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ABSTRACT

This study relates the historical development of fenestration in Irish buildings (mostly those of the classical tradition), using buildings or windows characteristic of each definable architectural period (chosen from published sources or site work). It shows that there is a close relationship between window design and the Irish interpretation of the classical idiom, and that change in the period under review came about from a fusion of aesthetic ideals and ongoing technological development. Because of the aesthetic and practical importance of the constituent elements in the window, a detailed mention is made of the types of glass and framing materials used. The history of window-glassmaking in Ireland is also chronicled. The details and elements of the windows used during this period – types of glazing, shaped windows, and openings, frames and lights – are examined (referring back to the important windows introduced in the historical account) to underline the variety found at every period.

The foregoing analysis establishes the importance of fenestration in Irish architecture, especially that of the classical style. Irish developments are then set within the North European classical architectural context, in which fenestration has long been recognised as a fundamental design tool. The research carried out brings to light the high standards of design and workmanship achieved in Ireland, underpinning the argument for conservation. The philosophy and practicalities of conservative repair are discussed in an inquiry into the requirements for window conservation, expanded upon by reference to case histories and discussion of educational and financial matters.

A glossary of terms is given and five appendices complement the text. Two inventories present the physical evidence and documentation used in this research, listing the relevant details of the key buildings and the window-glasshouses. There is an essay on the glazing fraternity, and some information is given on Irish window joiners and carpenters. The final appendix defines some of the more commonly used conservation terms.

INTRODUCTION

The size, scale, material, type and ordering of windows in a building (where they are original to it) define the style, era and sometimes the architectural type more than almost any other feature or detail. To change any of these relationships in the fenestration is to alter the original intention of the designer or builder and to in some cases to devalue the building as a whole. Inaccuracy in restoration or replacement seriously affects the authenticity of a building, its historical reading and the original aesthetic. The survival of windows of different ages provides a sure key to the appearance of the original built fabric of each specific period. This thesis asserts that windows are themselves important artefacts, and that fenestration is integral to the architecture of all periods and styles in Ireland, and especially so during the classical era. The obvious contribution made by the window cannot, therefore, be lightly dismissed.

The need for proper historical research to precede any work to buildings of architectural merit is clear: in order to handle conservation problems in practice it is vital to understand the successive developments in style, detail and the use of materials in buildings in each particular era. Such historical analysis has not yet been carried out in a systematic way on window development in Ireland.

In Ireland, the importance of retaining old sliding sash and casement windows – with advantages including historical and archaeological benefits, as well as aesthetic and material qualities – is little understood and largely unrecognised. Surviving old windows are rarely valued. The aim of this work on window development in Ireland is both to extend current understanding of the changes that took place and to give a context for conservation. The conservation of old windows (especially the oldest covered by this study), should be an imperative, complementing the current thrust towards retaining the historic built stock. The development of the sliding sash-window – including its history later than the 1860s – needs to be more widely known for there to be sufficient knowledge to tackle the problems of conservation in an informed and confident manner.

This study explains the ethical basis that should underpin architectural conservation¹ and discusses the possibilities for and practicalities of appropriate repair. The very real threats

to the future of sliding sash-windows are summarised, especially the threat to the early and rarer examples, the existence of most of which remains unidentified and their importance unappreciated.

It is insufficient, however, in an undertaking such as this just to chronicle the dangers to old windows, as they are under threat today at a rate unforeseen even fifteen years ago. The continued survival of historical windows depends on conservation providing viable methods of prolonging life and performance. Therefore several window conservation case studies are included, concentrating on those in which the windows have been thoughtfully repaired. The view of architects, contractors and joiners are set out in an attempt to approach the subject of conservation in a rounded manner.

The limited range of traditional building technologies available before the industrial revolution gave rise to a physical continuity in window design, which in Ireland was broken largely only in this century. Technological changes in construction and materials are imperilling the future of traditional timber windows and thereby are destroying a vital aspect of the history of all built fabric. This is evident all over Ireland, where the destruction of timber sash-windows has left many buildings with inappropriate and lifeless replacement windows. The greatest urgency therefore, is attached to researching this subject now, before much more of this vital detail of our architectural patrimony is lost.

History

The history of architecture is inextricable from the history of its material components. Approaches to architectural history have tended however to concentrate on style rather than to encourage research into materials and technology. The history and development of both the opening in the wall and the frame type used to make a weatherproof window has tended also to be included in the treatment of the overall building style, rather than as an identifiable and separate study. The materials and methods used to make and glaze windows have determined to a large part their form, and have, in consequence, had a considerable impact on the development of architectural styles which are heavily dependent on them.

The historical section of this study outlines the changes in Irish architecture relevant to the window, using a chronological approach. Starting in the Tudor era, it illustrates how regular

fenestration became one of the essential elements in the classical tradition of building in Ireland. The pivotal period of change in window types from the Restoration of 1660² to the mid-nineteenth century is examined in detail.

Within this historical time frame there were several distinct periods of development in window types. Characteristic buildings from each era are used to illustrate changes and progressions. Most of these buildings remain – some as ruins and others in a habitable state – and these have been photographed and the constructional details of their windows noted. Some other examples are now known only from illustrations; included are those which throw light on particular developments. The historical account notes the gradual acceptance and eventual primacy of the sliding sash-window. By the 1860s this window type had evolved considerably in its detailing and was used in most buildings in Ireland. Further evolution of the timber window in the nineteenth century was limited to decorative changes and functional advances (such as patented locking systems), as glassmaking and timber window construction technology were by that time becoming industrialised and Irish variations in type and style were dying out.

It is the crux of this study that one must appreciate the role of both fenestration and the individual window; whether in polite or everyday building design either overall arrangement or small detail can reveal useful information. Historically, the importance of the window was reflected in attention to the arrangement of proportion, design, material and detail. Proportion and regularity are vital elements in the classical architecture of Ireland; within this schematic approach the design of windows, their stylistic details and positioning provide the key to the classical aesthetic. Within the vernacular tradition the small detail – and indeed the absence of order in fenestration – helps to establish the extent of external references.

While observant historians of Irish buildings have, on occasion, pointed out early or important windows, and unusual features in their detailing, the minutiae of the development of window types has remained unresearched, leaving an important gap in the general knowledge of the evolution of Irish classical architecture. Generally the authors of the standard architectural texts mention window proportions, materials or details only summarily.³ However, the subject matter of the first section of this work approaches nearest the pioneering work of Dr Hentie

Louw as laid out in his doctoral thesis and distilled in the ground-breaking article ‘The Origin of the Sash-window’.⁴

The historical account of the materials used in windows is based on a few main sources; the standard text on glassmaking in Ireland is *Irish Glass*.⁵ Information on stone, iron and timber in Irish windows is obtained for the most part from contemporary documents.

Many developments in the details of windows can be traced to particular periods. Window openings, frames and lights underwent periodical refinements that were tied to improvements in technology and aesthetic tastes. Attention to such seemingly minor details often provides the evidence that can offer a date for individual windows.

This study is not limited in scope to polite architecture. It includes buildings which served uses throughout the social scale, as any example of an old window can provide clues to the evolution of window design as a whole. It is necessary, therefore, to look at the broadest picture possible to find out why such a profound change in the use of and desire for particular windows took place, and what helped or hindered these developments.

CHAPTER ONE

THE HISTORICAL DEVELOPMENT OF WINDOW STYLES¹

Perhaps the best point at which to begin this study is the adoption of the glazed domestic window in Tudor Ireland.² It finishes in the Victorian age, by which time the evolution of the dominant type, the sliding sash-window, was complete. This study assembles the available information on the earliest windows found in specific buildings throughout the country and to chart subsequent developments in their style, material and detailing.³ A number of important buildings are discussed at the start of each identifiable period to illustrate the key developments.

Due to the complicated political and demographic course of the sixteenth and seventeenth centuries in Ireland, with wars, upheavals and social breakdown there are no known complete surviving windows prior to the period of the Restoration of Charles II. There is, however, some amount of evidence, both documentary and actual, of opening sizes and window detailing and many important early buildings retain their elevational aesthetic, which illustrates the grand change that started in late sixteenth-century Irish architecture. The importance of fenestration in this period is emphasised, and the relevant points illustrated. It will be shown that it is not possible to treat the window of whatever type or material, or indeed the blank opening, in isolation either from the architecture of the time or from the individual structure.

The development of windows in Irish architecture is closely linked both to social changes and to technological progress in the building trades. Here social *mores* and developments were as vital in fostering change as were the availability of money, a tradition of building (masonry in Ireland), a high standard of craftsmanship and political stability. Scientific enquiry, social and aesthetic concerns and technological advances were the main catalysts which gave birth to the double-hung timber sliding sash-window and ensured its success; coincidentally its development happened during an era of relative stability in Ireland, and led to its speedy adoption and long tenure.

Between the Restoration and the early nineteenth century a marked change took place in both rural and urban environments in Ireland. From the 1660s much architectural development

and innovation was centred on the capital, Dublin; therefore a preliminary look must be taken at the place of Dublin in the country as a whole.

Changes in the architecture of the capital have been most roundly described by Maurice Craig in his standard text *Dublin 1660 - 1860*. From being a provincial town before the Restoration, an enormous population increase and concomitant geographical spread was fostered by its new position as court and parliament capital. By the late eighteenth century, Dublin was not only the second largest city in the British Isles, with private and public buildings to rival London, but was also the centre of society and fashion in Ireland. The classical architectural ideals that came first to Dublin (from England or the Continent) were disseminated throughout the island by the aristocracy and Ascendancy families. The development of other cities and towns in the eighteenth century followed that of Dublin, as industry and agriculture brought some measure of stability and prosperity throughout the country. This is evident in the architecture of cities such as Armagh, Belfast, Cork, Kilkenny, Limerick and Waterford. Terraces of brick or stone houses, of two, three, or four storeys depending on the prosperity and urbanity of the place, became the standard urban format. These rows of buildings were stylised and ordered, usually with decorated entrances. The aesthetic was defined by fenestration. Civic buildings closely followed classical forms, with pedimented porticos, measured symmetry, and the regular punctuation of vertically orientated sash-windows.

The Gothic Revival of the Victorian era (as distinct from Georgian Gothic which was classical architecture decorated with Gothic detailing) and the industrial revolution signalled a move away from classical forms in the early nineteenth century. Great technological advances in building materials and working methods accompanied growth and diversity in architectural styles in the mid-nineteenth century. Several inventions led to increased mechanisation of window- and glassmaking, at which point it is appropriate to end this historical study.

THE TUDOR AND JACOBEAN PERIOD

The Renaissance re-introduced the classical architectural form to northern European countries such as France, Germany, Holland and England, where styles of building developed in which large cross-mullioned windows were commonly used, fitted with lead-glazed windows. Such windows were not unknown in Ireland, however in this country fashionable building

projects were seldom initiated, due to the fractured history of war and conflict. A lack of pictorial and actual evidence for the buildings of the Irish later mediaeval and early modern period seriously impedes research into changes in the approach to fenestration and window detailing. The Tudor era is the first period for which there is physical evidence of large, glazed domestic windows, in the form of existing but restored or altered buildings.

Characteristic buildings of this era⁴

Buildings with fenestration characteristic of the period range from almshouses to castles. Perhaps the earliest surviving classically-inspired building in Ireland is the two-storey North Range of Ormond Castle, Carrick-on Suir, Co. Tipperary, (plate 1) built about 1565 for 'Black' Thomas Butler, 10th earl of Ormond.⁵ Kanturk Castle, Co. Cork (plate 2) was built about 1609 by an Irish chieftain, Donough MacCarthy, Lord of Duhallow, but never finished. This building was given a strongly ordered fenestration, with large mullioned and transomed windows, which were intended to be glazed. Portumna Castle, (plate 3) seat of Richard Burke, 4th Earl of Clanricarde, was built before 1618.⁶ It too was designed in the latest fashion, with large, regularly placed cross-mullioned stone windows, which resemble those at Kanturk. Portumna has a classically-inspired doorcase with an oval overdoor light.

Older castles were often extended in this period, when the fenestration of the older building would be modernised, for example at Ormond Castle. Donegal Castle (plate 4) is another good example of such a building, where the castle was restored and a new wing built for Sir Basil Brooke around 1623. Brooke's wing displays more irregularity in its window arrangement than Kanturk or Portumna, and is probably more typical of its time in this regard. In the 1630s Lismore Castle, Co. Waterford, was enlarged. Due to the detail of the surviving accounts (and one little-altered range), Lismore (plate 5) is of interest to this study. Two important buildings of this era are quite different however: Jigginstown, Co. Kildare and Joymount, Co. Antrim. Both display an individuality of design which is presumably owing to their respective patrons. Jigginstown (plate 6) is in a category of its own, a huge, rambling, single storey over basement house, built for the Viceroy Earl of Strafford in the 1630s, but possibly never completely finished. Leask describes it as 'palatial'.⁷ In terms of window size and scale there is just one possible comparison, Joymount, (plate 7) an enormous Tudor

mansion built between 1610 and 1618 for Sir Arthur Chichester, Lord Lieutenant. It was pulled down in the 1760s and is now known only from two late seventeenth-century illustrations.⁸ Late in this era is Old Bawn, Co. Dublin, (also demolished) an English-style unfortified house, with multiple gables (plate 8).⁹

Despite years of Elizabethan conflict, a good number of old English, native Irish and Planter proprietors built mansions in the Jacobean and Carolean styles. These took the form of semi-fortified manor houses where fashion and the quest for comfort and light overrode defensive considerations to a large degree. Good examples include Burntcourt Co. Tipperary, Coppingers Court and Monkstown Castle, both in Co. Cork and Athlumney Castle, Co. Meath. The longstanding reluctance to punch many or large openings in the massive masonry of Irish castles found an exception in the architectural styles exemplified by such buildings.

The growing importance of classical fenestration

From the first use of classical ideals in Ireland a degree of order was sought in the fenestration. The placing of windows was not purely a matter of convenience to the internal plan, as was previously the case. Craig dates the beginnings of larger, more ordered fenestration to about 1550, when "square-headed mullion-and-transom windows appear, which are not only fairly generous in size but are also regularly arranged".¹⁰ The North Range at Ormond Castle, Carrick-on-Suir has regularly arranged windows, with stone mullions having semi-elliptical heads, covered with a hood-moulding. The long gallery was designed with the windows staggered on either side in such a way as to give good light to the opposite walls: an architectural concept that was first discussed in a treatise by Philibert de l'Orme published just five years previously.¹¹

Kanturk and Portumna are two castles built in a manner which illustrates the recently realised power of ordered fenestration on all floors and on the important elevations. They are similar in date and plan, and in the treatment of the windows and string courses. The surviving 1630s wing at Lismore is no less regularly fenestrated. The windows of these and similar buildings were mullioned and transomed in stone, with leaded lights. They were usually given shutters with loop holes and iron bars as defensive measures. Windows of the basement storey were usually very small and provided with iron stanchions.

Many castles which were enlarged such as Donegal Castle, and some of the semi-fortified houses still standing as ruins (Coppingers Court, Athlumney, Burntcourt) display varying degrees of adherence to classical ordering in the fenestration, but all have flat-headed stone-mullioned windows, hood-moulds and rebates for glazing. Openings tended to be placed with void over void, and to be of a similar height on all floors and of a similar width to those in the same bay (widths varied in this era more than in subsequent fashions). The individual lights were mostly vertically orientated but within this style horizontally or vertically orientated rectangular windows were acceptable.¹² A number of sketched house elevations survive of the mid-seventeenth century, attributed to Sir John Perceval, which show the by then typical arrangement of a regular fenestration, indicating that the wealthy were interested in this most fundamental aspect of design.¹³

The sense of power expressed in such massive structures as Portumna and Kanturk Castles is enhanced by their regular fenestration, which gives the impression that the builders – no longer looking defensively inward – wished to show off their supposed security and lasting temporal power. It was as if there was a subtle switch from blind defensiveness to an assured, all-seeing authority. The alliances and political machinations of the late sixteenth and early seventeenth century shifted regularly, but the mark of high position exemplified by the new classical architecture was lasting, making a permanent impression of importance. One of the first elements to strike a visitor at Portumna are the windows, which like other classical details were effectively symbols of power and knowledge, of grandiose wealth, and of patronage of the arts and learning.¹⁴ In the words of Craig, “the claims of defence gradually yielded to those of comfort and convenience, in which rationality and order prevailed over atavistic fantasy”.¹⁵

Late sixteenth- and early seventeenth-century window styles include types of projecting – oriel, bow and bay – windows, of which rare examples remain (with newer fixed lights, casements or sashes). Several instances of bay windows may be given. There are two box-bay projections with many mullioned lights on both front and side elevations at Ormond Castle, as well as the remains of a rounded oriel window supported on a conical corbel (unique for Ireland), where it is conjectured the Great Hall was sited. The work at Lismore Castle included the insertion of a large bay window at a dramatic location overlooking the river.¹⁶ Several other

instances may be noted. One of the gable ends at Athlumney Castle retains a canted bay window (plate 9), there is some original stonework to the oriel window on the front elevation of Rothe House, Co. Kilkenny, the planter's house Myrtle Grove, Co. Cork, of *c.* 1600, has two oriel windows and there is a corner oriel to a medieval house at Shop Street, Galway. However, it has not been found that projecting windows were widely used in Ireland. The star-shaped plan of the Royal Spur, Co. Tyrone in which the windows are placed in the points of the star (plate 10) may be compared with a similar window at Mallow Castle, Co. Cork. This arrangement allowed better visibility for defensive purposes as well as giving a pleasant appearance.

The structural support for the window was formed by crude relieving arches or timber lintels, under which the stone head was fitted. The heads of each light within the opening could be semi-elliptical or flat-arched. The internal matrix of mullions and transoms had to be strong; thick octagonal mullions were used, almost always of stone. Kilmallock, Co. Limerick, which possessed many Jacobean buildings, was described in the early nineteenth century as a decayed mediaeval town with castle-style houses having square window frames, carved in a bold and massive style (see plate 13).¹⁷ From archeological evidence gathered from some buildings (such as Jigginstown, Killincarrig, Co. Wicklow and Old Bawn) it is evident that timber mullions and subframes were known in Ireland.¹⁸ The stone frame was almost always chamfered to interior and exterior to give an impression of slenderness without sacrificing solidity.

Fixed leaded lights without subframes of timber or iron could be inserted into chiselled rebates in the embrasure.¹⁹ It is not possible to state with any certainty whether timber or iron was the dominant window frame material in Ireland during the early seventeenth century, as insufficient evidence survives.²⁰ It is thought that all casement lights of this date opened outwards. Casements were described as right- or left-handed according to their hinged side when viewed from the inside. In England most are right-handed, and it is reasonable to assume that this was also the case in Ireland.²¹ A detail first noted in this period (and used intermittently over the next century) is a use of fine plaster to dress the window. At Brazeel (Co. Dublin) and Old Bawn Leask found that the plaster was brought to a fine surface around the openings with a block-and-start design (with the quoins treated similarly). Such treatment is also visible to the old castle which survives within the Palladian house, Powerscourt, Co. Wicklow.²²

The fact that openings weaken a fabric was occasionally ignored in the face of fashion and modern planning in early seventeenth-century Ireland. In a few documented buildings windows were positioned perilously close to each other, which indicates that fashion rather than constructional safety was paramount. Joymount and Jigginstown epitomise this fearless use of openings. They were the reflection of an English (and Dutch) building tradition which was already liberated from the need for defensive building and which preferred the patterns of English domestic architecture with its square-plan houses having tall box bay projections.²³ A visitor to Ireland in the 1630s, Christopher Brereton, had reservations about Joymount, finding that the windows, rooms and whole frame of the house were over-large, (the sheer size being a great burden of cost in repairs to the owner).²⁴ Joymount had enormous full-height bay windows, with two and three mullions. Jigginstown has main floor windows measuring about ten feet in height (plate 6 ii).²⁵ Chichester and Strafford, the respective patrons, were perhaps trying to emulate the maturity of style and confidence in power that Jacobean and Stuart architecture was capable of, seen in the large-windowed English royal palaces of that time.

The continued predominance of small windows

Most Irish buildings of the late Tudor and Stuart eras, however, were strongly fortified, and provided somewhat basic living quarters, with the impression of their small openings being entrenched in massed defensive masonry. Windows were kept to the minimum, as they could be breached. Castles such as Killilea, Co. Tipperary, and Ightermurragh, Co. Cork (plate 11) represent the type, built by the proprietor who would not risk all for architectural trends. Such buildings which remain show arrow- or gun-loop openings on the lower floors, and only those which had tenacious or confident occupants were given enlarged, mullioned windows, and then usually only on the top floors. Most of the everyday buildings of the late sixteenth and early seventeenth century appear to have had small windows, and those as few as absolutely necessary. Older castles usually finished up with a mix of small old and larger new windows.

In contrast to the scattered towers and castles of the "Old English" lords (the descendants of settlers of the Middle Ages) and Irish chieftains, plantation towns were built exclusively by Scots and English settlers or soldiers who gained from repeated confiscations of land during and after the Elizabethan wars. Stone-built towns such as Athlone, Carrickfergus,

Galway, Kilmallock and Limerick show the Jacobean and Carolean influences of the English builders (and to a lesser extent, French and Dutch). These and smaller towns retained many stone “castle-like” houses until they were replaced incrementally, in the eighteenth century and later (plates 12 and 13).²⁶ Timber-framed houses had large, apparently timber mullioned windows, most probably fitted with iron-framed lead-glazing.²⁷ None survive, but illustrations of Draperstown, Co. Derry, (built by the London Drapers Company) show typically English urban houses, mainly two-storey, some having bay windows (plate 14 i).²⁸ Contemporary maps illustrate new settlements and older towns, showing groups and terraces of houses, usually single storey, with rectangular mullioned or cross-windows (plate 14 ii).²⁹

Contemporary comments convey the impression that urban Irish buildings made on foreign visitors. A description of the small town of Dingle, Co. Kerry, in 1598 shows the type: “the houses are very strongly built with thick stone walls, and narrow windows like unto castles”. Luke Gernon, a visitor to Cork City in 1620, wrote of the city being built after the Irish castle form “with narrow windows more for strength than for beauty” but that a start had been made on beautifying it “in better form”. Another visitor, Sieur de la Boullaye-le-Gouz, wrote in 1644 “...to tell the truth [the buildings] are nothing but square towers without windows or at least having such small apertures as to give no more light than there is in a prison.”³⁰

FROM THE RESTORATION TO THE 1690s

The extension of English rule over the whole of Ireland was only achieved after the Restoration of Charles II in 1660. Civil government began to be exercised, and a permanent administration was established in Dublin Castle. The Ireland of the 1660s was a deeply divided country, a place in transition, whose inhabitants cautiously or reluctantly adjusted to the new order. It was, however, also a time of industrial growth throughout the country, which saw an influx of skilled artisan settlers from England and Protestant refugees (including many tradesmen) from the Continent. This relative economic and social stability, fostered in Dublin by the presence of a regular parliament, with increased revenue and subventions from the crown, brought advances in the standard of living in the capital and major towns. The twenty five years between the restoration and the death of King Charles in 1685 was the longest period of calm and prosperity seen in the country since before the Tudor wars. A large increase in the

numbers and types of businesses that supported the parliament and government offices contributed almost wholly to the increase of industrial activity and house construction in Dublin. Rural Ireland remained sparsely populated, with small, planted settlements of Scottish and English immigrants, and small conformist towns, set among a largely hostile environment.³¹ The views of Irish topography in the 1680s of Thomas Phillips and Thomas Dineley³² (plate 15 i-ii) show fortified and semi-fortified towns and castles, small vernacular rural dwellings, tower-houses and urban houses clustered around focal points such as cathedrals and market buildings.

Virtually the same Protestant ruling elite took power after the Williamite Wars (1688 to 1691). However, in Irish history, 1691 is a watershed date, used by historians to separate the seventeenth and eighteenth centuries. Architecturally, there were some differences between the styles of both periods, the most important of which is that the sash-window became fashionable in Ireland during the 1690s.

The Caroline era in Irish building

Buildings to note in the period from the Restoration to the 1690s are those which display some important differences in fenestration and window type to those of the era preceding. As above, those chosen as representative are drawn from a wide sphere. Surviving examples of important Caroline architecture in Ireland are rare. By far the most significant Restoration building, in overall architectural terms, is the Royal Hospital, Kilmainham, Co. Dublin, of 1680 - 1684 (plate 16). Houses such as Waringstown, Co. Down, after 1667, with alterations in the 1690s³³ (plate 17), Richhill, Co. Armagh, c.1670 (plate 18) and Eyrecourt, Co. Galway, after c.1660 (plate 19) are also of note as they still possess some details of their original windows, and show symmetry on the facade, with vertical (originally cross-mullioned³⁴) windows. Dublin Castle is represented by several drawings, c.1685, attributed to William Robinson, of the 'Grand Entrance' and 'Great New Building on piers and arches' which show clearly the cross-windows planned (plate 20, i-ii). Two surviving (now internal) mullioned windows, at Ballybritten Castle, Co. Offaly (plate 21), and no. 28, The Parade, Donaghadee, Co. Down (plate 22), neither dated, are invaluable for the information they have yielded. Assolas, Co. Cork is a house of several periods; the windows of the late seventeenth-century front remain (plate 23) and are useful to this study. The Southwell Gift-houses, Co.

Cork, 1682, retain their original form (plate 24), giving a view of what may have been more typical of the Irish house at this time. Ballinderry Middle Church, Co. Antrim, c.1667 (plate 25), is architecturally plain but retains some of its original mullioned windows, termed “very late Perpendicular” by Craig.³⁵

There are some long-demolished buildings for which manuscript details have survived and which should be noted as examples of the classicism of the late seventeenth century. Documentary evidence for Burton Hall, Co. Cork, and Blessington House, Co. Wicklow has added to the knowledge of windows in this era, as has a brief mention of sash-windows at Kilkenny Castle. Many other buildings are now known only through written accounts (or photographs). They testify to the widespread acceptance of modern building styles and methods at this time.³⁶ Three illustrations survive of the Dublin Tholsel, c.1680, which show the use of large windows in a modulated fenestration (plate 26, i-iii).

The extent of the classical influence in Irish window design

The origins of most architectural patrons led to the adoption and adaptation of English building styles in the classicism that filtered through the contemporary pattern books of France and Italy. When building new or adding to old castles many Anglo-Irish patrons chose the architectural style with which they were familiar – an artisan classicism. The new land-owning classes (settlers, Cromwellian planters, grantees and English entrepreneurs) would have had, in the main, no allegiance to the old (Anglo-) Irish order, nor to the styles of its built fabric. Leases often included requirements to build in an English manner; a lease for the building of a house in Belfast stipulated that it should be a “good handsome Englishlike house” (though this might not result in a discernibly classical design).³⁷ In general, the new land-owning classes concentrated more on the acquisition of land and cementing their security in a potentially hostile environment than on refinements in architectural details. Therefore the incidence of progressive building projects was somewhat limited.³⁸ There were however, some notable patrons (mainly of the establishment), including the first Duke and Duchess of Ormond, Lord Orrery, Robert Southwell, Sir John Perceval, Lord and Lady Conway and Sir William Petty, to name a few.³⁹ Such patrons as these were familiar with the designs of prominent classical architects such as Hugh May, Sir Robert Hooke and Sir Christopher Wren as most of them were also engaged in

building projects on their estates in England. Many had spent years in exile in France, and therefore were familiar also with continental architectural ideals, which involved various interpretations of classicism. The antiquarian James Ware, writing in the late seventeenth century, while dismissive of the houses of the poorer people, considered that “those of the Nobility, Gentry and Wealthier Farmers are elegant and sumptuous enough”.⁴⁰

The Irish builders of the Restoration era worked the newly received ideas on fenestration into modern architectural practice. The use of a rectangular plan and elevation extended to window design. In the modern buildings of the Restoration era the placing and design of windows became a defining characteristic. Regularity, vertical proportions and the use of a crossed mullion (usually in timber) define these buildings, and in some cases particularly classical types of dressing occur. The pervasive emphasis on grids, symmetry and structured spaces eventually worked down to medium sized building projects, as illustrated especially by Thomas Dineley and Francis Place (plate 27), but in Ireland the old-fashioned ‘quarry’ pattern leaded light continued to be more popular than either a rectangular pattern or rectangular timber-gridded lights.

The most architecturally progressive building erected in Ireland of this time is the Royal Hospital, Kilmainham, built as a residential home for old and infirm soldiers and designed by the Surveyor General, William Robinson.⁴¹ In creating a measured, palatial and symmetrical collegiate building, Robinson marked a departure in Irish architecture. It was a clear political statement for the patron, James, first Duke of Ormond, and a sign of the permanence of the new order.⁴² The power of classical architecture, with elegant rows of tall windows and central entrances, was finally seen in Ireland. The strong fenestration of the building was new to the cramped post-medieval town, showing the elegance possible when defensive elements can be discounted.

The Royal Hospital, Eyrecourt, Waringstown, and Dublin Castle were designed with generous openings, though houses like Richhill owe more in this respect to the more sparsely windowed buildings of the fortified era. Generally the proportion of solid wall to the void of window openings became less pronounced in buildings after the Restoration. The regular cross-mullioned windows of this period were much smaller than those seen in Elizabethan buildings

such as Joymount. A wide latitude with regard to window sizes, proportions and positioning continued to exist well into the eighteenth century. Contemporary illustrations show a mix of window sizes and positioning on both urban and rural houses. However, there appeared to be a tacit understanding that good architectural design entailed a judicious arrangement of the openings; classically-inspired buildings (which epitomised the direction which architecture was taking) employed fenestration in a manner that went beyond pure practicality to achieve certain aesthetic qualities, which eventually became standard in Irish classicism.

The key building projects of this time were designed within the framework of new domestic changes as well as architectural advances. One result of the spread of science and rationality was the fostering of a more outward looking view and a fashion for openings that admitted air and light. This preoccupation was reflected in seventeenth-century houses such as Burton Hall, which was designed to encompass and celebrate the landscape as part of the architecture of the house. Such a philosophical change had implications for the fenestration, which was designed for the admiring of an ordered landscape as well as for admitting light to the richly decorated interior. This led to the increasing use of larger, usually vertically aligned opening casement windows (with sill levels placed at a convenient height for the seated occupant). At Burton Hall the windows were projected to be ten foot high which demonstrates the extent of the classical interest in light.⁴³

Vertical window proportions and regular positioning occurred only on classically inspired facades, such as Dublin Castle (1680s work), the Royal Hospital or the Dublin Tholsel (toll-house or exchange). The vertical orientation of windows began to be exaggerated, seen in some very narrow and tall windows of the late seventeenth and early eighteenth century, of which Assolas, Co. Cork would seem to be a good example. However, of the rare seventeenth-century survivors, a substantial number of windows (some set in otherwise accomplished buildings) are horizontally-orientated and several are set quite low in the wall (at Ballybritten, for example). Others include the timber casement window on the side elevation at Waringstown (plate 27), the stair windows at Richhill (plate 28), the gable window at Donaghadee and perhaps the mullioned window to the rear elevation at Beaulieu, Co. Louth (see p.24).

It is posited by this study that vertical cross-windows were used in a stylistic manner to provide visual contrast and relief from the relatively undefined massing of Irish buildings of the seventeenth century (in which strong lines – either vertical or horizontal – are often lacking). It would appear that by the late seventeenth century the horizontally-aligned window was relegated to areas of little social or aesthetic consequence. The impression given by such windows is of a style far less lofty or grand than the vertical window, of an artisan hand at work. In *The Stones of Venice* the nineteenth-century critic Ruskin voices his definite opinion on the subject; “all elongated forms are objectionable placed horizontally; because this is the weakest position they can structurally have”.⁴⁴ The continuing use of horizontal windows (on secondary elevations of progressively designed buildings, and in any position on others) probably relates to practicality, due to low ceiling heights and the left-over pre-classical tendency to punch openings wherever necessary without regard for external impression or their potential for viewing the prospect.

Small windows prevailed in everyday buildings. At no. 48 Montpelier Hill, Dublin, the original windows of the late seventeenth century were blocked in the early eighteenth century.⁴⁵ The outlines of some openings remain, giving an indication of the original fenestration which consisted of small voids in the mass of wall, most probably single-light windows. Many castles survive (in ruins) illustrating the common window proportions employed, but the prevalence of either small, single light opening, horizontal mullioned or tall cross-window cannot be ascertained in the domestic buildings of the Restoration era. At Finnebrogue, Co. Down (and Morgans, mentioned above), the upper floor windows are larger than those on the ground floor, suggesting unfamiliarity with the precepts of classical fenestration. In summary, out of the very small, unrepresentative number of surviving windows which have been surveyed or otherwise documented, a substantial proportion do not belong to the classical mode at all, either in their dimensions (and internal divisions), or in terms of overall fenestration.

From lack of money as much as adherence to ancient ways, building traditions were slow to change. Several writers of the late seventeenth century mention small castle-like windows in Irish stone buildings. One of King William’s closest associates in his army in Ireland, the Dutch aristocrat Constantin Huygens (the younger), commented in 1690 that the

Irish built in a strange manner, with very few and very narrow windows. John Dunton, an English traveller, wrote of Galway in the 1690s that “the transoms to their windows are stone also instead of iron or wood, so that the inside looks like a close prison” which was echoed in writings of similar places up to the mid-nineteenth century.⁴⁶ The building tradition of rural Ireland, in order to meet the needs of a combination of defensiveness, climate and available materials, had usually favoured widely spaced, small windows. Many structures, such as Eyrecourt and Richhill, had large areas of solid corner emphasising the solidity of the building, a combination of stone construction methods and a reticence to introduce any weakness either in the fabric or in general security.⁴⁷

Urban builders could on the whole allow larger openings, in fashionably large cross-windows that admitted more light. Modestly scaled terraces were the common urban housing format in the late seventeenth century, of three to five bays across and two or three storeys in height. An illustration of “Burnyates” ground, around Nassau Street in Dublin (plate 29) dated 1680 shows what may be a typical artisan dwelling, with no classical pretensions. In the suburbs there were multi-gabled or wide-eaved, regularly fenestrated mansions and small, thatched or shingled houses and cabins, often having irregularly placed small windows.⁴⁸

The details of classical fenestration began to assume a familiar appearance. As Loeber notes, there was a distinct shift towards symmetry in the fenestration and plan of Restoration architecture.⁴⁹ In this early use of classicism the openings across the main elevation(s) were usually made to total an odd number, enabling the front door to be placed in the centre of the building, as at Dublin Castle (plate 20 i). The treatment of the doorcase began, in this thirty year period, to assume forms which remained familiar for the next hundred years or so: a columnated arrangement with overdoor light, either oval or rectangular, within a (pedimented) entablature. (It must be remembered that until the second half of the eighteenth century it was just as common to have no light within the door ensemble.) The doorcase of Eyrecourt (plate 19 ii) epitomises the attention paid to this feature. It is, perhaps, more a precursor of future treatments than a reflection of the similarly shaped but quite small light at Portumna.

At the Royal Hospital, Kilmainham and Blessington the rubbed brick window surrounds are very definitely taken from the classical vocabulary. Finely plastered quoined

dressings were also used to decorate openings, of a sort noted earlier in the century at Old Bawn and Brazeel. The plaster remains on some windows at Eyrecourt (plate 30). The use of high-pitched roofs with dormer windows became standard. In the only recorded instance during this period, Burton Hall was to have a glass 'lanthorn' lighting the top of the stairwell.⁵⁰ Dormers and lanterns remained in fashion from this period until the mid-eighteenth century, the dormers usually being placed in a regular order over (but not necessarily following) the main windows. Drawings of the time illustrate the common pedimented, hipped and gabled types. Some had equilateral pediments, others as at Waringstown were within larger, shaped (Holborn) gables (plate 31). Dormers were not without constructional drawbacks; in the 1680s Thomas Smith and Sir Richard Kyrle advised Capt. Henry Boyle about the dormer windows which were "hurting" the roof of Charleville Castle, Co. Cork.⁵¹

The classicism practiced from the late seventeenth century onwards emphasised regularity and proper proportions. In this very angular aesthetic, the use of gridded window divisions in timber was far more of an architectural statement than latticed leaded lights. The lattice was definitely extraneous to the vertical and horizontal lines of the building, whereas the gridded casement or sash was a continuation of the square planes so carefully planned elsewhere on the facade. The aesthetic of a grid of comparatively large squares of glass compared favourably to the previous style of tiny leaded squares or especially quarries which indiscriminately bounce reflections; Clifton-Taylor writes, in *The Pattern of English Building*, that "in contrast to the leaded casement, the sash-window with its wooden glazing bars is admirably articulate. The panes are large enough to avoid fussiness ... every window, therefore, makes a positive statement."⁵² Post-Renaissance England and northern Europe adopted the square lead-paned light in preference to the medieval lattice of quarry divisions, but in Ireland latticework continued in use throughout the later seventeenth century. Latticed glazing may have been preferred for aesthetic or financial reasons – there is no evidence to clarify this point – but documentary records seem to imply that it was the more usual.⁵³

Window types were limited, with the most common opening consisting of fixed lights within mullioned timber or stone frames, having one or more side-hung casements of timber or iron-framed leaded lights. The Diocesan Library in Kilkenny appears to have retained its

original windows (of c.1693), until recently; the style is of a type common in windows of this date in England (plate 32). Timber casements superseded the iron variety in the later seventeenth century in England, which was the source of most of the innovations introduced in Ireland.⁵⁴ Window frames were of timber or iron, with subframes of timber as far as can be certified. Oak was the timber of preference, with some use of fir. After the end of the seventeenth century it may be conjectured that the use of iron frames was confined to ecclesiastical buildings, however the proportion of timber casements (with timber glazing bars) to iron or timber framed leaded lights cannot be clarified at this point.⁵⁵ Large windows with a cross bar (transom) placed at the mid-point or one-third from the top, seen in Dineley's and other drawings, were common.⁵⁶ It is a matter of speculation to what extent Robinson and the other prominent architects of this era were aware of the overall effect the placing of the transom offered. The subtlety of this uplifting change is possibly underestimated in general architectural criticism (of which more in Chapter Four).

From the available evidence it appears that casements were fitted only in one or two openings in any given window. A comment about Eyrecourt made long after it was built suggests that none of the leaded windows could open, although it is likely that some could do so originally.⁵⁷ At Ballybritten one of the two lights was hinged, at Donaghadee one of three was a casement. The surviving timber cross-windows at Waringstown show one and two casements each in the four light windows.⁵⁸ The windows at Ballinderry Middle Church are mullioned twice, with an iron outward-opening casement to one pane of the central light (plate 25 ii). It appears that the usual direction to open casements was outwards, this style taken from the English as the French called this type "*Les Angloise*".⁵⁹ The tall windows planned for Burton Hall were to have full-height casements. The architect expressed some puzzlement about this in a letter to Egmont in 1665 in which he discussed some work sent for consideration. "I saw two frames (that I suppose came from England) that are to open wholly from top to bottom, but according as I understand from your worship the windows intended for your building would be ten foot high..."⁶⁰

The difficulties and disadvantages of casement windows

Opening casements were more expensive than the fixed glazed window. Fixed lead-light windows needed less repair and maintenance, though the health value of opening lights was recognised. Lord Herbert was reminded, in a letter from his clerk in 1671, that they were not included in the general computation of costs for works at Kenmare, Co. Kerry. His correspondent wanted to know if Lord Herbert wanted casements in the windows and in which and how many, “that some would be requisite to let in air to the rooms, but were not included in the computation”.⁶¹

A structural disadvantage of many windows in Ireland of the late seventeenth century was the positioning of the frames at the face of the wall, as windows set back from the facade are more sheltered, and therefore their longevity is better assured. Brick and stone buildings such as the Royal Hospital, the Southwell Gift-houses and Waringstown have windows positioned at or near the outside face of the wall. The late seventeenth- and early eighteenth-century terraced houses of the Dutch brick tradition shared this drawback with cagework houses. The openings of urban brick terraces had arched sections of plastered timber visible above the head of the flush windows. These were also prone to decay due to their proximity to the wall-face. Many stone buildings had recessed windows, set back however slightly, including Eyrecourt, Ballybritten, Donaghadee, Richhill, and Ballinderry Middle Church.

The *Calendar of State Papers (Ireland)* for the late seventeenth century and other contemporary commentary contains a surprising amount of anecdotal information relating to windows, with criticisms of their inconveniences. Passing comments by letter-writers also give some snippets as to the difficulties encountered in domestic life, among them the constant need to repair windows by damaged by storms. Casement windows, being hinged, fared badly in windy weather. They were easily smashed against the frame or reveal, particularly as it was hard to secure them effectively when fixed open. The rate of glass replacement was high, an expensive matter, and one not always easily dealt with due to general countrywide shortages of skilled glaziers, or material for repair. Some estate accounts reveal that glaziers and plumbers were retained at quarterly rates, to ensure that they were available when necessary.⁶² Outlying castles had to send to the nearest city, or arrange for the importation of glass and lead. “Cruel

winds” were responsible for destroying most of the glass in the windows at Castleisland, Co. Kerry, in 1659, and this difficulty was compounded by the uncertainty of quick repair.⁶³ An order was made in 1659 in Kinsale, to remove the windows “against” William Davis’ house, which were in a dangerous state; these were most likely bow or bay windows.⁶⁴ The Viceroy, Lord Clarendon complained about Dublin Castle in the 1680s, that “never comes a shower of rain but it breaks into the house, so that there is a perpetual tiling and glazing”.⁶⁵ At the Castle of Carrick in 1692 the incumbent, Col. Butler refused to pay out a “doit” after storm damage, even towards the repair of the shattered window, and correspondence shows that months later the windows had still not been repaired.⁶⁶ A rare additional hazard was that of lightning, as reported to the Dublin Philosophical Society in 1707. A house in Co. Down was struck by lightning along its gable, and the glass of the two windows “in ye bedchamber above, and two windows in ye kitchen beneath, was so shattered that there was scarce one whole pane left in any of them...”⁶⁷

The introduction of the sash-window to Ireland

The influence of fashion in the introduction of the sash-window into Ireland should not be underestimated, as the top stratum of English society had been using the sliding sash in many prestigious new projects in Royal Palaces since the early 1670s.⁶⁸ Emulation may certainly have been just as important a factor in the importation of fashionable English, Dutch and French ideas as in previous generations, given the background of the architectural patrons and designers of Restoration Ireland. Another factor in the rise of the sash-window was the visual incompatibility between it and the cross-window (illustrated by the gable elevation of Waringstown). The relative economy of installing fashionable sash-windows compared to complete rebuilding in the latest style must have encouraged their use throughout the island, although the extent to which the sash-window found favour before the Williamite Wars will probably remain unknown.

The introduction of the sash-window necessitated the confluence of three factors: an interested patron, an architect favourable to it and a knowledgeable craftsman. Wealthy Anglo-Irish clients were not slow to patronise the newest methods of construction and design in their new houses or enlarged castles, and architects took on the technically novel sash-window as it

offered a solution to the large windows demanded by the fashionable client. The importance of the role of the architect in the decision to use the sash-window is unclear; it is evident from the 1675 drawings for Dublin Castle that Robinson intended to use cross-mullioned windows. The Royal Hospital, Kilmainham, is another project designed by Robinson with leaded lights in cross-windows, although it is unlikely that he was ignorant of the new window type.⁶⁹ The architect and inventor William Molyneux, joint Surveyor General with Robinson (from 1684) was acquainted with Robert Hooke (one of the names postulated by Louw as the inventor of the sash-window), increasing the possibility that he was the conduit for the introduction of it to Ireland.⁷⁰

The earliest documented reference to sash-windows in Ireland is at Kilkenny Castle, in a letter of 1680. This (and another reference) makes it clear that the patron was the Duchess of Ormond.⁷¹ The craftsman was Robert Massy (or Massie) a joiner enfranchised in Dublin. The architect is not known, nor is there any information on the type of sash-windows used, whether counterbalanced or not, nor if they were set in mullioned frames.⁷² Louw has found that the evolution of the sash-window was aided as much by craftsmen as architects, and in the absence of contradictory proof it must be assumed that Massy was provided with blue-prints for the Kilkenny windows from contemporary London windows. It is also possible that he travelled there to learn the skill for himself, under the patronage of the Duchess.⁷³

In the period before the Williamite Wars no other reference to sash-windows in Ireland is known.

FROM THE 1690s TO THE 1720s

The era after the Williamite Wars and before the widespread adoption of the Palladian style in Ireland can be treated as an entity in architectural terms. In this period there was a hardening of political attitudes that consolidated the Protestant hold on power and wealth. New building started to replace the ruins of the war-torn country, and very gradually confidence in the future returned, symbolised by the erecting (and rebuilding) of mansions by prominent figures. The characteristic buildings of this era have many stylistic features in common, particularly a fenestration that was influenced by the popularity of rationality, order and scientific enquiry. However, architectural progress was not evident everywhere. A writer's

comment on Galway in 1709 could have been written at any time from the sixteenth century: "The houses are built of stone, of coarse kind of marble, all like one another, like castles, for [sic] the arched doors and strong walls windows and floors."⁷⁴ The topographical drawings of Francis Place, done in the late 1690s (of Dublin, Kilkenny, Drogheda and other places, plate 33) provide the pictorial evidence for Irish buildings (urban and rural) of the 1690-1700s. They show the prevailing styles in Irish building: a combination of vernacular, Caroline and artisan-classical (plate 33 i-ii). The illustrated map of Dublin made by Charles Brooking in 1728⁷⁵ (plate 34 i) and Van der Hagen's topographical paintings of the 1720s and 30s (plate 34 ii) complete the short list of contemporary drawings. In essence, there is not much to differentiate the subject matter of these illustrations from those of Dineley and Phillips, discussed above. Some urban domestic buildings of the late seventeenth and early eighteenth century survived into the age of photography, and are illustrated in the Georgian Society *Records* of 1913, and by O'Dwyer in *Lost Dublin*, providing the historian with a clearer idea of the character of Irish houses of this period.

Characteristic buildings of the pre-Palladian classical era

The buildings chosen to illustrate developments in fenestration and windows in this period are drawn mainly from the domestic house, with some examples from centres of learning and administration. Doneraile Court, Co. Cork (1690s to 1725) (plate 35), Kilmacurragh, Co. Wicklow (c.1697) (plate 36) and Marsh's Library, Dublin (1700-1) (plate 37), the latter two by Robinson; Castlelough, Co. Tipperary (1712) (plate 38), Skiddy's Almshouses, Cork (1718) (plate 39 i-ii), Castletown, Co. Kildare (begun between 1719 and 1722) (plate 40 i-ii) by Edward Lovett Pearce (and possibly Alessandro Galilei), Trinity College Library (1712 - 32) (plate 41 i-iii) by Thomas Burgh, The Brazen Head Inn, Dublin (unknown date) (plate 42 i-iii), and Beaulieu (works of 1722) (plate 43 i-ii), attributed to John Curl.⁷⁶

Bellamont Forest, Co. Cavan, (plate 44 i-ii), designed by Pearce in the late 1720s, exhibits a mature Palladian style and may be shown as a contrast with the other houses of its day apart from Castletown. Other notable buildings which are touched upon include The Rubricks, Trinity College (c.1700), The Red House, Youghal, Co. Cork (c.1700) (plate 45 i), Kinsale Courthouse, Co. Cork (enlarged 1706; plate 48 shows a detail), Shannongrove, Co.

Limerick (1709 - 23), Stackallan, Co. Meath (c.1710 - 12), Castle Durrrow, Co. Laois (c.1716) (plate 45 ii), Damer House, Co. Tipperary (c.1724), Buncrana Castle, Co. Donegal (c.1718) (plate 141 show a detail), Kildrought House, Co. Kildare (c.1719) (plate 119 ii shows a detail) and Drumcondra House (c.1727) (plate 47, unexecuted design).⁷⁷

The role of classical fenestration

These surviving buildings exhibit common characteristics, especially in the treatment of the fenestration, typical of pre-Palladian classicism. The use of vertically-orientated windows of a similar height set at regulated intervals, steep pediments (many lighted by windows) and dormers (hipped or pedimented), along with the use of sash-windows on the important facades, were conscious design decisions, part of the new architectural vocabulary. These buildings use, in various forms, most of the features that would be so carefully arranged in their Palladian successors.

The windows of the main elevations were usually generously windowed and organised in a modulated pattern. The thirteen bays of Castletown must have impressed most onlookers with their grandeur, as such an imposing use of fenestration had not been seen in over a generation. (However, a dissenting voice was heard in 1732 from the Englishman John Loveday, who wrote that the house had “no less than thirteen windows in front, too many either for Beauty or Strength”.⁷⁸) Shannongrove may be considered somewhat exceptional in that its narrow windows are widely spaced. Stackallan, Damer House, Castle Durrrow and the Red House, Youghal (c.1720) are apparently more typical in their fenestration (plate 45 i-ii). Secondary elevations were not similarly ordered. Most are now obscured by subsequent extensions, but at Castlough the irregularity of both size and positioning of the windows may be taken as illustrative (plate 38). Basement windows were often horizontally aligned, unsurprisingly, due to short floor to ceiling heights or raised external ground level, such as at Buncrana, Shannongrove (the original entrance front) and Castlough. External masonry detailing was sometimes more decorative on the principal floor window surrounds – the entrance front, Castle Durrrow (plate 45 ii) – or those within the projecting central bay, as at Stackallan. At this period there is no instance of the French-influenced elongated window lighting a double height room, nor has there been found (in buildings of this date) the English

Palladian solution to the high ceilinged-room, a small clerestorey opening over a normal height window. Viewed externally the side elevations at Bellamont Forest appear to contain this feature, but the layout of the house confirms that it contains a mezzanine floor (see plate 44 ii). Stairwell windows were sometimes exaggerated in size, a feature found at Castletrough, where the top sash has thirty-two panes (and earlier at Springhill, Co. Derry, which was later altered⁷⁹).

During the 1720s the grading of window sizes started to be practised by the most fashionable architects. The south front at Drumcondra House displays a hesitant touch of such hierarchic ordering. By the time that the top floor at Damer House was finished (in the 1740s) its windows were made somewhat smaller than those on the other two floors. At Doneraile Court the top floor was added on in the 1750s; the dimensions of the windows mean that this is no more successful (in emulating the Palladian ideal) than that of Damer House. However, most of the buildings dealt with here are two-storey and show no concession to any gradation, as found later where the principal storey windows are larger than those on other floors.

During the 1720s the narrow opening lost favour to one based on the double square. Kildrought, Bellamont Forest and Castletown show the more generous width of the newer fashion. The use of ornamentally shaped windows began to find favour. Round and oval lights, like those on the gable at Skiddy's Almshouse are baroque in influence. The drawings for Conyngham Hall, Co. Meath of c.1708 show a profusion of oval and round windows to the top floors of the south-east and entrance front respectively, in a baroque remodelling of the castle. Other forms are found in pediments, such as at Kilmacurragh where the light is a pentagon. Almost all of the buildings of this period, urban or rural, had dormer windows. Many were subsequently removed due to later changes in fashion.

The adoption of the sash-window

By far the most distinctive development in Irish architecture at the end of the seventeenth century was the general adoption of the sliding sash-window. There are several distinct and valid reasons why the sash-window quickly eclipsed its lead-glazed predecessors. First, (as remarked on above) wind cannot catch and smash the open sash as it can the casement, making it safer to manage in a country of unpredictable weather. Second, it is possible to control the size of the open section to regulate ventilation. Third, the jointed timber window

parts are sturdier than leaded lights, and are painted for more weather-resistance, and so need less frequent repair. Finally, the weight of the sash is entirely counterbalanced, allowing ease of operation with little wear and tear, whereas the performance of the casement window depends to a large degree on the strength of the hinges.

As mentioned above, within several years of the inauguration of William and Mary the political situation and economy improved enough to countenance house building or reconstruction. The next recorded instance of sash-windows – after those in the Duke’s apartments at Kilkenny Castle in 1680 – is in the accounts of Bishop William King, who had sash-windows in his palace in Derry by 1694 (the building is no longer extant).⁸⁰ Those at Kilmacurragh are convincingly of *c.*1697. Proof of the penetration into Dublin of the new window type in the latter half of the 1690s comes from a letter to Cyril Wyche, incoming Lord Chief Justice, written in 1700. Wyche was enquiring into lodgings in Dublin; his correspondent wrote: “...the house is two storeys high besides garrets and looks fairly enough to the street for a Dublin house, though we are much improved here in Sash-windows and other ornaments of building since your honour left us...” The Provost’s House, Trinity College was “sashed” by 1699.⁸¹ The earliest sashes still in use are in Marsh’s Library, probably of 1703 (plate 46). An advertisement in 1710 for a house on Arran Quay, Dublin, included the detail that it was “well sashed”.⁸² In 1712 a writer complemented the “town house” of Cork as being “a handsome building of hewn stone with arches and pillars and sashed windows.”⁸³ The earliest illustration showing sash-windows is a print of Skiddy’s Almshouses, Cork, dated 1721 (plate 39 i). It was proposed to sash the windows in Carrickfergus Custom House in 1725, to make the house much lighter and more convenient – illustrative of the perceived difference.⁸⁴

The fitting of sash-windows at Marsh’s Library and Kilmacurragh may indicate a conversion by the architect Robinson to the new window type. Thomas Burgh, his successor as Surveyor General, who worked until *c.*1730, practiced a style which looked backwards to mid-seventeenth-century English artisan classicism and which began to be out-moded even during his lifetime, but which included the sash-window in all except his barrack designs. By the 1720s Ireland was gaining a sense of architectural confidence, and modern influences began to shape new building styles. Edward Lovett Pearce, (a cousin of Vanbrugh) was the first Irish architect

(and Surveyor General) to adopt Palladian and Vanbrughian ideals systematically, working from *c.* 1720 until his early death in 1733. His Irish House of Parliament (begun 1729) showed Dublin – and indeed a wider audience – the potential of this new monumental style, while his work at Castletown had earlier displayed the touch of a master architect. The South front at Drumcondra House, Dublin, is another accomplished Palladian building by Pearce, in which the motif of the central Venetian window is an early example of its kind (plate 47).

The prominent architects had an undoubted influence on fashions, but as ever, it was the landed proprietor who implemented the project. The idea of the house as a social symbol spread to the Anglo-Irish gentry from their English mentors. A country seat with pleasant environs was now possible in a social climate which was more secure, while a city house was necessary for administrative accessibility. A middle class growing into respectability, from beginnings in trade and industry, looked to England and the continent for its ideas. The cultural values that these privileged classes espoused promoted the regulated, restrained beauty of classical ideals in architecture. Sluggish economic growth militated against architectural development in general, however, during the early eighteenth century. Dean Swift's opinion of Ireland at this time is profoundly depressing, whether accurate or not: "The miserable Dress, and Dyet, and Dwelling of the People. The general Desolation in most parts of the Kingdom. The old Seats of the Nobility and Gentry all in Ruins, and no new ones in their Stead".⁸⁵

Prominent patrons of the early eighteenth century include the Parliamentary Speaker, Mr William Conolly, responsible for commissioning Castletown (and a mansion in Capel Street, Dublin), and the governors of Trinity College, who had both the Rubricks and the new Library erected. Contact at the aristocratic level between England and Ireland remained high, and so did knowledge of current fashions, but many of the early eighteenth-century patrons of architecture were descendants of the Cromwellian Grantees.⁸⁶ These and other middle class landowners relied on pattern books that consisted of published English or French house plans and elevations for their house designs.⁸⁷ This dependence on printed sources from another country led to something of a time lag in new trends reaching rural Ireland, and helped to create distinctive Irish fashions in architecture and design.

Despite the provincialism that resulted from the isolation of Ireland, from early in the century there seems to have been a general knowledge among designers, patrons and builders of the use of sliding sashes. The spread of the sash-window within the middle and upper class milieu could not have taken place without the active involvement of craftsmen. By accepting a contract to form timber sashes, the joiner made a considerable financial commitment to the new type, with the cost of making tools, running lengths of moulding and training other workers. The knowledge accrued from each job put the joiner in a position to have his name circulated among the acquaintances of his patrons, for whom he could make sashes in subsequent work. To fit sash-windows into new buildings required prior agreement but no structural alterations, and the insertion of sashes into existing buildings did not necessitate any changes to the opening size, just the removal of the cross-mullioned timber frame.⁸⁸ Therefore changes could be made to new or existing buildings if progressive clients so wished. Working for forward-looking architects, or more importantly their patrons, offered prestige to the tradesman, which aided the fast spread of this technological advance at a time when so much was being built anew. As regards the ordinary builders of Dublin, Swift castigated the combinations of artisans who clubbed together as speculative builders of single houses and terraces which in his opinion were badly built, and commonly caused their bankruptcy.⁸⁹

Building accounts of the eighteenth century are more common than for earlier periods. They hint at a popular acceptance of the new window type, which was used primarily on main facades, while areas with little or no effect on the general aesthetic – rear elevations, basements and garrets – were still fitted with leaded casements or fixed lights. The characteristic buildings used in this study illustrate this hierarchy of glazing: Kilmacurragh and Doneraile have timber-mullioned basement windows, while Castle Durrow and Shannongrove originally had cross-windows in the wings and out-offices.⁹⁰

In a more antiquated design, several buildings have been examined that were built about this time with stone-mullioned basement windows. The Mayor's House, Galway was newly built c.1710 with perfect, hood-moulded mullioned windows, and at Doneraile Court, obviously influenced by the re-use of two of the earlier castle frames, all of the basement windows are mullioned in stone. Although the proportion of sliding sash to casement window in new

buildings cannot be assessed, documentary evidence makes it clear that by 1730 the casement – leaded or with timber glazing bars – was in terminal decline. The window at the Brazen Head may represent what might have been a common crossover style of the 1720s in less fashionable buildings, taking elements from both casement and sash.

The forms of sash-window used

New buildings in towns and cities, consisting in the main of terraced brick houses, were given flush-set sash-windows. The two or three bays were usually evenly spaced, in combinations of two and three windowed floors, with no pronounced distinction given to the main floor, nor reduction in size in the gable windows. Sills were set quite low with the window reaching up to the cornice of the room. During and after the Queen Anne period openings were narrow.⁹¹ A late eighteenth-century comment about Dublin illustrates how this style of architecture was later held in contempt: “You may conceive what the style of building was formerly when I tell you, that the mansion house of the Ld Mayor [of 1710] is a brick house of two stories, with windows of but two panes breadth in each.”⁹²

Variations on window shapes and styles used in this period became more common; these are chronicled in greater detail in Chapter Three. Semi-circular-headed windows were commonly used and segmentally arched openings were also a usual feature of this era. These survive especially in basements, seen at Kilmacurragh, Palace Anne (where the main floor of the surviving wing has semi-circular headed windows) and Castletown. The remarkable use in Munster of elliptical and segmental heads on all windows – at all periods – may date from the fashions of this time. It is thought that the Venetian window and its cousin the Diocletian were added to the Irish architectural vocabulary in the 1720s. The market house at Kinsale has a proto-Venetian window (three lights in a single opening, without decoration) to the centre bay of the front elevation of 1706, which, if original, is earlier than any other dated Irish example (plate 48).⁹³

Narrow urban plot sizes seem to have instigated a fashion for fixed lights over the door to light the hall, either designed as part of the doorcase or fitted at a later date. This led to a widespread adoption of the overdoor light, the earliest usually of a plain rectangle; Kildrought House possesses a good example of the type, above the door of the garden front.⁹⁴ It must be

remembered, however, that most early doors were tall and narrow, and overdoor lights were fitted later when this was replaced by a more fashionable shorter door. From the very start of the eighteenth century a fashion took hold for segmental and round-arched overdoor lights. There does not appear to have been a chronological development in the matter of shapes. The gable door to Trinity College Library by Burgh has a segmentally arched light with a more intricate design than any other known of this period (plate 49).⁹⁵

The horizontally sliding window (see plate 84), a variation of the normal vertically sliding type (but obviously without a weight mechanism), is found as early as the end of the seventeenth century, in the dormer windows at Kilmacurragh. Another early example can be seen lighting a back stair at Castletown. It appears that one sash was made to move in those seen in Ireland, but McGrath and Frost describe a more advanced version, "in which two frames slid in parallel grooves, overlapped and caught on the vertical bar".⁹⁶ As so few survive from this period, documentary evidence is crucial. The term sliding casement, found in the Royal Hospital *Minutes*, may sometimes have referred sliding to a horizontally sliding window.⁹⁷

There were two main ways of operating a sash in the early stages of its existence. The unhung, pegged sash is the earlier type, gradually eclipsed by the single-hung or more complex double-hung window, but all were used from an early date until well into the nineteenth century. The single-hung window usually had a moveable lower sash, the top sash being fixed. This type is found at Doneraile Court and Castlelough (1690s and 1710s respectively).⁹⁸ The sash-windows of the Governor's Lodgings at the Royal Hospital were double-hung from 1711.⁹⁹ The Kilmacurragh windows are double-hung, however they may have been altered subsequently. It is possible that the sash-windows on the side elevation at Waringstown, also double-hung, are of a similar date.

Sashes of this era have ovolo moulded glazing bars, with panes of almost square dimensions, usually in nine, twelve or sixteen pane sashes. Panelled (often raised and fielded) shutters were used in all buildings. The panelling reflected that of the wainscotting of the room. Some houses were given shutters only on the main floor, and in most it appears that stairwell and passage windows were panelled to the internal reveals to imitate shutters. The positioning of windows in this period varied, with stone structures having recessed windows. The sash-

frame was almost always exposed, this deriving from the method of installing windows from the exterior. The early eighteenth-century English surveyor and writer Robert Morris preferred not to see the “useless frames of the windows”, but the hiding of the frame in a reveal did not become a universal feature until well into the second half of the century.¹⁰⁰ The internal architrave was usually set with the shutters at a right angle to the room but in practice the angle varied, as seen at Bunrana and Shannongrove, to accommodate partitions. Curtains were in common use, but were hung from the top of the frame or an attached board in ruches and so did not affect the admittance of the valued light.

EARLY GEORGIAN IRELAND: 1720s TO 1760s

The profound influence of Palladian classicism

Palladianism is a system in which the Italian interpretation of proportion is paramount. The assertion of the Palladian architect and author William Halfpenny that “true proportions are the fundamentals, the Beauty and the very Life of Architecture”, expresses this importance.¹⁰¹ As stated by Louw, classicism involves “compliance with a set of strict proportional rules which impose their own rationale on the facade, irrespective of all other requirements.”¹⁰² The Palladian interpretation of classical architecture took hold in early eighteenth-century England for political reasons. It was thought correct by the Burlingtonians that England develop a national style to lend an air of venerability to the new Hanoverian regime. Though eminently suited to the hot and bright climate of Mediterranean Europe, the relatively small and widely spaced Italian openings were imposed upon Ireland without compromise (as seen in the unexecuted elevation for Drumcondra House, plate 47).

The Palladian influence on architecture in Ireland, as it started to permeate down the social scale, may be the principal factor in the wholesale adoption of the sash-window that took place in this period. The heavily gridded sash-window was one of the few permissible external decorative elements in this very masculine and angular fashion. The form and appearance of the window became increasingly important in Palladian classicism as it was an element integral to the aesthetic of the whole building.

Heavy architectonic handling of openings is a characteristic of the style. Both the masonry treatment of the window surround and the internal detailing of the glazing bars became

stockier than before.¹⁰³ Architraves became pronounced, with channelled masonry courses. Doorcases and ground floors received the bulk of the attention of the style (of this Cashel Palace (q.v., plate 50), is a good example), but all of the sashes in a building were detailed to similar specifications. Few windows survive which possess this emphatic Palladian treatment along with their original sashes to illustrate how the masonry massing complements the heavily detailed, relatively small-paned sash-window (but see Bellinter, plate 51).

The death of Pearce allowed his assistant, the German-born architect Richard Castle a free hand in the implementation of his own type of Palladianism in Ireland. Castle designed most of the important country houses from the 1730s until his death in 1751. Several other men – John Ensor, Francis Bindon, Thomas Ivory, George Semple and Nathaniel Clements – form the complement of architects who established quite conservative architectural fashions in Ireland, not straying far from Palladio's ideals and using the sash-window as an essential ingredient. The numbers of patrons increased dramatically at this time, however none stand out as did Speaker Conolly of Castletown. The ordinary urban and rural house of the rising middle class borrowed some elements of the fashionable style, among them the sash-window and the decorated doorcase.

Another classical style arose after the middle of the century, termed Georgian Gothic. The repeated editions of Batty Langley's *Gothic Architecture Improved* were influential in Ireland and fostered a fashion for his interpretation of Strawberry Hill Gothic.¹⁰⁴ Gothic became a fashionable alternative for several decades, used in new and old houses alike, such as Castle Ward, Co. Down, Leixlip Castle and Moore Abbey, both Co. Kildare. The first is a unique mix of classical and Gothic while the latter two remodelled buildings were given large pointed windows. In essence these buildings were classical in their ordering and modern in their conveniences, not poor imitators of a mediaeval aesthetic.¹⁰⁵ Differences in detail in Gothic windows included the shaping of the glazing bar grid in point-arched windows, and even the detail of its moulding. Several Irish examples remain, which show that the sash-window was cleverly adapted to fit within the overall design scheme (see plates 63 and 117).

In the 1750s a major stylistic change took place in European architectural thinking, which is termed neo-classicism. This change sprang from the rediscovery by young architects

and grand-tourists (including gentleman-architects), of the antiquities of Greece and the Roman empire, which fed a desire to use these sources instead of Renaissance influences in new architecture. Two of the most successful British proponents of this style, Robert Adam and William Chambers, used a far lighter approach to decoration and window design. This was born of the wish to make the window as invisible as possible both to admit more light and to visually incorporate the prospect (surrounding the country house) with the interior. As early as 1759 the new, more slenderly proportioned window type was known in Dublin. Mrs. Delany, the well-known diarist, wrote that “I was so nice about my bow window that I *sent to England for good glass* and have had the sashes new made in the narrow way, which makes them much pleasanter”.¹⁰⁶ However, the flowering of this refined window style happened slowly, as is dealt with at length in the next section of this history. The West Front, Trinity College was at the forefront of fashion, as it was designed with glazing bars somewhat slimmer than those favoured by the Palladians, just at the time Isaac Ware was encouraging their “retrenchment” in his work *The Complete Body of Architecture*, published in 1756.¹⁰⁷

Important buildings of the early Georgian era

Not all of the buildings noted in this study were designed by one of the above architects. However, Castle’s Ballyhaise, Co. Cavan (c.1730) (plate 52 i-ii), Ledwithstown Co. Longford (before 1746) (plate 53) and Bellinter, Co. Meath (c.1750) (plate 54) and Bindon’s work at Howth Castle, Co. Dublin (c.1738) (plate 55 i-ii), have been singled out as representative of work from the influential designers.¹⁰⁸

Mount Ievers Court, Co. Clare (1730-37) (plate 56), Bonnettstown Hall, Co. Kilkenny (1737) (plate 57), no. 13 Henrietta Street, Dublin (c.1743) (plate 58), The Bishop’s Palace Robing Room, Kilkenny (c.1751) (plate 59), the West Front, Trinity College (1751-58) (plate 60 i-iii), and St. Werburgh’s Church, Dublin (1754-59) (plate 61 i-ii) are important works by lesser-known architects. The single – undated – example of a leaded casement window is examined at Rathfarnham Castle (plate 62). The early Georgian Gothic sash-window (c.1760) is seen at Leixlip Castle (plate 63).¹⁰⁹

An increase in agricultural prosperity towards the middle of the eighteenth century meant that greater wealth was at the disposal of landowners, which resulted in more building

activity by them both at their country estates and towns and in Dublin. Many of the recently arrived ruling elite began to think of themselves as Irish as well as English, and based themselves in Ireland, patronising local architects, artisans and artists by commissioning austere classical buildings with beautifully designed interiors and landscaped grounds. Public interest in promoting cultural and industrial development was helped immeasurably by the endeavours of the Dublin Society, founded 1731, composed of responsible, cultured and entrepreneurial members of society, which aided the arts as well as domestic industries.¹¹⁰

As stated above, most architectural developments passed through the capital out to the hinterlands via architectural patrons, so once more a brief sketch of the city is given. Stylistically Dublin reached the heights of a capital city with the planning of grand set-pieces such as Sackville Mall and Rutland (now Parnell) and Merrion Squares. Sackville Mall and Parnell Square were commenced in the 1750s, quickly filling up with terraced houses of the highest quality. At the end of this period the ground plots were set at Merrion Square (though the south and east sides were filled very slowly). Palatial town houses were scattered throughout the city. Unified terrace facades did not appear in Ireland until near the end of the century, but even before the advent of the Wide Streets Commissioners (in Dublin) in 1758, lease stipulations and fashion had already established a degree of stylistic unity in the terraces of the streets and squares.¹¹¹ Drawings of Dublin done in the mid-century, however, show that symmetrically ordered facades had not become universal (plate 64 i-ii). Illustrations showing other towns such as Cork and Drogheda make plain that one of the basic tenets of classical architecture – regular fenestration – had begun to make a distinction between the old and new fabric of Ireland (plate 65 i-iii).¹¹²

Comments of the time by some of the learned and highborn are illustrative of the prevailing scorn heaped upon Irish buildings and towns, and the lack of tasteful architectural practice. Mrs Delany wrote in 1731 of Dublin that “the town is bad enough, narrow streets and dirty-looking houses, but some good ones [are] scattered about; and as for Stephen’s Green, I think it may be preferred justly to any square in London”. In 1732 she commented about rural Ireland that “the people of this country don’t seem solicitous of having good dwellings or more furniture than is absolutely necessary.” In contrast, an English visitor noted in the same year that

“the buildings of the quality, gentry, and of the citizens in Dublin, are large and beautiful, the furniture neat.”¹¹³ Lord Orrery wrote in 1736: “... here we see nothing but bogs, desert plains, or the awkward imitation of what is now distinguished by the word Taste.” George Berkeley plaintively listed the shortcomings of Irish manufacture, asking “whether smiths, masons, bricklayers, plasterers, carpenters, joiners, tilers, plumbers and glaziers would not all find employment if the humour of building prevailed?”¹¹⁴

In this era windows (in common with other building components) were a resource, often being retained when modernisation was undertaken and installed in out-offices or less prominent rooms. The value placed on them is clearly demonstrated by the theft of three large sash-windows from a house near Leixlip reported in 1739.¹¹⁵

By 1732 John Loveday, an English traveller, could give a positive account of the enthusiastic adoption of the sash-window, in a diary of his tour of Ireland.¹¹⁶ Loveday’s inclusion of the names of all the buildings he encountered “sash’d” indicates that the proportion of sash to casement window was far greater in Ireland than an observant English tourist would have expected. He comments on a number of churches which he visited that were sashed - at Kinsale, Tipperary town, Balline-mony, and some of the churches of Dublin; the chapter house of St Finbarr’s in Cork, and Bishop Foy’s school in Waterford (“built by his executors in 1708; ‘tis of stone and Sash’d”). Of Trinity College he notes that “The front is an extended brick building, partly sash’d. The 2d and 3d Courts lying in a line are smaller. The 4th Court has two handsome large sides of Brick, Sash’d.” (The first is the West Front of 1684, and the last is the Rubricks.) Interestingly, he notes that the barracks of the Western Gate in Waterford had its officers’ quarters sashed, as at this date most barrack buildings were not considered worthy of the more expensive new window type. Loveday also comments that “Even thatch’d Houses are Sash’d in Ireland”, but it must be borne in mind that at this time many of the well-to-do, including bishops, were content with thatch.¹¹⁷

The dominance of the classical format

Two features are common to all the progressively designed buildings of the age: a restrained classicism on the facade and the use of the vertically proportioned multi-paned sliding sash-window in regular bays. The desired relationship of solid to void is seen at no. 13,

Henrietta Street, Dublin (plate 58), a house with very Italian proportions (that is, widely spaced openings), carefully calculated to achieve a proper Palladian ideal.¹¹⁸ John Aheron, author of the first architectural treatise to be written in Ireland prefaces his book with some observations on windows, which illustrate the fashion for vertically orientated windows, with height twice the breadth. A drawing attributed to him of a sash-window is marked at eight feet three inches by four feet (plate 66).¹¹⁹ This is the earliest known working drawing for an Irish window.

The sash was used in its several forms, Venetian, Diocletian and overdoor light (sometimes with sidelight). Craig notes the importance of the window arrangement, writing that window spacing was widely used to give interest to otherwise plain facades, and that the most widely employed elevational feature was the tripartite opening, in one or other of its guises. A. E. Richardson concurs: "In so far as domestic architecture is concerned, the evidence shows that the excellence aimed at consists of studied contrasts of sashed windows with wall surfaces, enlivened by an enriched doorway."¹²⁰

The adoption of tall elegant windows in the new architecture of the day was not without drawbacks. Some writers promoted caution in their number and size. Richard Neve, the author of an early eighteenth-century builders' dictionary, wrote of the dangers that windows posed to the fabric: "observe first, that they be as few in number and as moderate in dimensions, as may possibly conflict with other due respects: for in a word all openings are weakenings."¹²¹ Aheron commented on windows in much the same negative vein, writing that "there is no part of a building more expensive than windows, or more ruinous, not only ... as being exposed to all wind and weather but because of consisting of so different and unsociable pieces as wood, iron, glass, and those small, and weak, and easily shaken".¹²²

In this period all openings on the main facade were of the same or similar width, with the tallest windows on the reception floor and smallest on the top floor. The tall principal floor window of the Palladian period led quite early on to the use of unequally sized sashes; in Ireland the larger sash is usually at the top, whereas in England and Scotland the reverse is usually true.¹²³ Window pane sizes are similar on each floor. However, exceptions to the rule of positioning and pane sizing are not only found in basements and attics, but also on some main elevations and badly placed sidelights. Basement windows are often placed out of line, and may

be of differing widths to those on the main facade. Attic windows could deviate from the positioning of the main windows, and again, pane sizes might not only be smaller, but more numerous. The doorcases of many urban houses were placed off the centre of their bay, forcing the ground floor windows out of line. Not all mid-eighteenth-century buildings (urban or rural) conformed to the classical rules in gradation either; there are many examples where the windows on all floors are of a similar size.

Window frames were usually recessed to the width of a brick in the wall, on primary facades at least, with window frames either exposed or hidden behind the reveal. As Surveyor General, in 1729 Pearce instigated a law to forbid timber members flush with building facades for fire safety purposes. This prohibited the flush-framed window, establishing a minimum depth for the setback of the frame of four inches.¹²⁴ Though this law, passed in 1730, covered the whole country under pain of fine or gaol it appears to have been widely ignored.

Hiding the box frame in a reveal became usual from the 1730s in England in order to let in more light. The earliest Irish incidence of a completely hidden frame occurs at no. 13 Henrietta Street (*c.* 1743). But the same quest for light is possibly the major factor in the persistence of the flush-set window, as there was a general belief that the recessed window would admit less direct light due to hindrance from the external reveals.¹²⁵ However, widening the angle of the internal reveals, and painting them white (or a light colour) was gradually found to be a convenient way to ensure maximum light into the interior.

Venetian windows took their proportions from the other openings in most cases, as did Diocletians and lunettes which were usually restrained in size, sitting atop the Venetian on the top floor. It was considered proper to have a Venetian window in certain areas, such as the stairwell – as at The Bishop's Palace, Kilkenny, no. 50, Pope's Quay, Cork, and Glasnevin House, Dublin – the saloon, and other areas where light was required. Both nos. 85 and 86 St. Stephen's Green, Dublin (of the late 1730s and 1760s respectively and together known as Newman House), have Venetian windows lighting the stairwell. Indiscriminate placement of this feature, however, became a feature of the mid-eighteenth century. The visual harmony afforded by the Venetian is set askew in inserting it off-centre without regard to the external

effect, as happened in an alteration to the Pearce-designed house, no. 9, Henrietta Street, and also on several other Dublin houses of the 1750s and 60s.

Doorways often had an overdoor light and flanking sidelights, either designed as part of the doorcase or inserted separately, one or two, as though an afterthought. By the 1730s the Venetian doorcase was widely known, this being a three-part entrance in the manner of the window of the same name, usually with a semi-circular-arched light placed within the pediment. Lord Orrery wrote in 1735 "...on High-Days and Holidays We have the honour of catching Cold at a Venetian door..." The doorcase at Hazelwood, Co. Sligo, was described in 1739: "The hall [is] lighted by a large Venetian window, whereof the Hall Door is the Middle part."¹²⁶

Pearce designed a radially-spoked overdoor light at Cashel Palace in 1730, the earliest to be definitively dated.¹²⁷ Internal semi-circular overdoor lights were another stylistic advance, bringing light into back halls. These windows, known from the 1730s, were made in similar style to the external overdoor light, usually with two intersecting curved bars (plate 67). The rectangular overdoor light did have its adherents, though never to the same degree as in England or Scotland, and as stated above, many resulted from alterations to early tall entrances.

Dormers went out of fashion towards the middle of the century. "Dormer windows are now generally exploded" wrote the Rev John Payne in his book *Twelve Designs of Small Houses* in 1757, while a letter writer to *The Freeman's Journal* of Feb 7, 1769 complained that "skylights of whatever form or Denomination ... however managed or adorned, suggest an idea of Meanness, or at Best of some Deficiency they are to supply."¹²⁸ The dormers on many surviving early and mid-eighteenth-century buildings (such as Castledurrow and Ledwithstown) were later taken down. Lanterns, known since the Restoration, became more usual in the eighteenth century, and several good side-lit examples survive at Bellamont Forest and Bellinter. That at Bellamont Forest is decorated with plasterwork (plate 68), while the original sashes remain in the smaller Bellinter lantern. Improvements in working iron led to the introduction of glazed metal rooflights after the mid-century, of which that in the Provost's House, Trinity College, is a fine example.

Houses with bowed projections became fashionable from the 1730s, of which Ballyhaise and Belvedere, Co. Westmeath (c.1740, with bows to either end) are both early

examples. The bow often incorporates curved windows, for which the skill of the joiner was honed to a fine degree in the making of the sashes. Ballyhaise has a bow to the centre bay of the rear elevation in which there are original round-arched windows (plate 69). In these windows the glazing bar grid continues up to the top, which is typical of the treatment of early round-arched heads. Although during the years in which Palladianism dominated, semi-circular- and segmentally-arched windows were seldom used on main elevations, they did not entirely disappear, as discussed in Chapter Three, p.86 ff.

The decline of the leaded light

It can be surmised that it was for aesthetic and practical reasons that the use of leaded and timber casements in basements and garrets tapered off, giving way to the use of the sash on all elevations, even for the tiniest and most obscurely placed windows. However, the use of leaded windows in existing buildings continued, according to contemporary sources, until late in the eighteenth century (as treated below). At Rathfarnham Castle the windows remained their original small size until the middle of the century, with single lights having lead-glazing, as instanced by the surviving casement at basement level (as seen in plate 62). This has square panes, not quarries, and is in a deal frame, making it more likely to be of the eighteenth than the seventeenth century. Building accounts refer to the leaded windows installed in the basement of houses erected in 1738 for the Earl of Fingall in Church Street, Dublin. This was a relatively late date to find leaded lights in a house built for an architecturally aware patron.¹²⁹ At Trinity College the contract glaziers were releading lights in the (old) West Front until its demolition at the start of the 1750s. A highly unusual instance of archaic design occurs at Patrick Street, Kilkenny, where a classical terraced pair of mid-century houses possess stone mullioned basement windows; however, it is not known if they had leaded lights (plate 70 i-ii).¹³⁰

Especially enlightening on the drawbacks of leaded windows are the reports of the Barracks Commissioners in 1752, printed in the *Commons Journals*. By this date most domestic buildings had sash-windows throughout, but barracks were considered to be low priority for modernisation. Some comments suffice to illustrate the frustration of barrackmasters countrywide at the continuous repairs necessitated by the leaded windows. The comment from Belleek (now Ballina), Co. Mayo to the Barrack Board was “the windows are casement, and so

insufficient that they are blown out of the frames by every blast of wind.” Foxford Barracks, Co. Mayo, reported that the windows were glazed with small panes of quarry glass that did not hold the wind or rain out, and that they were unserviceable. Sligo Barracks reported that the frames were all rotten and the lead decayed.¹³¹

By the mid-eighteenth century the view seemed to be universal that the sash-window was an improvement in terms not only of aesthetics but also of comfort and convenience. In Ireland it was established to such an extent that comment appears to have been superfluous – quite simply windows were sashed. There is no reference found to the fitting of houses with timber casement windows, apart from rare mentions of French doors or windows. Church buildings, too, were sashed, whether classical – St. Werburgh’s – or Palladian with Gothic features as at St. Peter’s Drogheda (of 1748). This latter was commented upon for its pointed windows by Pococke in 1752.¹³² There does not appear to have been any interest in exploring alternative window types, even in the Gothic style. Leixlip Castle, for example, was fitted with Gothic-arched sash-windows with octagon and diamond glazing and Y-tracery style arches, adapted from Batty Langley’s *Gothic Architecture Improved*.¹³³

THE MATURE CLASSICAL STYLE: 1760s TO 1860s

From the late eighteenth to the mid-nineteenth century the classical architectural idiom termed *Georgian* put emphasis on an artistic coherence based on geometry and pattern. Politically, for several decades at the end of the eighteenth century, there was a resurgence of national pride in Ireland, which manifested itself in patronage of the arts. The diversity and excellence of the visual arts of this period have never been surpassed. It was a “Golden Age” in art and architecture, covering both urban and rural Ireland (though indeed limited to certain social classes). Those who were patronising the arts at this time were most closely linked to Ireland through Parliament and its associated fields.

With the 1798 rebellion and Act of Union, 1801, the withdrawal of the parliamentary aristocracy began. The built environment continued to improve, however, and few discernible differences are to be seen in architectural terms. Despite the loss of political autonomy and the wealth that had been associated with a national parliament, there was a general growth of prosperity in the early nineteenth century, especially of the middle classes. This hinged upon the

demand for agricultural produce occasioned by the Napoleonic wars. Provincial merchants and professionals were largely responsible for the consolidation of the Irish urban fabric in the early nineteenth century and for the large numbers of middle-sized country houses that still exist today.

One crushing new development which affected the purses, if not the designs of property owners and architects, was the introduction of the window tax, first imposed in England in 1695, but not extended to Ireland until 1799. This was accompanied by a tax on glass from 1825, both of which Ireland had escaped as long as she had had her own legislature.¹³⁴ William Cooper, a Scottish glazier and author, wrote that the tax had led to the “introduction of a mode of building by which the size and number of windows have been diminished, at the expense of taste, symmetry and elegance, comfort and even health.” While it is now held that dummy windows were more used to attain symmetry than escape tax, Cooper made a strong case for the suppression by it of the free use of window-glass.¹³⁵ In hindsight, it is not easy to find differences in the fenestration of new buildings which result from the window tax, though obviously the lower classes suffered far more. Petitions were regularly sent to Parliament from guilds and trades’ associations that were affected by both taxes.¹³⁶

As well as the flowering of the strict classical style, the late eighteenth century saw the diverse developments of Gothic and neo-Greek, and the eventual decline of Georgian influences in the face of the Victorian Gothic Revival and the machine age. Within these broad architectural developments, details in window design also progressed.¹³⁷ (Technological advances in joinery and glassmaking which influenced and accompanied changing styles, outlined in this historical account, are covered in greater detail in Chapter Two.) The technological and fashion changes experienced with the advent of the Victorian age – machined building components and processes, more widespread education (for artisans and professionals), and eclecticism in architectural design – all affected the sash-window. The purist Gothic Revival of Pugin and others assisted in promoting other window types, shapes and materials. The architect George Wilkinson expressed his preference for the Gothic, writing in 1845 that the old style stone mullioned window was better than “the prescribed form of the perishable modern

sash ... so strictly uniform must be the arrangement of these square modern perforations, that internal arrangement must ever be subservient thereto".¹³⁸

The scenes illustrated by the authors Pool and Cash, Thomas Milton and early nineteenth-century artists such as the Brocas family, but especially James Malton's detailed prints of Dublin, show the architectural change that was transforming Ireland (plate 71 i-ii).¹³⁹ Written comment is also more plentiful, as Irish and foreign visitors published accounts of their tours. Many travellers and antiquarians of the late eighteenth century were repulsed by the buildings and conditions they found throughout the country, in towns as well as in the countryside. In the eyes of some authors the "big house" was the only visual and temporal respite in a ravaged and poverty-stricken land. However most writers tended to take into account the backward, agricultural nature of the Irish economy which left most of the population unable to build houses of any worth or architectural value.¹⁴⁰

Tastes changed substantially between the mid-eighteenth and the early nineteenth century. Looking back over his life, Jonah Barrington, a member of the Limerick gentry described (in 1819) the house in which he was born, "the old mansion exhibited altogether an uncouth mass, warring with every rule of symmetry in architecture."¹⁴¹ The solid three and four storey terraces of county towns and cities built towards the end of the eighteenth and throughout the nineteenth century demonstrate an accomplished familiarity with the classical type as perfected over the previous fifty years (plate 72 i-iii). Of Dublin the comment was made, c.1820, that "the shops are handsomely fitted up, with considerable taste, and so near are the resemblance of several streets to some in the metropolis of England, that a stranger from that city might imagine he was in London". Sir Walter Scott could not see any of the desolation about which he had heard, describing Dublin in 1825 as "splendid beyond my expectations."¹⁴² From the late eighteenth century urban terraces, middle class farmhouses and estate workers cottages were often designed with a conscious effort at classical proportioning, with perhaps a fanlight or modulated windows.¹⁴³ Away from the strictures of fashion, thicker glazing bars and exposed box framed sash-windows were still fitted by local joiners.¹⁴⁴ Contrasting with the spreading prosperity of the middle classes was the poverty of the masses. The lower part of Mallow Co. Cork was described in the 1820s as consisting "chiefly of mean looking shops with

old fashioned projecting windows over them...”¹⁴⁵ which was probably an accurate description of the poorer quarters of most towns. Alexis de Tocqueville, a French traveller of the 1830s, was repulsed by the standards of housing he encountered among the peasantry, “a large number of them wretched to the last degree”. He described thatched mud houses lacking windows and chimneys, and only in the better houses was there a separate sty for the pig. “I imagined that these were the wretched dwellings of beggars, but my companions assured me that they were the homes of small tenant farmers who had twenty or thirty acres of land to cultivate.”¹⁴⁶ In contrast, in the 1840s – on the eve of the Great Famine – Samuel Hall and his wife reported on provincial towns and cities in a generally positive manner, and J. G. Kohl, a German visitor of the same decade, noted that ‘the private houses of the wealthy (were) just as small, neat, unadorned, and precisely of the same cut and design as private houses in all English towns.’¹⁴⁷

By the 1780s, the classical style had achieved a status in the social consensus that disallowed deviation. One of the principal reasons why the character of the Dublin terraced house came to conform so exactly to classical proportions was the strong influence of the Wide Streets Commissioners. The regulation of the façade interested the commissioners to such a degree that adherence to their rulings was mandatory, and buildings could be – and were – altered to suit them. The Commissioners had reluctantly to rule, with legal advice (when they were challenged by a group of speculative builders) that they could not “compel the tenants to execute leases with covenants as mentioned for preserving symmetry and uniformity in the buildings, although ... it is certainly in their interest as that would continue the beauty of the street and consequently enhance the value of the houses therein.”¹⁴⁸ In Cork City the corporation took a similarly strict view, imposing – at least once – conditions connected with the fenestration on prospective builders.¹⁴⁹

Characteristics of later Georgian and early Victorian buildings

The buildings that best illustrate the development of windows in this period include The Casino, at Marino, Co. Dublin by William Chambers, (1758-69) (plate 73 i-ii), nos. 23-4 Upper Merrion Street, Dublin (c.1765), (plate 74 i-ii), Castletown Cox, Co. Kilkenny by Davis Ducart, (c.1774) (plate 75), Glin Castle, Co. Limerick (1780s) (plate 76), Townley Hall, Co. Louth (designed by Francis Johnston, 1794), (plate 77), the Gilson School, Co. Meath (1824, by C. R.

Cockerell) (plate 78), no. 2 Pery Square, Limerick (1838) (plate 79), and Heuston (Kingsbridge) Station, Dublin (1845-6 by Sancton Wood) (plate 80).¹⁵⁰

Stylistically Ireland lingered on with a conservative Palladianism – interspersed with Georgian Gothic – after the death of Castle, as no single architect took up his mantle for well over a decade. Taste was set from the 1760s by the well-publicised architecture of Chambers and Robert Adam, neither of whom visited Ireland but whose legacy was lasting (several commissions were carried out *in absentia*). The arrival of the Italian, Davis Ducart on the architectural scene in the 1760s saw the final flowering of the baroque in Ireland. Ducart used fenestration in a very expressive manner, seen at Castletown Cox, the Mayoralty House, Cork and Kilshannig Co. Cork (see plates 116 ii and 123 for the latter two). James Wyatt, an English neo-classical architect, practiced widely in Ireland during the late eighteenth century, but – among others – he was eclipsed by the talents of James Gandon. Gandon’s majestic classicism, at The Customs House, Dublin for example, influenced many Irish architects, notably Francis Johnston and Richard Morrison. However, very many of the distinguished architects of the turn of the nineteenth century, including these latter two, practiced with ease in either classical or Gothic modes. The austere classical Townley Hall was designed by Johnston, who also built the impeccably Gothic Dublin Castle Chapel. George and James Pain, the sons of an English architectural pattern-book-maker, produced several designs in different idioms for Dromoland Castle in the 1820s. William Vitruvius Morrison, son of Richard, designed the imposing Carlow Courthouse as a polygon, with Ionic portico and pedimented windows as the only external features. In contrast he is also credited with introducing the Tudor revival to Ireland.

Change and development in the sash-window

One of the most distinctive developments since the introduction of the sash-window was the refinement of its members to suit changing fashions during the 1750s. As touched on above, Isaac Ware flew in the face of the still-established Palladianism, writing that “the thick bars we used to use hurt the eye, and obstructed a great deal of light; they made a large window resemble a number of smaller ones”, and that “as much glass should be seen, and as nearly a continued a body as possible”.¹⁵¹ Both of these wishes – for thinner glazing bars and larger

panes of glass – were made possible by ever-increasing skill and experimentation in the fields of woodwork, metalwork and glassmaking.

The neo-classical style was introduced to Ireland very soon after its inception with Chambers' design for the Casino, at Marino outside Dublin, in 1758. This was built for a patron fresh from the Grand Tour, Lord Charlemont. In its large-paned, slimly detailed sashes this building illustrated that finesse was possible without sacrificing durability. Over the next decade the new approach to window design – the glazing bars becoming secondary to the glass – was seen in fashionable new buildings around the country, with some slimming down of the sash-members. Mrs Delany's knowledge of the new narrow type (which encouraged the use of the best quality of glass) before the end of the 1750s points to some early enthusiasm for it in Ireland, in theory at least. The most dramatic example of the difference occurs at Castletown, where the original blocky windows were replaced on the main elevations by narrower sashes in the 1760s; here some sashes were taken out a few decades later for even more fashionable, slimmer ones (plate 81 i-ii). On the whole, however, the change was slow to take hold. At The Provost's House, Trinity College, the windows were only slightly more refined in outline than the West Front of the previous decade (which had shown some concession toward thinner members) and the basement windows of no. 23 Upper Merrion Street had (until recently) a full two inches to the glazing bar. This transitional caution towards what were probably seen as very spindly members is also seen in other buildings of the 1760s including no. 2 Palace Street and Browne's Hill. It possibly contained also an element of restraint from a style that might be soon dismissed by the proponents of fashion. However, there was no turning back. Chambers (at Rathfarnham Castle as well as the Casino) and Ducart led the way which Thomas Cooley soon followed at Mount Kennedy (in his execution of Wyatt's design), with slimly sashed, large paned windows.

The Georgian Gothic retained a small but noteworthy share of attention throughout the late eighteenth century and adapted well to changing tastes, with Regency Gothic a favoured early nineteenth-century church derivation. Dunsany Castle, Co. Meath retains its attenuated Gothic glazing to the rear of the castle, which was probably inserted in the 1780s. Timber mullions and transoms were sometimes used in conjunction with sash-windows in early

nineteenth-century castellated Tudor-Gothic buildings such as Dromoland and in the alterations at Glin Castle in the 1810s (in an unusual use of domestic Regency Gothic in Ireland); possibly it was a Munster derivation. In both of these buildings there are paired sash-windows with fixed lights above the transom. Instances of stone mullions and transoms with sashes are found throughout the country in Tudor-Gothic mansions, religious buildings and domestic houses; in some the lower sash slides up behind the transom. Gothic did not always necessitate pointed windows; having a Gothic pattern to the glazing bars or inserting mullions and possibly hood-moulds was an understated way of altering the look of a classical house or extension. This occurs at Powerscourt House, Dublin (1771-4), where the Y-pattern glazing in the round-arched windows survives in the basement (plate 82). A good range of Gothic and Tudor revival mullioned sash-windows can be seen at Kilkenny Castle, remodelled in the 1830s.

The previously neglected timber casement window returned to fashion during the nineteenth century because of its romantic associations. It was principally employed in garden buildings and estate cottages where rusticity was desired, seldom being the main window type in classical country houses.¹⁵² A latticed timber grid seems to have been the most common variation employed (as at Malahide Castle Oak Room, done in the 1820s). A more prosaic window type, seldom used outside the cottage or the castle – Malahide, Great Hall, for example – is the cast iron quarry-pattern window. These lights, which came into wide use after the industrial revolution allowed mass production, copy the two types of quarry known in the previous centuries, square and long (plate 83). Renovations done to the Southwell Gift houses in the early nineteenth century included the fitting of such lights, which are still in place. Some of the schoolroom windows at the Gilson School were specified to be of cast iron with opening lights, though those to the facade were timber sashes. Horizontally sliding timber windows (called Yorkshire Lights in England) were also occasionally used throughout the nineteenth century. They were not associated with any particular style but usually were fitted in smaller domestic houses (plate 84) with low floor to ceiling heights.¹⁵³

A mid-nineteenth-century comment (from a Gothic enthusiast) confirms that no other window type had managed to ascend to the prominent position occupied by the sash-window.

“The majority of our domestic windows are provided with double-hung sashes, which are so much associated with our notions of convenience, as not to be likely to be superseded”.¹⁵⁴

Contemporary criticism of fenestration

Not all mid-eighteenth-century critics were satisfied with contemporary architectural development. The renowned philosopher, Edmund Burke, wrote in 1761 “the management of light is a matter of importance in architecture.” In contrast to the trend of the day, however, he believed that gloominess was to be preferred indoors.¹⁵⁵ On this subject James Gandon echoed Robert Adam’s view, writing that “the admitting light by various ingenious contrivances will not only assist the internal convenience and beauty, but may greatly contribute to the effect of the external appearance and consequence by adding to the dignity of the elevation, which is so often injured by the too frequent repetitions of such openings, so as to destroy its simplicity.”¹⁵⁶

While Burke found there to be insufficient distinction between exterior light and interior shade, the striving towards light in buildings was obviously not apparent to those who wished to see it. The *Dublin Magazine* published an essay in 1764 that castigated badly proportioned facades; buildings put up by inexperienced workmen who did not understand the theory and practice of architecture. The author agreed with the criticism voiced by earlier commentators who compared Irish buildings to gaols: “Hence it is, that we have so many bungled houses, so oddly contrived ... some of them are like prisons, because of the darkness of the rooms”. This opinion was echoed by Thomas Malton (father of James, the draughtsman), in his caustic comment “I think, as we are not yet cursed with a Tax on Windows, they need not be so sparing of them, but give more business to the glaziers.”¹⁵⁷

A critic writing in 1769 expressed distaste for Trinity College West Front. “The windows of the three lower Stories are so much of a Size, that the Difference between them is scarcely marked, consequently there is no subordination perceivable”, concluding that it was a “dull, heavy pile ... perforated all over with a profusion of windows.”¹⁵⁸ Thomas Malton was another critic who looked for other decoration besides mere rows of windows. “It is very unseemly and most insipid, to have so many tiers of windows in one flat front without a cornice and other mouldings”.¹⁵⁹

The late eighteenth-century correspondence of the Lennox sisters (who all married wealthy men, and three of whom settled in Ireland) reveals that design of such relatively ordinary features as windows was attended to with interest by some of the gentry at least; clearly interior decoration and cost were factors in the position, size and proportions of openings. Towards the end of 1775 Lady Sarah Bunbury wrote to her sister Emily, Duchess of Leinster at Frascati, Co. Dublin, with an enclosed sketch and advice on three different proportions of window for projected works at the house, together with approximate costs.¹⁶⁰

An undated – and unlocated – drawing for a house by Thomas Ivory (d.1786) survives with accompanying notes detailing the painstaking measures he proposed for ensuring that both interior plan and exterior fenestration would read correctly. “The centre of the Hall Door is remov’d six inches to the left from the middle of the front ... the outside pier on the left hand is six inches less than that on the right This distribution was necessary where three windows only could be introduced, with any degree of propriety in order to bring the windows and the door as near to the centres of the apartments they are in as possible without any sensible difference in the front of the building”.¹⁶¹

Late eighteenth-century reliance on classical fenestration

The visual harmony required by neo-classicism came to rely even more on the fenestration in the absence of baroque or Palladian adornments. In this context the standardisation of window design (style, positioning, proportion and detail) within acceptable parameters was as important as spatial organisation or surface decoration. In fenestration a vertical emphasis was seen as essential to contrast with the horizontal lines of the string course, cornice and parapet. Townley Hall is a good example of a building which relies entirely on contrast between the horizontal massing and vertical windows; this house has windows of the same size to both floors (with twelve panes to each) but shows no hint of provinciality.

The tallest windows were on the reception floor (*piano nobile*), typically with the Irish arrangement of nine pane over six pane sashes. Exceptions are found, especially in buildings designed by English architects such as Wyatt (at Carton the first floor was given the English arrangement – six pane over nine – by this architect c.1776). This feature lasted until near the end of the eighteenth century in Dublin, and almost everywhere else in Ireland it was universal

until the 1840s. The Pery Square terrace still retains all of its original first floor nine over six pane sashes. In Dublin the larger panes of glass offered by a pair of six pane sashes became popular, but this slight detail did not usually find favour outside the capital.

The top (attic) floor windows were nearly square with windows of nine panes (six over three) or six (three over three). The parapet (disguising the roof pitch) often started just above the window head. Dormers were rarely used by this stage, only finding occasional favour in nineteenth-century castles of revivalist styles.

Internally, a preoccupation with symmetry and order occasionally extended to fitting and glazing dummy sashes in internal walls with mirror glass, to balance the layout of the room. This is seen to elegant effect in the oval room at Lucan House, Co. Dublin (of the 1770s) and the Supper Room, Dublin Castle of a similar date (plate 103), where the sashes and mirror glass are slightly curved to match the bend in the wall. W. McGregor, author of the *Picture of Dublin*, (c.1820), complemented the Cash Office of the Bank of Ireland for the ingenuity of the roof lighting. "One row of mirror windows on one side, being made conformable to sashes on the other ... few would discover the deception. It produces a good effect."¹⁶²

A fashion for lengthening the windows of the reception rooms to floor level altered the facades of many existing houses from the 1790s onwards.¹⁶³ No. 85 St. Stephen's Green, Dublin had its saloon window-sills lowered to give more light, in a manner that leaves the Venetian window especially distinctly altered, cutting through the string-course. James Gandon, the pre-eminent architect of the day, designed the very elegant unified terrace of Beresford Place, Dublin, in 1793, which faces the rear of the Custom House. The extremely tall eighteen pane windows of the piano nobile stretch from floor to ceiling, and illustrated to Dublin the grand effect of such design. A similarly august result is achieved at Aldborough House, Dublin, the last great city mansion, built at the end of the century. Nos. 1 to 6, Pery Square have floor-to-ceiling windows on the principal floor which was standard by that date even in provincial towns. An element of the rigorous approach to fenestration of this period is the exact placing of the doorcase in the centre of its bay. Though this had been done in houses of the highest quality for decades, in Pery Square the effect is seen to best advantage due to the unified façade (plate 85). Also visible on this terrace is the continuous cast iron balconet stretching the entire length

of the front, a notable feature of the late Georgian period. Early balconets were made in wrought iron, and are apparently of French origin, used with the French window – floor length casement windows – to provide limited access to the open air while preventing accidents. A design for terraced houses in Dublin in 1787 clearly shows them on all of the first floor windows, but they achieved popularity only with the lengthened window of the end of the century.¹⁶⁴

The continuing importance attached to the prospect in country house architecture is seen in several late eighteenth- and early nineteenth-century examples, in which the windows and doors are designed to receive the best view. A drawing by Gandon survives for a “sash-door” for the garden front at Emsworth, Co. Dublin. It has six over nine pane sashes with two sidelights, the whole imitating a Wyatt window; when the lower sash is pushed up it slides the depth of one pane into the wall above, leaving a door space with an apparent six-pane “overdoor” light (plate 86). Marlay House, Co. Dublin, was designed with its main door glazed in the style of a sash-window.¹⁶⁵ At Carton, Co. Kildare, extensions made in 1815 by Morrison included 18 pane windows set at floor level, to best view the formal garden. The English landscape architect, Humphrey Repton, writing in 1816, had definite opinions on the design of windows to least obstruct the view, notably on the positioning of the meeting rail of the sash-window at a level to accommodate the view of both sitting and standing occupant.¹⁶⁶ Not only the domestic view was considered important. The parade ground at Fermoy Barracks (Co. Cork) was painted through an upper floor window in 1822, showing how the narrow bars offered perspective (plate 87).

Conformity in window design and construction

The details of the sash-window were refined and standardised in the late eighteenth century, due as much to emerging industrialisation in the tools of the joinery trade as the stability of window fashions. An abundance of builders’ guides appeared in print during the eighteenth century, with more detailed technical manuals from the 1800s, and advances in woodworking methods and equipment from the mid-nineteenth century allowed timber products to be more quickly mass-produced.¹⁶⁷ These guides were illustrated with diagrams that detailed the standard joints and gave hints on better construction, helping inadvertently to eradicate regional differences. The slimmer ovolo sash bars pioneered in the 1750s gave way by degrees

to the five-eighth-inch-wide bar. On these only the narrowest decoration was possible, such as astragal-and-hollow or lamb's tongue moulding (diagram 11). At Castletown it is clear which sashes belong to the 1760s works and which are later, due to the differing widths of the bars. The Gilson School had astragal and hollow glazing bars of five-eighths of an inch width specified in the contract.¹⁶⁸ Although technological developments assisted in the refinement of window members, a combination of heavier glass (from the 1830s) and the machining of glazing bars (from the 1840s) caused the mid- and late-nineteenth-century window to be more stockily profiled than its predecessor.

On all but the least important windows the box frame was hidden in a reveal, and the window set in a recess, with a flat block stone sill. Most sash-windows were double-hung, though there are examples of the single-hung (lower) sash on very tall windows (at Castletown, for example). Many early eighteenth-century windows were replaced by fashionably slim sashes, the previous ones often being re-used in basements or out-offices. Some buildings of the 1770s were fitted with blocky sashes and frames to the basement, which may have been taken from other sources. Of these, no. 23 Upper Merrion Street is an interesting example, as on the main elevations the newly fashionable slim metal sash was used. At no. 4, Henrietta Street, Dublin, the early eighteenth-century ground floor sashes were re-used in the basement in a rear extension of about fifty years later. At Carstown an early or mid-eighteenth-century sash was inserted over an internal kitchen door, probably about the start of the nineteenth century when a large extension was built. An early eighteenth-century sash (with two-part glazing bars) at no. 21 Aungier Street, Dublin (of the 1680s) was re-used as an internal overdoor light when the building was refaced in the early nineteenth century.¹⁶⁹ At Carton Richard Morrison removed a finely detailed sash (with egg-and-dart carving to the glazing bars, illustrated in plate 161) of the Richard Castle era to an extension partition in the 1820s.¹⁷⁰

In England the late eighteenth-century joiner competed with the sellers of newly developed metal (brass or wrought iron) sash bars, which could be made thinly elegant for prestigious building projects. No references have been found in Ireland to such overt competition, although plate iron and hardwood composite sashes were sold. Several examples point to the finesse achieved by iron-workers in the pursuit of the neo-classical style. Nos. 23

and 24 Upper Merrion Street and Rathfarnham Castle (in the 1770s renovation) were given hardwood sashes, of which the glazing bars are plate iron covered with hardwood slips. No. 4, Henrietta Street was also redecorated in the 1780s and along with the best plasterwork and silk-lined walls the windows were of the most fashionable covered metal type. The use of wholly metal windows is found after the start of the nineteenth century, as discussed in Chapter Three (p.151), but their survival rate is poor. The eminent nineteenth-century Dublin architectural founder, Richard Turner, designed several houses, which unsurprisingly were fitted with wrought- and cast-iron elements, including windows and doorcases.¹⁷¹ His iron glasshouses (see below) illustrate the prevalent belief in iron as the material of the future. Iron roof lights over the stairwell and landing retained their popularity in the country house until the last phase of classicism died away. Spectacular examples of top-lit staircases can be seen at Townley Hall and the Customs House, Waterford.

A gradual widening of the window embrasure within the room to admit more light is noticeable from the 1780s and 1790s. Earlier window openings are usually set at right angles to the plane of the wall or are very slightly inclined. The right-angled embrasure may have been consciously deployed for its visual impact on the interior space, as it offers a strong contrast between light and shade, suitable to the very definite, angular architecture of the first half of the eighteenth century. The high-relief plasterwork and strongly moulded joinery of the Palladian era benefits from this chiaroscuro effect. The elements of neo-classical plasterwork being too lightly sculpted to respond to contrasting light and dark however, a softer light was necessary. The splayed reveal diffused the light considerably, reflecting sunlight shining at an angle into the room and allowing it into all corners, properly showing off the more dainty Adamesque decoration popular in later years.¹⁷²

The splayed reveal facilitated side-drawn curtains, which at this time tended to replace the vertical-drawn ruched curtains of the early and mid-Georgian periods; these could be carried far out to the sides of the openings without obscuring the light. On most early and mid-nineteenth-century Irish examples the head of the architrave was also placed at an upward slant. This resulted in a small triangular space being formed at the top corners of the shutter case,

which was usually decorated with a reeded or fluted fan.¹⁷³ It appears that the earliest example of this decoration occurs at Townley Hall, in the dining room and bedrooms.

Some other details characterise the windows of the late Georgian and Regency eras, including the introduction of horns to the sashes. Whereas there is no definite date of introduction of the horn, it seems that it was used from near the start of the nineteenth century. The application of a coat of plaster (painted white) to the external reveal is another early nineteenth century development to encourage more light to be reflected indoors.

Prominent classical window forms

Parnell Square, Dublin, has some late Venetian doorcases from the 1760s, but on the whole, pedimented doorcases faded from fashion after the introduction of fanlights in the 1770s. The front hall was gradually becoming smaller, of a single bay width which necessitated more natural illumination than an overdoor light alone could give. Many houses were apparently given narrow sidelights at a later date, often without concern for the visual effect, at odds with the fenestration as a whole (plate 88).

New metal compounds suitable for fanlights were patented in London in 1774. These narrow metal bars allowed a light armature to be formed, to the desired size, with a wide variety of patterns possible. In Ireland, the natural tendency towards effusiveness in rococo design passed on to fanlights. The exuberant treatment of the fanlight, and indeed the whole doorcase, illustrated by many late eighteenth-century examples on Merrion Square, Dublin, is one of the very few areas in which window design was let flower. Sidelights were often fitted with compound glazing bars in curves and circles (plate 89), and both fanlight and sidelight could be given decorative bosses of cast lead. Semi-circular-arched windows were designed with fanlit heads as early as 1811 (in an English exemplar), filled with coloured and stained glass in imitation of peacocks' tails.¹⁷⁴

An elevational feature often employed by James Wyatt was a three light sash-window, on the pattern of a Venetian window without the central arch. This became known as a Wyatt window. Much in the style of the Venetian, it could be decorated with applied pilasters or left plain, and in some instances, usually but not exclusively in Munster, the whole could have an arched head (plate 90 i-ii). Many later examples have timber mullions instead of masonry piers.

Like many Venetian windows, the centre window was usually counterbalanced, and the sidelights fixed in position. The origin for this development may not have been purely stylistic, but in part at least a response to convenience. Many Venetian windows were located in rooms with a ceiling height lower than the top of the arch, which had to be blocked up in the manner of a dummy window, as at the West Front, Trinity College, for example, where the sidelights are also blind. The Wyatt tripartite window merely took this to its logical conclusion and omitted the arch.¹⁷⁵ In the neo-classical era there does not seem to have been the same emphasis as previously on Venetians windows. The flat head of the Wyatt window was more suitable to the spare order of late eighteenth-century design, and so this architectural element quickly became standard. The sister of Blayney Balfour, the owner of Townley Hall, drew up a design for the new house which consisted almost wholly of Wyatt windows; however, it did not find favour with Johnston.¹⁷⁶

Lead glazing and stained glass

It is not known to what extent lead glazing continued to be used in domestic buildings in the late eighteenth century. The antiquary Austin Cooper, remarked in the 1770s on the old-fashioned leaden windows in Old Bawn, indicating that such lights were at least unusual (even in very old buildings) by this time.¹⁷⁷ Very early in the eighteenth century complaints were recorded in the Royal Hospital Governors' *Minutes* that the leaded windows were failing to keep out the weather. This situation went on for decades, until eventually moves were made to replace them, piecemeal, in the 1760s.¹⁷⁸ A late date indicative of the survival of leaded windows (referring to payment for glaziers' lead) is 1789, at Killeen Castle, Co. Meath.¹⁷⁹ In this (and the next) decade several glass suppliers imported "quarry window glass", indicating that they anticipated a sale for it.¹⁸⁰ The last gasp of the quarry leaded light came towards the middle of the nineteenth century. The seventeenth-century Galgorm Castle, Co. Antrim, had its windows enlarged and sashed shortly before 1832 and Myrtle Grove, Co. Cork had lost its original diamond-pattern leaded windows by 1856.¹⁸¹ A building type new in the late eighteenth century, the cottage ornée, was commonly fitted with lead glazing and stained glass, as is found in the Shell House on the Carton desmene, owing to the romance attached to the type.

The use of stained glass seems to have been revived in the mid-eighteenth century, not merely for ecclesiastical commissions. Since the Reformation, Protestant countries had shunned stained glass in its churches. A lay market for painted glass grew during the eighteenth century, however, and one of the most famous stained glass artists in the British Isles at this time was a Dublin man, Thomas Jervais. Jervais achieved lasting fame (or infamy) with his interpretation of Joshua Reynolds' art for the ante-chapel of New College, Oxford of 1778. A few Irish stained glass artists, including Jervais, James Pearson and Richard Hand forged something of a living for themselves in Ireland and England. Rathfarnham Castle has three oval lights which may include panels by Jervais.¹⁸² Most eighteenth-century stained glass windows, many of them secular or made for private chapels, are now known only from contemporary writings.¹⁸³ The lot of the glass-painter was not always a profitable one. Petitions to Parliament and the Dublin Society were a common method of trying to raise money to carry on this expensive art form. The Dublin Society helped Jervais in 1760, ordering that "Messrs Rutland and Deane do arrange for his use £25 in preparing a furnace and materials proper to carry on his proposals." Perhaps because he gained only limited recognition in Ireland, from about 1770 Jervais lived in London.¹⁸⁴ The early nineteenth century is not noted for stained glass design, but William Vitruvius Morrison's designs for a stained glass skylight at Barons Court, Co. Tyrone, survive (as does the skylight with slightly different glazing). Two alternative schemes show a pattern based on diamonds, with floral roundels and a foliated or shell pattern border.¹⁸⁵

The influence of nineteenth-century glass manufacture on window design

A major factor which differentiates some Victorian windows from their predecessors is the use of single pane (termed *skeleton* in Ireland) or two-pane sash. Developments in glassmaking in the 1830s (coupled with the removal of the glass tax in the following decade) allowed far larger sheets of glass to be fabricated by the improved cylinder sheet and patent plate glass methods. One of the earliest variations on the multi-pane sash-window results from developments in the production of cylinder glass. Margin lights, narrow panes at the perimeter of a sash, were a fashion for about ten years at the middle of the nineteenth century.¹⁸⁶ Heuston Station was designed with margin lights to the main elevation (plate 91). In many buildings the margins were glazed with coloured glass, a development which is also found in some fan- and

sidelights of this period. Often the resulting corners were glazed with coloured glass with etched motifs.

Around the middle of the nineteenth century many new projects were designed with large-paned windows, but most date from after the lifting of the window tax. The suburbs of Dublin were rapidly expanding, and several terraces of the 1850s survive with original windows intact, illustrating this new advance. Houses at Rathgar Road designed by W.H. Murray in 1851 have as a feature of the reception room floor two-pane sashes (plate 92).

The Royal Irish Yacht Clubhouse, Kingstown, was designed by J. S. Mulvany, a well known architect, in 1851 (plate 93), with the main elevation, facing the sea, given single pane sashes (the bowed end bays having curved sashes).¹⁸⁷ This is the first design known to use the single pane sash, and notably it dates from the year the tax was repealed. The clarity of the glass sets off the channelled stonework, preventing the design from becoming too fussy. The rear elevation, facing land, has large-paned casement windows, much in the manner of those found at Deane and Woodward's Museum Building, Trinity College, 1853-7. The Kildare Street Club, Dublin, of the 1860s and by the same architectural team, masters the difficulty of designing for plate glass windows, according to Craig. "The treatment of the plate glass windows, set far back behind a 'false jamb' or 'inner order' which insulates the glass completely from the wall surface, is a bold and brilliant solution of the plate glass problem."¹⁸⁸

The earliest known suburban house to be designed with single pane windows is no. 47, Terenure Road East, Dublin, dated 1859, in which only the basement windows had glazing bars (plate 94 i).¹⁸⁹ A number of terraces on Leeson Park, Dublin, of the 1850s and 1860s also illustrate the hierarchy of the day; the most important rooms are given the expensive skeleton sashes, while the upper floor has two-pane sashes, and the basement (raised to ground level) has the ordinary six pane sash. Most of the speculative housing projects of the time followed on in style from the classical. An exception to this is found in Leeson Park, in a pair of houses modelled on the Hiberno-Romanesque Revival of Deane and Woodward in which the single pane sash-windows with semi-elliptical heads are appropriate to the architecture (plate 94 ii). This is an early example of the Revivalist styles applied to domestic housing that used ever larger panes of glass in a complete break with the long-dominant classical ethos.

The Palm Houses of the Belfast and Dublin Botanic Gardens (built by Richard Turner in 1839 and 1842 respectively) and the Pavilion of the Irish Industrial Exhibition of 1853 used the latest developments in wrought- and cast-iron work and cylinder sheet glass to produce early examples of the new conservatory building type, which illustrated the Victorian belief in progress by invention.¹⁹⁰ It is also notable that Turner's Botanic Gardens work predates other similar projects on mainland Britain (many of which were implemented by his firm). The use of so much sheet glass in the two palm houses is remarkable as it had been developed commercially only that decade and was still expensive and subject to excise duty.

By the 1860s all of the window details and developments which are chronicled in this study had taken place.¹⁹¹ Despite variations on the theme of the traditional sash-window in the later nineteenth century, its basic form remained the predominant type and is a defining element of the historic building stock of Ireland.

CHAPTER TWO

AN HISTORICAL ACCOUNT OF WINDOW MATERIALS

WINDOW-GLASS TYPES AND PRICES

Historic glass types

There were four types of window glass used historically, divisible into two categories, blown and cast. *Broad* (also called *muff*, *spread* or *cylinder*) glass, *crown* glass, *blown plate* and *patent plate* glass are blown, while *cast plate* glass is self-descriptive. After the turn of the twentieth-century, technological developments led to machine made window glasses, known by the names of their makers such as Lubbers and Fourcault. The invention of float glass in the 1950s, by Pilkington's in England, made possible a perfectly clear and flawless pane of glass, and of any size imaginable. Such size and clarity had previously eluded hand-blown and machined glasses.

Broad, or cylinder glass was made on continental Europe, around the Rhineland and Lorraine, since the middle ages. It was made in Ireland for about one hundred years from the late sixteenth century and imported broad glass was in common use until the late eighteenth century. This glass was made by blowing a large cylinder-shaped bubble, which was cut open while hot with a shears (plate 95 i-ii). The glass sheet, a rough rectangle with curved top, was cooled down in an annealing oven, called a *lehr*, as the process of slow cooling is vital to remove the stresses inherent in glass. The very rare surviving panes of broad glass show colour, usually an ashen tint, with many striations and bits of sand caught up in the pane. Sometimes the sweep of a wooden tool is visible across the surface (plate 96 i-ii). Cylinders of broad glass were usually about 24 to 30 inches long by 8 to 10 inches diameter. In 1703 Richard Neve described (English) Newcastle broad glass as "a kind of Ash-colour ... subject to have specks and blemishes, and streaks in it, and it is very often warped and crooked". Neve noted that French cylinder glass was thinner and more transparent than Newcastle, and the Dutch similar to Newcastle, but that the Dutch glass seen by him was very crooked, and made in small tables. There were two types of German cylinder glass, according to this author, white and green. The

former was free from spots and blemishes, but had fine streaks and the latter had a greenish tint, but both types were of a better quality than Newcastle.¹

Glass technology improved gradually on an empirical basis on the continent, making clearer and larger cylinders possible, with later ones cut on the square at both ends. Despite the fact that a rectangle is a more economical shape for the cutting of window-panes this type did not find favour in English or Irish glasshouses. All cylinder glass used in Ireland in the eighteenth century was imported from Newcastle or the continent (all Irish glasshouses of this date produced crown). The main improvement with this glass was that the cylinder was let cool before being reheated, grozed and cut. Thus the surface of the glass was hard enough to resist picking up most of the dust and sand that were inescapable by-products of the process. As early as 1758 English excise commissioners noted that imported broad glass was of such good quality that it could be taken for crown.²

A more sophisticated method of glassmaking, *crown glass*, also involved blowing a large thin-walled bubble. This was kept quite round, and transferred to a solid punty iron. The open end of the bubble was gradually widened until it formed a dish shape, and then spun until by centrifugal force it flattened out (or “flashed”) into a disc (plate 97). This method of producing glass sheets may have originated in Syria and been introduced to Europe through the glassmakers of Venice.³ A common diameter was about fifty four inches (which had about thirteen pounds weight in the molten glass) but sizes of seventy inches were known. Imported crown glass was in demand for prestigious building projects from its introduction into Ireland at the end of the seventeenth century up to the mid-nineteenth century.⁴

This glass disc (also called a side) did not come into contact with any surface while soft, so it had a sheen and clarity that the broad glass lacked. Due to the spinning process, there are usually perceptible curves in the side, like ripples on water. When cut and glazed each pane will catch the light in a different way (plate 98 i-vi). A. R. Powys wrote, “owing to its slightly bellied surface, crown glass glazing when seen outside a building catches and plays with the light shining on it most beautifully.”⁵ The distance at which the pane is cut from the centre influences its character as thicker glass with a tighter curve comes from near the bullion. In the eighteenth and nineteenth centuries the bullion was the cheapest cut due to its inherent

distortion, and was usually only used on the least important windows or discarded as cullet (to be melted down for re-use). Occasionally the bullion was used in the windows of the main floors of isolated houses, most likely as a substitute due to delay, or the cost of ordering a pane of better quality. (Internal doors were often given one or two small lights with bullseye panes, where transparency was not necessary.) Another reason to avoid the thick centre arose from its capacity to act as a magnifier: "be very careful about introducing bullions on a south aspect", wrote one author, as there have been cases in which "curtains have been ignited by these acting as burning-glasses focussing the sun's rays".⁶

The quality of crown glass depended on the presence or absence of a number of defects encountered during the blowing and annealing. It could be, according to the English glassmaker Henry Chance, badly melted, full of little vesicles, blistered with air or by the pipe, have pipe scales or dust from the pipe, dust from the nose-hole, bottoming-hole or flashing furnace, have bad bullions, scratches or music lines, or be crizzled, curved, bent, hard and smoky or small and light. "No wonder", he added "that tables of the best quality are few and far between, in some manufactories a forlorn hope never to be realised."⁷

In 1832 the glassmaking firm of Chance Brothers introduced an *improved cylinder glass*, which was capable of being made in significantly larger and clearer panes than English broad glass (but in actuality it did not represent much improvement on continental cylinders of this date). Chance termed this type of glass improved cylinder sheet. The cylinders could be up to seven feet long, with a diameter of sixteen inches and over (plate 99 i-vi). There were standard thicknesses, the thicker cylinders available in larger sizes. Once blown and annealed, the cylinders were split with a diamond drawn on a long handle inside the cylinder against a wooden rule. With the application of heat, the cut would fall back into a wavy sheet, and smoothed with a 'polissoir', a rod of iron with a block of wood at one end. Cylinders often needed considerable force to flatten them.⁸

Common deficiencies in the sheets included elongated seeds, stony speckles of glass attached, strings of glass threads, blisters, grooves and scratches, marks from the flattener, or dust, and bending from the annealing process. Henry Chance was of the opinion that the process did not give a high production rate, and that good sheets were generally in the minority.⁹

There were differences of opinion on the new product. Cylinder sheet glass was generally free from the flaws associated with the older style of broad glass but had a shimmering surface caused by laying the hot sheets on a sanded bed during the flattening process (plate 99 vii). While it was generally welcomed for the larger sizes it offered, the *Builder* wrote that it had “a very bad appearance” and “a hammy-looking surface”. The complaints about sheet glass were universal, this journal claimed, as the surface was “always wavy when the light falls on it” and the author called for the return of crown, in larger panes.¹⁰ Chance’s cylinder glass really only became popular in its *patent plate glass* version. This was made from sheets of cylinder sheet glass, slightly thicker than normal, especially selected for their superior quality. James Chance of Chance Brothers invented a machined method for the grinding and polishing of glass in 1838 that did not require the sheet to be totally flat; the patent states that this method removed the “irregularities of surface without grinding away irregularities arising from any bendings or curves, which may exist in the general substance of the glass”.¹¹ It is not known how extensively this glass was used in Ireland.

Much the most expensive alternative was *polished plate glass*. Plate glass, a polished sheet of glass, was made from Roman times. From the medieval period onwards it was prized for mirrors and the windows of the extremely wealthy. It could be made by casting molten glass onto a plate (a method used successfully in France from the 1690s (plate 100))¹², or by blowing a thick crown or cylinder (as was practiced in England until the late eighteenth century) and then polishing both surfaces. The risk of breakage or other flaw was great, due to the precariousness of the grinding and polishing process which was at first done manually.¹³ This glass is very clear, displaying only by occasional swirls in the body of the material, or very slight facets in the surface, that it is cast and polished (plate 101).

For polished plate glass the ingredients had to be of the highest quality as did the skill of the casters, grinders and polishers, as “failure to produce a commercially successful sheet of glass would in each separate instance involve a large loss.”¹⁴ In the 1770s, a more reliable casting method was introduced in England, leading – when eventually successful – to slightly lower prices, and a larger market.¹⁵ Various innovations led to the mechanisation of the polishing process, starting with the invention of a steam engine to power the polishing by

Boulton and Watts in the 1780s. Mirror-making was helped by industrialisation of the silvering process from the 1830s.¹⁶

It appears that French plate glass was not exported to Ireland until the seventeenth century. The lack of information on its use in Ireland for windows suggests that it was extremely rare, but seventeenth-century inventories note many instances of mirrors.¹⁷ Some early eighteenth-century English mansions had bevelled plate glass panes in the main room sashes, to facilitate viewing the proprietor's landscaped grounds. Despite conjecture, no evidence has been found to show this use of polished plate glass panes at this time in Ireland.¹⁸

The use of plate glass in shopfronts became a feature of the nineteenth century enabled by technical progress in its production. The *Builder* commented in 1851 that the size of sheet obtainable was now limited only by the dimensions of the polishing bed, usually fifteen feet by eight feet.¹⁹

Only three references, discussed below, are known concerning Irish manufacture of plate glass. Cast plates (for mirrors and glazing) generally came from England after this branch of the industry became successful in the 1790s and despite the high levels of excise an amount continued also to be imported from continental Europe.²⁰ Mirror manufacturers are mentioned in Irish documents and directories. Most of these would have imported the plate, to cut to size, silver and frame themselves (see Appendix Three). Of the pier glasses made for Castletown House in 1775, which remain in place, Lady Louisa Conolly wrote to her sister: "... the French glasses are very bad and imperfect, however they look handsome up."²¹

Mirror was often used in the classical interior to reflect light as mentioned in Chapter One. A particularly delicate use of oval mirrors in neo-classical decoration is found at Avondale, Co. Wicklow (plate 102). The Supper Room, Dublin Castle, uses overdoor mirrored Gothic sashes, made on a curve, to echo the matching patterned floor and ceiling (plate 103).

The different qualities and prices of window-glasses

The endless variations in the ingredients of sand, soda and lime (the exact mix was a secret guarded by each glassmaker) ensured that no two pots of molten glass ever contained the same chemically exact mixture. Common "colours" (and sometimes iridescence) result from this variation, denoting surplus amounts of chemicals present. Visible tints include green/yellow

(from excess iron in the sand²²) and purple/blue or a brownish yellow (too much oxide of manganese used in the first instance to counteract protoxide of iron). In some houses arsenic trioxide was used to counteract the iron, which could give a milky effect in excess.²³ Any excess of alkali – soda – will hasten discoloration, but as glass is photosensitive, after prolonged exposure to ultra-violet light some there will be some alteration in the colour of all kinds of window glass.²⁴

Glasses were divided into several qualities due to the variations in the mix and methods of manufacture described above: firsts – an ideal never realised in many manufactories – second, third and fourth best and then what was termed CC, called “the worst glass ever made” by Chance Brothers. The English crown glass exported to Ireland (said to be of inferior quality) was labelled differently, A, B, C, and CC. Dumbarton glass was divided into A, B and C, but it is not suggested that an inferior product was dumped onto the Irish market from this glasshouse.²⁵ Crown glass of an inferior quality may have been cut up into quarries, as suggested by several surviving coarse and seedy bullions found recently. Of the crown produced in Ireland, a witness to a parliamentary inquiry in 1785 stated “crown glass I never understood was so good in Ireland as in England”, although some surviving fragments of Belfast glass refutes such a generalisation.²⁶

Exact grades were sometimes specified for particular jobs when quality was important. Terms such as “best Bristol”, “best London”, “white” English or Newcastle, “good French”, and “best Normandy” are found in accounts and advertisements. Many surviving windows from the eighteenth century have wonderfully clear panes, of the highest quality glass.

Price and desirability depended on the degree of translucency and freedom from marks or flecks in the pane. English and French white or green glass – these adjectives were used to describe broad glass – were never as translucent or clear, nor free from marks and were always cheaper. Polished plate glass was described according to tint, some colours being more sought after than others. The best was a “fine watery colour”, and a reddish colour was “much coveted by pale-faced people”. Then there was a yellowish and a blackish tint, the latter “worst of all”. The colours were distinguishable only when the glass was mirrored.²⁷

The weathering properties of glass could not be taken for granted. It became obvious only over the long term if durability had been sacrificed by the glassmaker in the interests of easier production. The amount of lime necessary in the glass batch to give good weathering rendered the melting of the metal a difficult operation, so there was always temptation to lower it to avoid trouble and expense.²⁸

The selling price of glass was dependent not only on the cost of production and its quality but also on artificial considerations such as monopoly conditions, prohibitions on imports or exports, conflict (the French wars of the early eighteenth century for example), excise duties and the ratio between supply and demand.²⁹ Price depended also on availability – remote places had to have crates of glass brought from a major port by sea or cart – the quality of the panes and other factors which appeared to be linked to fashion, such as the preference for more expensive Normandy or London crown.³⁰ The prices charged for eighteenth-century Irish glass seem to have been competitive with imports, although exact comparisons are hard to gauge; glass was priced per foot depending on its quality and the distance from the retailer or glasshouse.

Increases due to the imposition of tax on the making of glass in Britain in 1745 affected the Irish buyer, as at this time imports made up the largest portion of glass used. The *Dublin Journal* pointed out that there was no point in imposing the new tax in Ireland as it would crush the manufacturers – and no manufacture would then be forthcoming to be taxed.³¹ The tax on glass was one factor in the refining of the side of crown glass to the extreme thinness achieved in the best panes. As the tax composed twice the cost of production (and was calculated by weight and not size), there was an impetus to make thin sides of crown and have a smaller tax liability. Unlike with a thin cylinder, the quality of crown is not much affected by extreme thinness. Even with such thin sheets, the tax accounted for more than half the selling price.³² Although the tax was not an issue in the Irish manufacture of glass at this time, competition in quality with imports and the English origin of the glassmakers in Ireland led to similarly thin crowns.

Irish prices rose sharply on the imposition of the glass tax in 1825. Several incremental increases of duty worsened the situation, as in 1828, when a price increase of about one hundred

percent per foot of glass occurred due to the levying of extra Government duty.³³ By 1845, when the tax was repealed, crown glass cost £12 per crate in England (the price was set by monopoly agreement). The price dropped to £2.8.0 in 1865, which was comparable with mid-eighteenth-century prices.³⁴

The true price of glass was distorted at every period by frauds and evasions. Deceptions with regard to excise calculations took place in the glasshouse, which enabled the proprietor to sell at a more competitive price. The smuggling of imported English glass back to England and Scotland (by which the drawback of duty for exported glass was obtained) and the selling of it at low rates was complained of by a Scottish glassmaker in 1825.³⁵

The procurement of glass

Most of the surviving crown glass and all of the improved cylinder sheet glass that was used in the buildings of Ireland was imported. The provenance of panes of glass, however, cannot be told from their appearance. The Customs Books, extant from 1698, show the exact amount of window glass imported to every port in the island, and list the countries of origin.³⁶ Sizeable amounts were imported to Dublin especially. Landing glass at such places as Dingle, Co. Kerry (on the far southwest coast) presupposes the placing of special orders, whereas glass landed at Dublin must have been bought as a general commodity, with the high chance of finding ready buyers. The difficulty with importation of this delicate material was compounded by elements beyond the control of merchants or factors, such as badly packed crates, inclement weather and piracy, which was prevalent at all periods.³⁷

Total imports of cases of window-glass make interesting reading in the light of ongoing developments in the construction industry in Ireland in the late seventeenth century and through the eighteenth, as the quantities vary widely.³⁸ They reflect perhaps the ebb and flow of native glass enterprises more than indicate the overall quantity used during this period of massive expansion (in Dublin and some other urban centres, at least). The re-use of window-glass was carried on at all levels of society, with glaziers' bills noting time spent taking glass out of old windows. This thrift may have represented an appreciable saving of the quantity of new glass in circulation.³⁹

Glass measurements

Individual panes of cut window-glass are called "square" or "quarry".⁴⁰ The square of "square glass" was very rarely exact; oblongs were much more common. In lead work, squares of around six by four inches were used. Early gridded timber windows used small squares rather than quarries. An English mention of a size of 8 x 6" scant in 1672 may be a good example of the small sizes then used.⁴¹ Squares became larger in the later seventeenth century and through the eighteenth century; a typical size was given as 8 x 10" in the *Commons Journals* of the 1750s, but in general sizes were more a good deal more generous.⁴²

There are many documented terms for bulk measures of glass. It was generally sold by the crib, (also called chest, case or crate) or sometimes by individual square or quarry. The term crib denoted a given number of sheets, which were approximately of a given size. From the mid-eighteenth century retailers sold glazed sashes, and ready cut squares, for easy transport by travelling glaziers, or installation by local tradesmen. The quantities described by these bulk measurements appear to have varied throughout the centuries.⁴³ A brief example suffices to illustrate the variation. In the mid-eighteenth century a case of crown glass contained 24 or 25 tables, the table being the larger portion of a disc cut into two sections. This measurement had varied, however by 1823, when *The New Practical Builder* stated that crown glass was bought by the crate. A crate of the best quality consisted of 12 tables, the second of 15 tables, and the third of 18, the tables being about three foot in diameter.⁴⁴

Each crown of glass was necessarily of a unique size and shape, which would make calculations even more complicated. The customer usually paid per square foot, however, and so was spared dealing with such variables. Builders' guides (Stitt's and Nicholson's among them) table not only the prices of each quality of glass but also different prices per square foot (for sizes under one foot square, under two foot square and under three and a half foot square), and give price increases relative to the distance travelled from the shop.⁴⁵ The selling of glass by weight (a medieval practice) continued for coloured glass which, however, was rarely made or used in Ireland during the period under study.⁴⁶

*AN INTRODUCTION TO WINDOW-GLASS MAKING IN IRELAND*⁴⁷

Irish window-glasshouses from the 1580s to the end of the seventeenth century

Although glass was known and used in mediaeval Ireland in stained glass windows (none of which survive), the domestic use of window-glass appears to have been very limited and has left no trace. Documentary records relating to glasshouses in Ireland begin during the reign of Elizabeth I when several petitions were made for licences to make glass in Ireland.⁴⁸ At this time glassmaking was an embryo industry in England, regulated by monopoly or licence. Early enterprises were usually set up under the patronage of the ruling classes or merchant adventurers, and manned by foreigners, usually immigrants of French extraction who came or were invited for the specific purpose of making glass. The market they sought was not the embryo Irish one, as the produce was apparently exported. What attracted them to Ireland was the advantage of cheap fuel and the opportunity that it offered to circumvent English monopolies.⁴⁹

The ingredients of window-glass were very cheap – white sand, potash and lime – but as the melting of the glass consumed enormous amounts of fuel, there was a limit to the numbers of glasshouses that could be set up in any one place. The vast quantities of timber were consumed by glassmaking put it in direct competition with the shipbuilding ambitions of Elizabethan England. Some of the late sixteenth- and early seventeenth-century licencees sought permission to start making glass in Ireland, as the Irish forests then remained mostly intact, whereas a cap had been set on the numbers of glasshouses that could operate in England. One of the first petitioners, an English merchant, George Longe, even sought to promote his request over others as it promised to preserve English woods by using the Irish, which “in time of rebellion Her Majesty has no greater enemy there”.⁵⁰ Thus, even in glassmaking, England’s gain was Ireland’s misfortune.

The earliest window-glasshouse known in Ireland was set up by Longe at Curryglass in Co. Cork, near the end of the sixteenth century. The confidence of this businessman is evident in his later comment “I think Curryglas for ‘glazing’ might take rank beside Broad Street for Venice drinking glasses.”⁵¹ Evidently the glasshouse was a success: the import of a quantity of

glass is recorded at Padstow in 1591, and in a petition of about 1597 Longe states that he had kept a glasshouse at the “end of Drumfennig woods” for ten years.⁵²

A glasshouse was set up in the early seventeenth century at Salterstown, Co. Derry, about which production nothing is known at present. The buildings (most likely made of timber) were reported to be in decay in early 1619.⁵³

In the same decade – from 1614 to 1618 – under the patronage of the Great Earl of Cork, Sir Richard Boyle, a glasshouse manufactured windows (and possibly vessel) glass. It was operated by John Hawys, a glassmaker cousin of William Robson, an important English figure in the industry. (Robson had bought the privilege to make glass in Ireland in 1611.) The glasshouse produced window-glass for export to London from 1614 to 1618, with frequent consignments of 100 cases shipped to London in 1614. As the glass was sold for less than London prices, Robson’s competitors combined to force a ban on Irish imports, and it closed down in 1618.⁵⁴

A glasshouse operated at Ballynegerah in Co. Waterford in the 1620s, which, in contrast to the earlier manufactories, was apparently aimed at the Irish market. It may have been started by some of those associated with the venture of a few years previously, which would have been located quite close at hand. A fragment of an account book survives showing the costs of setting up this enterprise, including the names of blowers, founders and glaziers, and the materials used.⁵⁵ Broad glass was produced here, blown by a French glassmaker, Francois Davy, and sold to glaziers and glass sellers on the spot. Chests or cases of glass were also on occasion delivered elsewhere. This works may have been the glasshouse alluded to in the tract *Advertisements for Ireland*, published in 1623, in which the author exhorted the undertaking of more industries such as “the glass houses, powder mills, paper mills, mills and the like.”⁵⁶

In 1623 the glass-blowing family, Bigo, (of French extraction, but already established in England) was invited to come to Birr, Co. Offaly by Sir William Parsons to set up a glasshouse there. The author Gerald Boate wrote, in his 1652 treatise on Ireland, that the Bigo works had supplied Dublin with drinking and window-glass.⁵⁷ In the 1650s or 1660s, Philip Bigo, (probably a relation), set up a glassworks near Banagher or Shinrone (or possibly both), in Co. Offaly.⁵⁸

tried. If that failed, he would have to put out the fire, for lack of ingredients or other necessities which were not available in winter.⁶⁴

Up to the end of the seventeenth century all glasshouses were sited close to the source of the fuel, which in Ireland meant that rural locations were favoured. A prohibition on burning timber for glass (stated in a law of 1641, but most likely not heeded immediately) led to the invention (in England) of coal-fired glass furnaces, which had to be located in port towns or near collieries. Wood-burning glasshouses set up in the 1660s such as Henzy's were at a disadvantage compared to the coal-fired type which could produce a clearer cylinder, as the extra heat offered by the coal furnace burned off more impurities and also allowed the molten glass to be blown more thinly. The coal furnace was used in London in the production of crown glass from the 1680s, and this partly accounts for its renowned superiority.

A clear distinction between flint (also called lead) glass for drinking and other domestic vessels and soda-lime window glass came about at the same time. Previous to the 1680s the batch or mix of ingredients was similar for either. Put simply, a discovery was made that the addition of about thirty percent red lead (or "flint") to the batch of ingredients caused the molten metal to be more malleable. This made glass vessels suitable for incised surface decoration but required the greater temperature offered by the coal furnace. Due to fashions in glass decoration, flint glass quickly gained popularity. John Dunton, a visitor to Ireland in 1698, mentioned passing Lazar's Hill (between Dublin and Ringsend) where there stood "two glass houses, though none of them were at work by reason of the scarcity of coals".⁶⁵ Thereafter different pots were required for melting the two types of glass, soda-lime (windows and bottles) and flint (lead glass). Most glasshouses specialised in one or the other type. The making of bottles was compatible with window-glass, though bottles were usually made from a coarser mix, commonly being so dark green as to appear black.

The manufacture of window-glass in Ireland, rarely more than a sporadic and local activity in the seventeenth century, was forced to remain under-developed for most of the following century because of the imposition of an export ban on glass (and other) products in 1698, which was closely policed. One early nineteenth-century historian termed it a "violent and unwarrantable Act". A. E. Murray, writing in 1903, commented that "not much benefit seems to

advertisement in 1711 indicates that both crown and plate glass were made at Waterford at this time; however, no further information is forthcoming.⁷²

A consortium of Englishmen set up the "Round Glasshouse" in Abbey Street, previously part of the works of the Square Glasshouse (above), in 1759.⁷³ In a petition to Parliament in 1761 one of the proprietors stated that the workmen were all natives of England, that saboteurs had attempted to stop them, that their glass was twenty-five percent cheaper than imports and that it was equal to any except London crown. He also stated that their crown glass was recommended by the Surveyor General as being as good as that of Bristol, which was regarded as second only to London. One of the undertakers, Henry Lunn, remained in the industry (at several locations) until the 1790s and in 1801 the works resumed production under different management.⁷⁴

In Ballycastle, Co. Antrim, Hugh Boyd, owner of a colliery and previously with an interest in the Bachelor's Quay glasshouse, erected a glasshouse for bottles, window- and plate-glass in 1754, to be fuelled by his adjacent coal pits. It appears that bottles provided the mainstay of production, which eventually ceased about 1780. Archaeological investigation has found that window glass was also made at this site.⁷⁵

The manufacture of plate glass in the late eighteenth century is known only from several references to Dublin enterprises. The flint glasshouse of Richard Williams and Co., operative from the 1750s to 1829 at Marlborough Street and Potter's Alley, Dublin, produced window-glass. An advertisement of 1770 indicated that among other items it sold "window glass in cribs, or cut in squares, for windows, hot houses, frames or pictures", which would appear to refer to crown or broad glass.⁷⁶ However, Richard and William Williams separately and jointly advertised and petitioned for premiums for plate glass during the 1780s, made at their Marlborough Green glasshouse. When William Williams died in 1788 the announcement of his death noted that he was the first person to bring to perfection in Dublin the manufacture of plate glass. No subsequent notice is found of plate glass at this glasshouse.⁷⁷ In 1786 a former ironworks was taken as a glass manufactory (for flint glass) at Ballybough, Dublin. An advertisement of 1787 for the Ballybough Bridge works notes that "plate glass for coaches etc" was made and polished near the North Strand. When this was finally sold in 1798 no mention

was made of plate glass.⁷⁸ These and the earlier Waterford reference provide the only information on the making of plate glass in Ireland. Most likely the exorbitant costs associated with making even small cast plates and the size of the Irish market rendered it unrealistic. However, at all times plate glass polishers did exist, as the unpolished cast plate was imported and finished in Ireland for mirror-makers and coach-builders.⁷⁹

The manufacture of window-glass was started in Belfast in 1788 by John Smylie and Co., who built the largest glass cone in Ireland for this purpose. In an announcement of 1789 the proprietors were confident that their crown glass – of “good” and “second” quality – was superior to and cheaper than that of Bristol. Although this factory ceased production in 1797, it appears to have been restarted in 1824 by the owner of a neighbouring flint glasshouse.⁸⁰

By the late eighteenth century opposition was growing to the siting of glasshouses in the city of Dublin, as their “cephalic fumes” were noxious to the inhabitants. An Act of 1783 prohibited the erection of any more glasshouses within the city, or a certain distance thereof; those found in breach of this law were liable to have the buildings pulled down without compensation.⁸¹ As Ringsend was excluded from the provisions of the Act, and as it had a ready supply of sand for the glass mixture, it was here that all subsequent Dublin glasshouses were sited (up to the present day).

The earliest reference to window-glassmaking in Ringsend, Co. Dublin occurs in 1787, a result of the recent Act allowing the export of glass. At this date an English company set up (or was intending to set up) a crown-glass manufactory for export to France.⁸² The next mention of a window-glass business in this area, which may refer to the same factory, is of trials taking place for crown glass in 1798. The proprietor was John Raper, a Dublin glass merchant.⁸³ In about 1820 Mulvany and Company, flint glassmakers, erected a window- and flint-glasshouse in Ringsend which continued in operation until about 1837. However this, or perhaps another works, did not get off to an auspicious start. It was related to a parliamentary inquiry in 1822 that due to well-funded opposition from the Dumbarton company “one manufacturer of flat glass ... was put down for want of capital ... he had not friends to carry him on, or they could not have put him out”.⁸⁴ This may have been the glasshouse let by Samuel Davis, window-glassmaker, in 1848, from where it appears he was operating into the 1850s.⁸⁵ Several other

contemporary references to glassmaking in Ringsend occur, however the existing evidence is insufficient to chart fully the progress of window-glassmaking there from the 1780s to the 1850s.

The late eighteenth and early nineteenth centuries were the years in which Ireland competed successfully in window-glassmaking.⁸⁶ Many glasshouses were set up, working within a relatively normal business environment after the repeal of the export ban until both window and glass taxes were imposed in 1799. However, the extent of window-glassmaking was thought insufficient by one commentator, who wrote in 1798 that “in crown glass we are far from being as extensive or as successful as in the flint glass manufacture”.⁸⁷

Chance Brothers’ improved cylinder sheet glass started to compete with crown in the 1850s, the decade in which Irish window-glass appears to have been quenched. The conversion of Newcastle glassmakers in the late eighteenth century to crown glass had lessened the price due to the vastly increased production capacity. (Conversely Normandy glass, the French spun disc, died out around this time.)⁸⁸ Growing competition from larger and clearer Belgian, German and French cylinders was probably a factor in both of these cases. From the 1790s the more established glass producers were joined by Dumbarton glassworks from Glasgow, who exported to Ireland such seemingly good glass that Dumbarton crown became a byword for quality, rather like “Bristol” and “London” in previous generations.⁸⁹

Following the lead of Chance, who had developed his cylinder glass as a way to gain clawbacks in the stringent excise regime, in the 1830s and 40s other large firms cut their output of crown, to concentrate on the more economical cylinder production. Despite the abolition of the window and glass taxes the number of English glasshouses continued to decline, with only the large manufacturers surviving, until there existed “something like a monopoly in the trade”.⁹⁰ No Irish glasshouse could compete in this industrialised field, being small manual concerns. Belgian glasshouses were as competitive as the English at cylinder-making, if not more so. In 1825 the longest Belgian cylinder averaged approximately twenty inches, but by 1870 their technology had improved to the extent of producing cylinders of about forty-seven inches long.⁹¹ By this date competition between English, Belgian and American glasshouses

was intense, and rival technologies were constantly being updated to provide a larger and clearer sheet of glass, culminating in the float process.

Glassmaking rates

In the medieval era glassmakers were always among the most prestigious of skilled workers, with nobility conferred on many in France.⁹² The makers of Irish glass were valued highly; glass was never a cheap material, and the skill necessary to make it was well rewarded as the glassblower commanded a handsome wage at all periods. At a time when the daily wage of artisans was measured in pence rather than shillings, glass was sold at prices ranging from 6d to 14d per foot, and glass makers were paid up to 54 shillings per week.⁹³ A significant drawback however, was the short life expectancy associated with the working conditions of this craft. In 1813 Irish (flint-)glassmakers at Cork received fourteen shillings for a six hour day, as recompense for the harshness of the work; “the glassmakers generally drink a good deal and seldom live long,” wrote the Rev. J. Hall, in the book of his Irish tour.⁹⁴

WINDOW FRAMING MATERIALS

Timber

The change in window frame material from lead and iron to timber took place in the seventeenth century, first noted in France and Holland where the conditions were right to foster this development. A higher standard of living meant that better environmental control was sought than possible with the leaded casement window. Timber windows offered more weather-tightness, and, glazed with Normandy glass which could be cut into relatively large panes, the result was a more efficient window that admitted considerably more light. Sir Balthazar Gerbier was enthusiastic about the foreign window type, writing in 1662 that “these nations cause their glass windows to be fitted in wooden casements treble rivetted, to keep out wind and rain; they are lined with wooden shutters, and have double boarded shutters without, to resist all the violence of the weather and thieves.”⁹⁵ A variant on the all-timber window is noted by Louw in seventeenth-century England, wherein the casement frame is timber but the light is of lead-glazing. The earliest documented example of the timber-framed leaded casement window in Ireland is found in the 1680s, in the house of a merchant probably of Dutch origin.⁹⁶

Much of the timber used in Irish windows from the late seventeenth century onwards was imported, as the native forests had been almost completely wiped out for the pipe stave and shipbuilding industries and as fuel for iron and glass among other extractive manufactures. Milled fir or pine and oak were imported in enormous quantities as deal and wainscot board.⁹⁷ Oak was generally termed 'Dansick' oak as it came from Danzig in north-west Prussia and the softwoods were from the Baltic countries. Usually the contracted joiner was responsible for obtaining the timber for the windows, but occasionally timber merchants imported and supplied it under a separate contract.⁹⁸

The lack of detail pertaining to the timbers imported for use in windows during the seventeenth century does not permit any generalisation to be made regarding the use of the different species for windows. Oak was the preferred timber for all structural work, including windows, during the seventeenth century.⁹⁹ However, scarcity, the difficulty in working it and expense combined to render it less amenable to joiners for the refined sash members and joints. The two seventeenth-century mullioned window frames examined in this study – at Ballybritten Castle, Co. Offaly and Donaghadee, Co. Down – are made of oak. Dineley reported that the windows and window-cases at Birr Castle, Co. Offaly were of 'Ewe'-timber, as this was readily available on the estate.¹⁰⁰ Old Bawn, Co. Dublin and Eyrecourt, Co. Galway had massive solid oak frames, but such large sections became archaic by the end of the century, as timber, and especially oak, became more highly valued. The sashes and frames at Kilmacurragh are of slim sections of oak, the sashes made in two sections, possibly in answer both to the absence of sophisticated moulding planes and difficulties in working oak, which tends to go into twist even after seasoning. A definite twist is seen in the sashes at Bonnettstown Hall, Co. Kilkenny (plate 104). "Wainscot" continued to be given in eighteenth-century builders' guides, but the extent of the use of imported oak for windows has not been established. The use of native oak is seen at Trinity College later than elsewhere, due to the ownership by the college of primeval oak woods in Shillelagh, Co. Wicklow. Yet even with this special resource, deal and red fir remain the two most usual timbers noted in eighteenth-century college accounts.¹⁰¹ A drawing (plate 66) of c.1740 illustrates a sash-window having "frames all Rt wainscott inch and half ... sashes made out of two-and-a-half Rt wainscott".¹⁰² In 1749 George Semple specified the use of Irish oak on

the windows of St. Patrick's Hospital "which are in an exposed situation". Re-use of old timber was not unknown, as happened in barrack repairs at Granard, Co. Longford, c.1770, where 43 solid sash frames were made of the old oak joists.¹⁰³

No. 13 Henrietta Street, Dublin was fitted with new sashes, of extremely thin oak members in the neo-classical style, when bought by Richard Pococke in the late 1760s. As Archbishop, Pococke had use of the archiepiscopal woods in Meath. The sashes of a slightly earlier date at Castletown are also of oak, its origin unknown. Oak was also used in conjunction with wrought iron sashes, but the more easily worked mahogany – see below – may have been preferred. After the decline in oak for window sashes, it continued to be used for sills, due to its resistance to decay, through the nineteenth century.¹⁰⁴ There were differences of opinion on the qualities of native and imported timbers as late as the nineteenth century, but by this time choice was severely limited, there being so little Irish timber left.¹⁰⁵

In contrast to the fate of oak, by the end of the seventeenth century in Dublin (and possibly in most towns) softwoods were gaining popularity for framing windows. Cost was a factor in the change, as seen from correspondence of 1703 in the Egmont manuscripts – "you may note that those (sash-windows) which are made of deal are cheaper made than those of oak, for I understand they make them all of deal in the towns."¹⁰⁶ Scots fir, Memel and Riga Pine, Pomerania Baulk and Norway Spruce were resinous enough for external use and could be finished to a high standard. They were the common timbers used in making windows in Ireland from the second quarter of the eighteenth century, and possibly earlier; the original solid sash-frame at Doneraile Court, Co. Cork, is of pine. Pomerania sash baulk was used in the extensive barrack works that were carried on country wide throughout the eighteenth century.¹⁰⁷ The diversity of timbers detailed in mid- and late eighteenth-century builders' guides reflects the ever-increasing choice available to the joiner. During the eighteenth century Norwegian deal became the most important single timber imported into Britain, and probably Ireland.¹⁰⁸ Pitch pine was not commonly imported into Ireland until red fir became scarcer in the late eighteenth century (after American Independence the importation of timber from there was less frequent and more expensive). An acute shortage was experienced during the Napoleonic Wars due both to the increase in shipbuilding and the difficulty in successfully piloting merchant ships in

waters patrolled by the French navy. For the rapid escalation of building work in the nineteenth century timber was imported from colonies of the expanding British Empire.

Hardwoods such as mahogany were occasionally used for sashes in the eighteenth century, particularly for high quality work when the building was of such importance to merit this (or if the owner had access to the timber).¹⁰⁹ From the late eighteenth century mahogany sashes with covered plate iron glazing bars were made, giving an extremely fine appearance (plate 105). The use of metal is discussed below, pp.151-2, in greater detail.

The ancillary uses of timber are briefly outlined here, as they are treated in greater detail in Chapter Three. Sash pulleys were originally of very hard wood, *lignum vitae* (*lignovity*) and olive being two named in Trinity College bills.¹¹⁰ Apple- and pear-wood may also have been used as they have similar properties. Louw finds that pulleys of boxwood or larch were occasionally used in England for reasons of economy (although brass pulleys with iron pins were more usual), and that during the eighteenth century mahogany pulleys were known but rarely used.¹¹¹ The pulley was housed in an oak or fir box, the shape and size of which varied, and was fitted with an oak pivot. Oak pulleys were noted at the early eighteenth-century house, no. 30 Jervis Street, Dublin. As late as 1794 William Pain's price list for window materials gives small box pulleys and pins, and wainscot pulleys and boxing.¹¹²

Metals

The earliest use of metal in windows is thought to have been as an unglazed wire lattice, presumably fixed to an iron frame. The framing and external security (in the form of iron bars) for lead-lights was made of wrought iron until the latter half of the seventeenth century, and this tradition may have persisted into the eighteenth century in some parts of Ireland in the framing of basement and dormer windows. However, the use of metal to frame windows or a structural material was limited in the eighteenth century, the provision of iron stanchions being the usual use of iron, with one known reference to iron lintels occurring at Trinity College in 1762.¹¹³

Metal sashes were a development of the mid-eighteenth century. The first, of cast iron, were very heavy and unwieldy. It is not known if any were made or used in Ireland. Louw has shown how even before the Industrial Revolution progress in metalworking in England challenged the joinery industry to match the slim profiles obtainable in iron.¹¹⁴ A patent was

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loded in England in 1763 for a machine to make sashes with plate iron, the first of many, including one by the Scottish architect William Playfair in 1783.¹¹⁵ Inventions and patents for new types of metals from the mid-eighteenth century led the way to lighter sashes, but the price never came competitive enough to match timber. One of the reasons given by Louw for the reluctance to adopt metal on a wide scale, apart from price, was its far greater mass relative to timber.¹¹⁶ The shortage of timber associated with the Napoleonic Wars was a factor in the greater employment of metal for various structural and decorative uses, including windows.

The case for metal was made by English metal-former Joseph Bottomley c.1795: "The change now taking place in the materials for sashes, sky-lights, fan-lights, staircases etc from Wood to Metal, has, besides the elegance of appearance, the advantages of strength and extensive durability."¹¹⁷ A factor encouraging the use of metal windows was a reduction in the fire risk, although Louw notes that this advantage was largely ignored in domestic buildings throughout the eighteenth century.¹¹⁸

The distinction between "metal" sashes and those made of hardwood slips over wrought iron is blurred, as the term is not defined in surviving accounts. There are few documented fully metal sashes in Ireland. Those examined are usually framed with timber, as only the internal grid is made of metal (plate 105). Cast iron quarry lights, popular in smaller houses from the early nineteenth century, were probably founded on site or in locally based workshops.

There were three main decorative uses of wrought iron in the eighteenth century, for fanlight protectors, window grilles and balconets (the latter two made in cast iron at a later date when casting techniques had improved to produce finer profiles). The stair window at the Provost's house, Trinity College (plate 106) is a very fine example of the standards then available in forging iron into protective grilles. Many fanlight protectors survive, some of a delicacy to rival the pattern of the fanlight itself (plate 107). These were always placed inside the opening and most were designed to be unobtrusive. The removal in some cases of the fanlight has left the grille visible. It is quite likely that these protectors were introduced simultaneously with the overdoor light, that is, earlier than the metal fanlight.

Lighter zinc and lead based patent metals vied with patented 'Eldorado sashes' of "a peculiar golden-coloured metal" containing copper, zinc and iron. This was confined to ornamental use in fanlights, the ribs being made of hot-rolled wrought iron.¹¹⁹

References from the early decades of the nineteenth century point to some use of metal windows in Irish buildings. The Articles of Agreement for the Gilson School, Co. Meath (1824), include detailed instructions to the smith and founder on the cast-iron metal windows to be fitted to the schoolrooms.¹²⁰ Several metal and zinc sash makers are listed in trade directories, but the extent of zinc as a framing material is unknown at present.¹²¹ The work of Richard Turner's Hammersmith Ironworks, Ballsbridge, Dublin, may have included the manufacture of metal windows alongside that of wrought-iron glasshouses and other articles.¹²²

CHAPTER THREE

THE ELEMENTS OF WINDOWS

WINDOWS - CONSTRUCTION AND CONSTITUENT PARTS

This chapter covers in detail the many aspects of the chronological developments in windows that have been briefly introduced in Chapters One and Two. These elements are illustrated and further elaborated upon using examples from surviving buildings and manuscript and published sources.

Diagrammatic explanations¹

The naming of the members of timber window frames and lights follows standard joinery practice. The vertical members of the window frame are called *stiles*. The horizontal members are *head* (the soffit of the frame) and *sill*. The masonry above the head is usually supported on a *lintel*. The vertical supports of a cross-window are *mullions*, and the lateral supports are called *transoms* (diagram 1). The *stiles* – sides – of a counterbalanced sash-window frame are termed *pulley stiles* or *pulley pieces*. An *outer lining* is fixed to the exterior of the frame and to the interior there is an *inner lining*. A *staff bead* is affixed to the inner lining to hold the lower sash in place and in windows of later than the mid-eighteenth century central *parting beads²* divide the pulley stile into two grooves for the sashes. The frame rests on a *timber sill*, which may be the full width of the pulley stile or stop short, to hold only the bottom sash (diagram 2 i-iii). The sash is operated by a system involving counterbalanced *weights* connected to the stiles by sash cord run through metal or timber pulleys, which are fitted into the top of the pulley stiles. The weights are accessed by a *pocket piece*, a length of sawn-out timber from the frame. In Ireland this is commonly sited in the inner lining, whereas in England it is usually found in the lower section of the pulley stile (diagram 3). Fixed or opening lights (both casement and sash) use the same terms, stile for the side and rail (top, meeting and bottom) for the horizontal members. The internal divisions within the sash are termed *glazing bars*, also known as sash-bars (and colloquially as astragals – in Scotland astragal is the standard term), which are moulded to the interior and rebated to the exterior. Putty is used to fix the panes which are glazed to the exterior.

The head and sill of the frame are jointed with morticed or dovetailed ends which receive tenoned stiles. In good work the outer and inner linings are grooved along the length into the stile for a firm joint. Where the parting bead is found, it is usually fitted into a groove in the pulley stile. The rear of the cased frame may have a timber back, though this is not always found in Ireland, nor is another refinement, a length of timber within the weight box (hung from the head) to keep the weights apart. The rails of the sash, casement or fixed light are morticed and wedged into the stiles using a scribe joint at the moulded internal side (diagram 4). The glazing bars are fixed through to the external sides of the stiles and rails by morticed joints and held with wedges for maximum strength. On many sashes the stiles extend past the meeting rail ending in curved projections, which are termed horns (also known as joggles) (diagram 5). Sashes, casements and frames of many periods are dowelled with timber.

A joinery architrave surrounds most window frames. This contains a soffit, shutters (in most cases), shutter housing, apron, and frame. The architrave is usually panelled.

The window frame members of a lead-glazed window are termed as above. The leaded-light frame, when in an opening casement, may be of either timber or metal, with an external rebate for the glazing. Small panes of glass, either square/rectangular or diamond (quarry) are affixed within H-section extruded cast lead lengths, which are termed lead *calmes* (diagram 6 i-ii). These are arranged in a manner to provide maximum structural support for the whole light, by alternating long and short lengths of calme. In squared work the vertical leads run through, the horizontal lengths being cut from pane to pane. The whole lattice is fastened together by soldering with a silver-zinc solder. Weathertightness is achieved by grouting the light with a putty-like mix of whiting, linseed oil and lamp black. Iron saddle bars are used for lateral strength, attached to the casement-frame and lead calmes by twisted copper wire. Ironwork in leaded windows is termed *ferramenta*.

SUMMARY OF WINDOW SHAPES AND STYLES

The use of bay and oriel windows has been found to some extent in sixteenth-century Ireland, but the incidence of them appears to be quite low and confined in the main to the Ulster plantation, where tall bay windows were often used. The grandest example is of course Joymount (plate 7 i), but the historian D. M. Waterman noted that more than half of the houses

illustrated in Londonderry in 1622 had tall bay windows.³ However, exceptions occur. Rothe House, Kilkenny, has an oriel window on the front elevation, the bay window at Athlumney Castle is used above as an example of the type, and Mrytle Grove, Youghal, Co. Cork has two oriels. Ormond Castle, Co. Tipperary has two very good examples of box bay windows to the front and side elevations, with mullioned glazing. The long-demolished bow windows at Lismore, Co. Waterford (in the new dining room and the nursery) can be dated to the 1630s or 40s. Illustrations of domestic cage-work houses show the same vernacular use of bay and oriel windows still commonly found in England.

The bow window was not a conspicuous feature of classical design, but in Munster bow windows (and curved windows in full-height bows) were popular throughout the eighteenth century. Kinsale, especially, retains many bowed oriel windows with mullioned sashes (many of the windows of which, in Munster fashion, have segmentally arched heads). The comment by Charles Smith about this town in 1749, in the *City and County of Cork* may be explanatory: "the houses are mostly built in the Spanish fashion, with large balcony windows".⁴ In the classical idiom the window was usually subservient to the bow or bay, which was predominantly of masonry. As mentioned in Chapter One, the bow to the rear of Ballyhaise is probably the earliest of its type in Ireland. As to be expected, the revival of Gothic and Tudor architecture brought with it the widespread use of bay, bow and oriel windows, which had many adherents.

The size, head shape and spacing of windows were of importance in Renaissance architecture (expanded upon in Chapter Four). During the sixteenth century the trefoil and four-centred arches, common in Irish late Gothic and Tudor architecture (plate 108 i), made way for the depressed-three-centred arched windows seen at Ormond Castle, Carrick-on-Suir. By this date the masonry window head was usually squared-off, although individual lights within it were arched. Most of the buildings of the early seventeenth century chronicled in this study have flat-arched lights and from that period onwards this is by far the most common head shape. An exception to the usual form of window in Elizabethan Ireland may be seen in John Derricke's *Images of Ireland* (1581), in which one illustration shows the army riding out of Dublin Castle.⁵ The castle building nearest to the portcullis is drawn with three clearly delineated round-arched, Renaissance-influenced windows having quoined reveals and iron

bars, with quarry lead-glazing (plate 108 ii). While the contents of this print may deviate from the actuality, it is interesting to find such attention to detail on a drawing of this date. Another drawing which may not be accurate (but is worth noting) is that showing similar semi-circular-arched windows in an (unbuilt) town hall at Derry, in 1622.⁶ Louw states that the rectangle was the established form for the window by the mid-1680s, “although the much more expressive” semi-circular headed window was known to English architects long before the Restoration.⁷ Loeber maintains that William Robinson’s predilection for semi-circular-arched windows was similar to that of Hugh May, though in practice the use of such a feature may be hard to isolate from the general trends of the time.⁸

Assolas, Co. Cork has three narrow semi-circular-arched windows on the first floor of the seventeenth-century section of the house, which contain early sashes (plate 23). The design of the fenestration could not be considered particularly classical, though if anything, the narrow windows echo the proportions of twice-transomed windows in France. The late seventeenth-century St. Andrew’s Church, Dublin (drawn by Francis Place, since rebuilt twice) had tall and narrow round-arched windows. St. Mary’s Church, Dublin, c.1697, has a very large baroque semi-circular-arched east window (plate 109), with stone tracery, and quasi-Jacobean semi-circular arched windows to the nave.⁹ The architect John Curld designed a window in 1709 for a dog kennel at the old Castle Coole, Co. Fermanagh “six foot high beside compass head and three foot six inches in the clear wide”, with inside shutters.¹⁰ The Dublin Poorhouse, c.1700, (demolished) was illustrated by Brooking in 1728, showing its imposing semi-circular-arched windows. Such windows as those in the Royal Hospital and the Poorhouse were made to monumental sizes, exploiting the new technological developments in joinery and glassmaking.

Semi-circular-arched windows were not prominently used by Palladian architects on main elevations apart from in their composite Venetian form. There is an unusual – for Ireland – single semi-circular window to the front elevation of no. 9, Henrietta Street, Dublin (c.1731, by Pearce), clothed in an Ionic entablature with keystone and apron balustrade, copied from the Earl of Mountrath’s House on Old Burlington Street, London and other published designs (plate 110).¹¹ A set of arched windows survive on another building thought to be by Pearce, Dundrum, Co. Tipperary (c.1730), where the windows flanking and above the doorway are round-arched,

as are the pavilion windows, all decorated with keystones and capitals.¹² Although the use of the semi-circular arched window on its own is not a prominent feature on mid-eighteenth-century facades, it became almost standard on the stairwell in medium and large houses of the mid- and late eighteenth century. The Provost's House, Trinity College, has a prime example of the type (see plate 106). A late Palladian building, Powerscourt House, Dublin, shows some individuality in its semi-circular-arched ground floor and basement windows, as do a number of other houses. Ducart tended to use rounded window-head shapes in his Irish buildings of the 1760s and 70s, displaying an almost baroque feeling for fenestration and detail, as at Castletown Cox, Co. Kilkenny (see plate 75). Within these shapes he used several decorative glazing bar patterns. Barker's Fitzwilliam Estate Survey (1762) illustrates some in new houses (not necessarily in buildings with any classical pretensions), notably Captain Barry's new house, where the three upper floor windows are round-arched (see plate 64 ii).¹³ Church architecture – of all denominations – did not lose interest in this style of window at any date, from Lismore Cathedral (rebuilt by Robinson c.1680) to St. Mel's Cathedral, Longford (mid-nineteenth century).¹⁴

While this window shape was not often seen towards the end of the eighteenth century, it did appear on some later classical buildings (such as the General Post Office, Dublin, 1815, where the arched windows are hidden behind the portico to the first floor), and it regained a higher profile in the mid-nineteenth century. Heuston Station is a Renaissance Palazzo with pedimented semi-circular-arched windows to the first floor, crowned by alternating segmental and pointed pediments (see plate 80). The Mater Misericordiae Hospital, Dublin (1855-61) has semi-circular-arched windows to the main floors in an institutional classical design.

A stylistic feature which found favour in the late seventeenth and early eighteenth century was the segmentally arched window opening. This window style became gradually outmoded after the introduction of Palladianism and was relegated to the basement in most buildings; Pearce used small segmentally-arched windows to the basement of Bellamont Forest, Cashel Palace and to both front basement and all storeys of the rear elevation at Dundrum. A drawing by Richard Castle shows the danger of generalising about the use or otherwise of architectural features within particular styles. In a design for a terraced house (which may not

have been built) segmentally-arched windows light the ground floor and dormer windows in the mansard roof, while there are semi-circular-arched windows to the basement.¹⁵

The use by Ducart of such windows on the front elevation at Kilshannig, Co. Cork is another example of his baroque tendencies in fenestration. Apart from the work of this Italian architect, and the continuing popularity of it in Munster, especially Co. Cork, the use of the segmentally-arched window died out during the latter half of the eighteenth century. The next use of it outside Munster is found early in the 1800s, in some utilitarian or civic structures such as barrack architecture and then in mid-nineteenth-century buildings of both classical and Gothic revival styles. Heuston Station has segmentally arched windows to the ground floor with heavy Italianate rustication under the semi-circular first floor windows. The designers of late nineteenth-century urban terraces also found a use for it in their otherwise quite plain facades.

An unusual window head shape noted in the late seventeenth century is a pointed type – a pentagon – illustrated by the pediment lights at the Royal Hospital and at Kilmacurragh. It is not possible to state definitively that this diamond-pointed window head is original to either building, although both are attributed to Robinson. No examples later than that at Kilmacurragh are known. A nineteenth-century noting of ‘lozenge-shaped’ windows in houses in a late seventeenth-century Huguenot colony in Innishannon, Co. Cork, is interesting; perhaps these were similar. A very rare window shape is that of a diamond or lozenge with concave sides, seen in what appear to be reasonably accurate elevations of houses on the Fitzwilliam Estate in Dublin, drawn in 1762, but found nowhere else.¹⁶

It has been thought that an early Palladian architect such as Edward Lovett Pearce may have brought the Venetian window to Ireland, but it is probable that Robinson and other seventeenth-century architects who practised in Ireland were familiar with the form from English examples.¹⁷ That the use of the Venetian or Serlian window was considered a novelty as late as the 1720s is seen by William Halfpenny’s comment that it was a window used by “ye modern architects” in a publication of 1724.¹⁸ A number of three light windows in the same manner as the Venetian – proto-Venetian, so to speak – have been noted in earlier Irish buildings. Those at Clonfert Bishop’s Palace, Co. Galway (of Restoration date) may be original

to the house, as might the Venetian style window on the 1706 front of the Market House, Kinsale, although it is unlikely that proof will be found for the dates of either.

A drawing for Drumcondra House by Pearce, dated 1727 (not quite as built) shows a Venetian to the centre of the first floor elevation. An undated drawing by the same hand sketches a side elevation for Bellamont Forest, Co. Cavan with a ground floor Venetian of the Doric order.¹⁹ The Parliament House had a huge Venetian window in the original House of Commons, illustrated in a mid-eighteenth-century engraving (plate 111). The scale of this window was immense.

The strict rules of Palladianism did not prevent Pearce and others from varying the Venetian form as promulgated by Halfpenny; in Bellamont Forest Pearce plays on it in two variations, with niches as the centre of the arrangement and at Drumcondra he suggests a Venetian composition in the outline of the central first floor tripartite window. At nos. 121-122 St. Stephen's Green Dublin, a pair of semi-detached houses attributed to Richard Castle (early 1730s), there is similarly a niche imitating the centre light of a Venetian window straddling the party wall. At Glasnevin House, Dublin, the stairwell Venetian window is clumsily handled to the interior, with the entablature hanging in front of the top panes of the sidelights. Two instances occur of a stairwell Venetian window surmounted by a segmentally arched lunette, at no. 85 St. Stephen's Green by Castle (plate 112) and Loreto Abbey (formerly Rathfarnham House), both in Dublin and of the 1730s.²⁰ In neither case could it be said that this close juxtaposition of two strong forms is successful.

Many undecorated tripartite windows of a proto-Venetian type are to be found, mostly in buildings otherwise lacking in distinctive classical motifs. However, some were clearly used as part of the contemporary repertoire, as at Tottenham Green, Co. Wexford, of the early eighteenth century (plate 113).

The Venetian window is not a conspicuous feature of the neo-classical or Greek Revival periods, although flat-arched variations of it were used by James Wyatt and his followers (as discussed in Chapter One, pp.54-5). Railway architects of the mid-nineteenth century employed the Venetian on some stations, such as J. S. Mulvany's Dalkey station (Dublin and South East

Railway), c.1850, or the neighbouring Bray station, which has one Venetian to each of four pavilioned end bays.

The *oeil-de-boeuf* or oculus light, a decorative oval or round window, was a feature of baroque architecture which survived into the Palladian repertoire.²¹ It was commonly used to crown the facade, either in a pediment or gable. (See below, p. 91, where the use of an oculus as an overdoor light is discussed.) Oval lights were known from the early seventeenth century, as instanced by the use of several of them at Portumna Castle, Co. Galway, one now blocked up (plate 114 i). At Finnebrogue, Co. Down, late seventeenth-century examples remain near the re-entrant angles of the north front, in elliptical embrasures (plate 114 ii). Slightly later, the surviving design for a classical townhall at Londonderry, of 1692, shows two oculi with keystones and impost blocks (plate 114 iii). A number of oculi of the early eighteenth century are worth illustrating. The round pediment window of the Red House, Youghal, is glazed with a star pattern, the only overtly decorative feature of the façade (plate 115 i). The old Presbyterian church, Princes Street, Cork, 1710, has a front elevation devoid of all but two floors of widely spaced large oval windows (plate 115 ii). A pair of oculi decorate the end gable of Skiddy's Almshouse, Cork (plate 115 iii), and a contemporary oval window lights the attic of the granary at Shannongrove, Co. Limerick. The rear elevation of Doneraile Court has a large oval light set low in the wall to give light under the stairs.

Some Palladian houses also contain this feature, although it is rarely found as a feature of the main elevations. The quadrant walls flanking Castle Dobbs are a good example of the light touch regularly spaced *oeil-de-boeuf* windows can express (plate 116 i).²² A mid-eighteenth-century round window at Leixlip Castle which lights the top flight of a stairwell has five divisions around a central circle. As noted above, Ducart had an interest in unusual juxtapositions of arched or round windows; the top floor of the Cork Mayoralty House (now the Mercy Hospital) has a pair of oculus windows to the top floor central bay with unusual glazing bar pattern (plate 116 ii). The pediment of Powerscourt House, Dublin, has a decorated oculus, seldom noticed in the narrow urban street, crowned with a coronet. St. Martin's, Eyrecourt, Co. Galway, has two projecting wings flanking the entrance with oculus lights to the ground floor glazed in a pattern that resembles the late eighteenth-century windows at nearby Clonfert

Cathedral (plate 116 iii). Blind oculi or arched niches are also a part of the classical repertoire; good mid-eighteenth-century examples are found at St. John's Square, Limerick and Patrick Street, Kilkenny (see plate 70 i). As with the Venetian, use of the oculus faded in the neo-classicism practiced by Gandon, Johnston and Morrison with some remarkable exceptions such as the enormous oval windows to the King's Inns, Dublin (on the courtyard elevations) and was revived only intermittently during the nineteenth century. Three round windows were designed for the three bays of the upper floor front elevation at Emsworth, Co. Dublin by Gandon, but this design was either not implemented or was later altered.²³

As mentioned, Gothic features were used to a late date in Ireland, with ogee-headed windows alongside Tudor arches. The pointed or Gothic arch went out of favour during the seventeenth century, probably because of its overt religious connotation during this most secular of times. However, church building of all denominations began again before the century was over and builders returned to applying the pointed window to naves and towers. Craig points to the small church at Hollywood, Co. Wicklow (very late seventeenth century) as indicative of the belief that the pointed arch is essential to salvation; it is a moot point whether the pointed window should in this case be termed Gothic survival or revival.²⁴ As discussed in Chapter One, p.33, upon its revival in the mid-eighteenth century the pointed window quickly jumped the boundary into country house architecture, aided by the ubiquitous pattern book. Several varieties of pointed arch are seen throughout the latter half of the eighteenth century; the ogee is used to dramatic effect at Castleward, Co. Down (plate 117) and to a lesser extent at Grey Abbey, in the same county and possibly influenced by it. A (demolished) house, no. 2 Hume Street, Dublin of the 1770s, illustrated a mix of Palladian and Gothic with an ogee-arched window having a heavy internal architrave with lugged imposts to the arch.

The juxtaposition of several types of arched windows to the facades of eighteenth-century buildings was, in the main, regulated and policed by the arbiters of taste. However, restraint was not always a characteristic of classicism in Ireland or elsewhere. The use of multiple arch shapes was dismissed by William Chambers as a "childish hankering after variety", but such reactions did not deter architects or clients from using several forms of

window in the one house, or designing extensions with window sizes and types competing with those of the original house.²⁵

The adoption of Gothic and Tudor styles for house extensions and rebuildings in the early nineteenth century saw variety employed on a large scale. Often the windows of the original house are altered to match the new style, but in many cases no concession was made, and the windows of both periods exist side by side, exhibiting old and new taste. At Carton the original house suffered several improvements, all designed within the classical oeuvre, but not all could be termed compatible (plate 118).

Overdoor lights appear to be a northern European phenomenon, known in The Netherlands and England predominantly, which most likely arrived in Ireland by direct imitation as the earliest ones predate pattern book and builders' guides. The illustration signed by Antonie Lipsett of the "Plott of a howse for ye Drapers" from 1615 shows an overdoor light with a central mullion (see plate 14i).²⁶ Portumna Castle retains the stonework of its round overdoor light which is a part of the Jacobean doorcase entablature (plate 119 i). Eyrecourt had an oval overdoor light (plate 119 ii) but this house was very much an English creation; this design was probably unique in its time and place. Both bear some resemblance to the oculus type, probably purposefully so.

Overdoor lights began to be common towards the end of the seventeenth century, when narrow, terraced, urban plots were becoming more widespread. The lighting of halls in these houses was limited to windows in or about the doorcase; from the mid-eighteenth century even larger urban houses tended to limit the size of the hallway to a single bay, necessitating an alternative opening, which could be conveniently fitted over the door. The drawing of the old Castle Coole, Co. Fermanagh (by its architect, John Curld) in 1709, and the elevations for Conyngham Hall, Co. Meath, show door openings with semi-circular arches. Although the possibility of semi-circular-arched doors cannot be ruled out, there may have been a light accommodated above a normal door.²⁷ The decorative possibilities of the overdoor light were exploited from the second decade of the eighteenth century (no earlier examples have been traced), at Ardee House, Dublin (c.1715), in which the rectangular overdoor light had a central semi-circle and radiating spokes within it.²⁸

Lights with three or four square panes such as that to the garden front of Kildrought House, Co. Kildare (plate 119 ii) may have been more common at the time, but few such have survived (several gabled houses are illustrated by Craig, in *Dublin*, showing similar lights). As mentioned above, the very tall Queen Anne door was often replaced at a later date, and a light then inserted. At the Deanery, Kilkenny, the basement doors have blocked overdoor lights with four horizontally set panes (plate 119 iii) (the unusual pane shape suggests that they may be cut down window-sashes turned sideways). Early eighteenth-century lights are predominantly rectangular but some had a segmental arch, in which type there was a tendency to shape the glazing bars decoratively. The arrangement of the glazing should not be seen as a precursor of the Gothic revival, but rather as a baroque element. Craig has attributed some to Burgh, such as that in the gable end of Trinity College library (see plate 49). No. 33 Jervis Street, Dublin, a very early eighteenth-century house, was drawn before its demolition with a segmentally-arched overdoor light.²⁹

Early semi-circular lights (named *compass* sashes in contemporary documents³⁰) were often incorporated into pedimented doorcases. They are dissimilar in their construction to the fanlight of the 1770s and after in being formed entirely of jointed timber members. The period 1720s - 1760s saw great use of compass lights in Dublin, with simple divisions. Pearce may be credited with their early use, as shown by three extant drawings signed by him (or attributed) in the Elton Hall collection. Two of these must date from the late 1720s (as they relate to houses built *c.* 1730), and the other is signed and dated 1731. An elevation for Bellamont Forest – not as built – shows three semi-circular overdoor lights with four spoked divisions around a hub; none of the other windows are filled in, but the doors of the two side openings are carefully drawn to indicate glazed French windows (plate 120). This attention to detail may have been done for a client unfamiliar with these modern features. Similarly, the overdoor light in the drawing of Cashel Palace, 1731, is the only opening delineated (with similar divisions; see plate 50). The third drawing, for a townhouse, shows a semi-circular-arched entrance without any classical decoration, but with a spoked light which resembles the fretted light at Marble Hill House, Twickenham of 1725.³¹

The semi-circular light appears to reflect the glazing arrangement of contemporary semi-circular-arched windows in the second quarter of the eighteenth century. By the 1750s doorcases were commonly designed to take such a light. Many survive on Parnell Square, Dublin (there are also later examples on Merrion Square) in which a large light fits within a pediment resting on scrolled brackets (without a full entablature). Both Barker's Fitzwilliam Estate Survey (1762) and William Pain's *Builders Pocket Treasure* (1763) illustrate some of the spoked designs found in these windows.³²

The fitting of an overdoor light within the body of the house became, if not usual, then occasionally acceptable during the mid-eighteenth century, to light rooms or passageways. Two good examples of the 1740s are found in partition walls at no. 13, Henrietta Street, Dublin, in which spokes run radially outwards from a central semi-circle. Another, larger light of similar design lights a passage at Leixlip Castle, Co. Kildare (see plate 67). Also at Leixlip, the front hall is lit by a pointed Gothic overdoor light in imitation of the adjacent sashes.

Alternative overdoor light shapes are very rare in the mid-eighteenth century. It had been thought that the segmentally-arched fanlight was a late development, but two drawings for houses by Richard Castle (d.1751) display segmental lights, one in a tripartite, pedimented doorcase, the other, an unexecuted design for no. 45, Kildare Street, Dublin, within a Doric entablature.³³

The mid-eighteenth-century rectangular overdoor light at no. 2 Palace Street, Dublin, is unusual for Dublin; a similarly sized internal light is also retained, lighting the rear hall and stairwell, but the original sashes of both are gone. The less decorative rectangle possibly reflects the lower status of the tradesman's or middle class dwelling. The use of a rectangular overdoor light continued in shopfront doors from the late eighteenth century to the end of the period under study.

The semi-circular overdoor light, or fanlight (often at this date still termed a *compass* sash) is the feature most widely used to define Irish classical architecture from the second half of the eighteenth century to the middle of the nineteenth. The various uses to which glass was put arising from the fantastic fashions of the mid-eighteenth century – rococo, Gothic and Chinese – bear witness, according to McGrath and Frost, to the “freshness and ingenuity with

which its opportunities were taken,” leading to the necessary tracery of glazing bars being adapted to “ingenious and graceful ornament”.³⁴ Many early doorways were subsequently altered to accommodate fashionable fanlights later in the century, which can cause the misreading of a building’s original aesthetic.

Several rival systems consisting of rolled and cast metal construction were patented for glazing bars in the 1770s in England, which quickly became popular as the slim profiles they allowed accorded so well with the fine Adamesque style then in vogue. These windows were soon called fanlights or fan sashes due to the resemblance of the decorative, delicate skeleton of bars to a lady’s fan. The early examples seen in Ireland were initially copied from English pattern books or directly imported. Designs for door and window surrounds were particularly suited to dissemination by pattern book models and could be easily copied by an architect into a working scrapbook. A cursory survey of Dublin doorcase types has established the usage of two popular English authors by Dublin builders.³⁵ However, the proliferation of designs found only in Ireland, with countless regional variations (many carried out in timber), is proof that there was early and lasting Irish interest in this most exuberant element of the classical facade.³⁶ No other country adopted the semi-circular fanlight on the same scale, nor exploited its decorative possibility as did Ireland; some of the varieties are illustrated (plate 121 i-v, from the 1770s to 1840s). It is clear that Dublin at least, and probably other major centres, must have had its own designers and manufacturers, as certain designs are found which have no parallel in England or Scotland.³⁷

Possibly the most elaborate Irish fanlight is at no. 9 Hume Street, Dublin (plate 121 v). This design shows how creative the collaboration between architect and craftworker could be. The doorcases of many houses of the 1790s encompass enormous fanlights covering both door and sidelight. Others have smaller fanlights which are contained within a shallow cove decorated with plaster composition swags and motifs, with the doors flanked by columns of timber or stone (plate 122). Even away from fashionable centres, houses in many provincial towns possess fanlights of marvellous quality. The gilding of fanlights in some of the most prestigious buildings – such those which survived the fire of 1922 at the Custom House,

Dublin³⁸ – is evidence that not only were they meant to be highly visible themselves, but that their very visibility would highlight the opulence of the patron.

In the Regency era, and with the advent of the Victorian age, the shape of the fanlight became progressively flatter and lower with semi-oval and elliptical forms predominating (although as seen above, generalisations are unwise in this matter). A practical explanation for this tendency in urban terraces may be the lowering of ceiling heights as the full semi-circular light requires a lofty entrance hall. However, terraces in Dublin were designed in the 1850s and '60s with round-arched fanlights.³⁹ Another small development was the complete disengagement of the columns, used to support a flat porch instead of an entablature. The glazing of mid-nineteenth-century fanlights included the use of coloured glass, usually around the perimeter.

The overdoor light was not invented as a convenient way of using up odd cuts from tables of crown glass (which were circular), but this factor was utilised and due to the relatively safe position of the light many original panes of crown glass survive. Close observation shows how the glass was cut with its concentric rings following the curve of the arch (as seen at Leixlip, plate 67). Unlike the earliest, utilitarian overdoor light, where the central core or bullseye of the crown glass was used (as the light did not merit the use of good quality glass), the timber overdoor lights and the later metal fanlights of Georgian Ireland have many panes of best quality crown.

The idea of opening a narrow flat-arched sidelight beside a doorcase seems to have become popular slightly later than the overdoor light, again with the mundane function of providing light for the front hall in urban terraces. However, its genesis can be traced back to the earliest unfortified houses. At Springhill, Co. Derry the narrow sidelights are echoed in the arrangement of the central bays of the upper floor (where the windows are even narrower). Waringstown, Co. Down has narrow lights set at a distance from the doorcase which do not follow the positioning of the other windows. At Stackallan, Co. Meath (c.1710-12) the entrance is definitely tripartite in design, despite there being no actual connection between the door and flanking windows. The design potential of such a light developed soon after the import of

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Palladian classicism. A very early example was drawn by Michael Wills, for the Schoolmasters' house, Drogheda, 1728.⁴⁰

The popularity of the Venetian window led to an early adoption of its three light form for entrances, in an elaborate arrangement in which two sidelights were incorporated into a pedimented doorcase (as discussed in Chapter One, pp.38-9). This type of doorcase became universally popular. These sashes were at first fixed, with no moving parts, but designed to simulate sliding sashes. In arrangement they are a single pane wide, the internal dimensions corresponding to the main ground floor windows. Later examples often have glazing of compound metal, the patterns complementing those in the fanlight.

The semi-circular lunette and Diocletian window types used in the main from the mid-eighteenth century onwards proved a very popular way of decorating the top floor or pediment of a house, by providing a suitable finish for a facade having a pedimented doorcase and first floor Venetian window. While many Diocletian windows are fixed, in others the central light, usually a sliding sash, opens. In the nineteenth century some were given pivoting lights of timber or iron.

As with the oval and round shapes, the use of the semi-circle as a window shape can be traced back to the early seventeenth century. A drawing of the façade of Joymount, Co. Antrim, shows two lunette shaped windows to the ground level basement (see plate 7 ii). In Turvey House, Co. Dublin (demolished), the seventeenth-century gables were removed during the eighteenth century and the top floor glazed with three Diocletian windows in a row, giving a rather odd result out of proportion with the rest of the building.⁴¹ Mountainstown, Co. Meath, dated 1726 has a Diocletian window to the pediment. Ducart used lunettes in basements, as at Castletown Cox and Kilshannig in the 1760s where they were glazed in imitation of fanlights, but with stronger timber members (plate 123). Syngefield, Co. Offaly, a mid-eighteenth-century house, retains similar fenestration in its basement.⁴²

Four country houses, Newbury Hall, Co. Kildare (plate 124), Colganstown, Co. Dublin (both of the 1760s), Raford, Co. Galway (late 1750s) and Mount Kennedy, Co. Wicklow (plate 125 i-ii) (finished 1784), have extremely large Diocletian windows directly above the doorcase, in designs which overpower in the latter two. The use of the Diocletian form tapered off during

the neo-classical period, but did not disappear completely. The semi-circle, in both large and small size, found favour in many building typologies to impart a touch of lightness to otherwise undecorated facades or to light the clerestories of buildings such as the Waterford Courthouse, 1784, designed by Gandon.⁴³ A similar use of the large Diocletian clerestory window by Gandon is seen at Emo church, Co. Laois (1790s) and the King's Inns, Dublin (begun 1800).

MASONRY CONSTRUCTION AND DECORATION

Window head construction

The construction of openings in masonry buildings necessitates the insertion of a relieving arch to spread the load, strengthen the wall above and protect the opening from downward pressure. Many medieval structures have or had massive stone lintels instead of relieving arches, in unglazed flat-headed apertures resembling door openings.⁴⁴ At all periods after the late sixteenth century flat-arched window heads were in general use, with a relieving arch a short distance above, clearly seen at Lismore Castle. In crude masonry and timber-framed buildings, however, the timber lintel is the only support for the coursed masonry above the flat-headed opening, and is faced with stone or brick, as at Portumna Castle, illustrating that this happened even in fortified mansions in the seventeenth century. Similarly at Eyrecourt massive bonding timbers run at lintel level to the interior of the walls. Kilmacurragh has squared lengths of oak supporting the internal brick facing, covered by a panelled soffit. In many buildings the lintels were visible both to internal and external faces. Rough construction was not necessarily weaker; Killincarrig, Co. Wicklow retained its half tree-trunk section lintels until this century, when examined by Leask,⁴⁵ and many of those at Portumna have survived over 150 years of dereliction. The fifteenth-century tower-house at Newcastle Co. Dublin shows a crude but effective method of lintel construction of barely adzed lengths of timber directly supporting the wall (plate 126). Several small windows in the gatehouse at Lismore Castle (of the 1630s) have lintels of thick slate.

Irish masons had never been overly concerned with decoration in constructional features such as window heads and lintels. The refinements of classicism merely added stone voussoirs or rubbed-brick arches to rudimentary openings. Pioneering (for Ireland) classical design in the seventeenth century used pronounced window surrounds or architraves to

highlight the openings of important floors, many pedimented or with Gibbsian style keystones. The window-heads at Jigginstown are constructed in redbrick on the main storey, with gauged voussoirs externally and internally. The decorative possibilities of shaped or gauged bricks were explored in this house, with a curvilinear pattern to some of the window-heads (plate 127 i). Yeomanstown, nearby in Co. Kildare, an early eighteenth-century house, has an unusual type of brick head, in which the bricks are placed on the diagonal to give a chevron effect. At Lisle House, Co. Dublin, the brick voussoirs of the ground floor windows were scrolled in a pattern seen in some English houses of a similar early eighteenth-century date (plate 127 ii).⁴⁶

Brick houses such as Blessington, Co. Wicklow and Beaulieu, Co. Louth employed rubbed bricks in a flat relieving arch. Such refinements had an impact on the treatment of window heads insofar as it became gradually unacceptable for the structural timbers to be visible (but the change took place over a long period). In brick buildings in the late seventeenth and early eighteenth century timber lintels were often set at the external wall face. As the (flush) window frame was built in and incorporated with the walling it supported the masonry overhead so the load upon the lintel had to be taken by a relieving arch.⁴⁷ The material within the arch was often permeable, usually rubble brick, stone or timber with a high proportion of mortar and faced with render. In some buildings the relieving arch is high – almost horse-shoe shaped – and the space in between filled with coursed brick. Of course there are exceptions, even within the one building. The house known as Ward's Hill, Dublin, had flat arched windows to the first floor, with triangular cornerstones to the heads, but over-large relieving arches to the second floor windows, both types performing an obviously decorative role (plate 128). When a building was rendered the curve of these arches remained visible. Some can be seen on the remaining early eighteenth-century brick houses in Dublin, notably in basement windows.

The main disadvantage with this type of construction, as in the earlier buildings seen by Leask, was the exposure of permeable material to the elements. Rotting lintels and frames have probably caused a great proportion of early window failures within this type of window head, and in that described above (cf. Eyrecourt), where the lintel supported the masonry directly, bearing a strain worsened by moisture. The use of the flat- or segmentally-arched relieving arch in conjunction with the recessed window frame protected the timber lintel far more efficiently,

and was quickly worked into the classical repertoire (as treated above). Louw finds that the ill-considered replacement of many cross-windows with sashes in the early eighteenth century caused subsequent structural problems, as the lintel was insufficiently strong (or inadequately supported) to withstand the load of the wall above without the prop of a central mullion.⁴⁸ The use of reinforcement using lengths of iron, is documented only once in Ireland in the eighteenth century, as mentioned in Chapter Two. A nineteenth-century writer castigated the brick flat arch “the structural badness of which must be apparent to any perambulator of our streets; where the number of such arches that have failed ought to be enough to banish them, except on a small scale”.⁴⁹

The widespread use of a particular type of brick flat-arch in Ireland deserves to be stressed: in Ireland the brick camber starts at a more vertical – or upright – angle than its English counterpart. Several examples using widely splayed bricks can be seen in early and mid-eighteenth-century houses in Dublin, but later builders seldom employed it. Whether or not this has to do with a difficulty in procuring properly rubbed or moulded bricks with which to form the arch has not been ascertained. Craig has noted that rubbed and gauged brick for window heads seems always to have been rare in Ireland.⁵⁰

Stone sills

Constructionally the sill diverts rainwater from settling at the base of the window frame and this was its function (with decoration a rare feature) in almost all classes of building through the eighteenth and nineteenth centuries.

The absence of projecting sills on the surviving windows of ruined Tudor and Jacobean buildings does not necessarily rule out their use, but stone window frames with all four edges bevelled, and lacking distinct sills, are a characteristic of surviving buildings such as the Mint at Carlingford Co. Louth, Ormond Castle, Carrick on Suir and Lismore Castle. At Jigginstown a gauged brick coping course on the plinth doubles as the sill course (on the main floor windows) and no sills are found in the stone mullioned basement windows. It is impossible at this remove to ascertain the types of sill prevalent on non-defensive buildings (such as urban and planters’ timber-framed houses) of the early seventeenth century and earlier. A cursory look at illustrations of cage-work houses would seem to show no sill, with the window placed directly

on framing timbers. However, the drawing of a Drapers' Company house (see plate 14 i) very definitely shows sills, in two courses.⁵¹

It seems likely that many buildings of the Restoration period did not have projecting sills either. Eyrecourt never had sills and the detailed articles of agreement for Burton Hall, Co. Cork do not mention the provision of them. The cross-windows at Waringstown are also without sills, as are the windows of Ballinderry Middle Church, Co. Antrim. (Those at Richhill, Co. Armagh are nineteenth century in aspect.) However, the application of a string course at sill level in buildings (common in most eras) made individual sills unnecessary, so the absence of documentation is not conclusive. Some late seventeenth- and early eighteenth-century urban brick terraces ran a plat band across at least one storey, obviating the sill. Period photographs show many flat sills (some thin), and other windows with none. The speculation about whether or not a moulded sill would have been part of the overall design leads one to consider that a flat block sill would have been the cheapest one for the builder to fit in speculative work without compromising the saleability of the house. Obviously the moulded sill was far more expensive to carve, and would only have been used when monetary considerations allowed, which depended on the judgement of the client and builder.

The use of a *Boswell* (a projecting brick surround, detailed below) was another architectural device which made a separate sill redundant, as seen at Kildrough House (south front). The Rubricks, Trinity College, has a continuous granite sill course to the ground floor (front), but proposals as to the original type must be made cautiously, as major works were carried out to this building in the 1750s and 1890s.

Note should be taken of the use of the word *sill*. Until the mid-eighteenth century the standard term used to describe what is now called a sill was *stool* or *stoole*. The Powerscourt, Co. Wicklow accounts of c.1740 mention sash cills (note the Irish spelling⁵²), but whether this term would also refer to the stone sill at this date is not known. An account of 1762 differentiates between door sill and window *stoole*. In general the terms *sill* and *stool* are found alongside each other in the later eighteenth century. However, an entry from 1826 in the Minutes of the Royal Hospital mentions "mountain stone in window stools 1/- per foot".⁵³ *Sill* is

used in this account so as to avoid confusion, as the modern interpretation of stool is limited to describing the raised ends of a lug sill.

Sill types: a) Stone or brick sill with moulded carving

The moulded sill is a stylistic detail of the baroque era, which seems to have been introduced by North European immigrants. The working name given to this sill (by the author) is the baroque moulded sill (plate 129 i-v).⁵⁴ The earliest projecting sills noted are of this type, characterised by an understated curved moulding on one or two flat or ogee-moulded courses. The moulding commonly seen may have its origin in the bolection moulding used around doorways of the period; the Burton Hall articles of agreement detail the moulding to the windows: “the heads and jaumes molded as those of the doors but less”.⁵⁵ The contract specifications for Blessington House, of 1672 (built of brick), detailed “under every window to work a stoole moulding in three courses, the first course to be a Syma Beding [sic] and upon the two courses upright... to work a straight Arch one brick and a half in height.”⁵⁶

Buildings of brick that have or had moulded and shaped brick sills include Beaulieu (plate 129 i). The north front of Kildrough House has the remnants of rounded brick sills. However, as has been noted above, the use of rubbed and gauged brick seems to have always been rare in Ireland. The common – and probably easier – construction was to insert a carved stone sill onto brick courses. Early eighteenth-century buildings with this detail include Dublin Castle Treasury Building and Molyneux House, Peter Street, Dublin (c.1710, now demolished). Knowing that many early moulded sills were replaced when later frames were installed makes it very hard to state conclusively that the baroque moulded sill (or any sill) was widely used on brick buildings. Retrospective fitting of stone sills was carried out at the Royal Hospital under Johnston in 1805, replacing the brick ones.⁵⁷ At Kilshannig (which was altogether later) the brick front has moulded stone sills, possibly due to the baroque tendencies of its architect.

Kilmacurragh (plate 129 ii), Castle Durrus, Co. Laois (plate 129 iii), Drumcondra House (the east front of the 1720s) (plate 129 iv), Howth Castle, Beechwood Park, Co. Tipperary (datestone 1741) (plate 129 v) and the Robing Room of the Bishop’s Palace, Kilkenny are good examples of this type of sill on stone buildings. The Robing Room, built in the 1750s, represents a late use of the carved sill, which apart from the work of Ducart is not

found in the latter half of the eighteenth century. What becomes obvious when a selection of moulded sills is seen together is the variety that was employed in their design. Surprisingly, for such a small detail there is an amount of diversity, from the very compact sill at Castle Durov to the heavy type seen at Beechwood Park.

The choice of a design for the window-sill is interesting when considering the design of large mansions of the Palladian period. Although a minor element in the building the window-sill was, it appears, important enough to be included in the aesthetic of the whole. Bellamont Forest is a case in point. The main elevation combines moulded sills on fishscale brackets to the ground floor, with a raised stone surround to the first floor windows. There are moulded sills to the main floor of the other elevations. On both sides of the house, the ground floor window-sills are continued as a decorative course, linking the central Venetian-style windows to the niches in the end bays. The Italian Palladians often omitted the sill, instead using a string course or plat band, but the moulded sill is sometimes seen. Most often the sill is part of the architrave which is carried on a balustrated apron, and it could be presumed that this moulding is the genesis of the Irish baroque sill.

b) *Block stone sill*

The origin of the squared or block stone sill is not documented, and investigation of it is impeded by the rarity of surviving buildings of the seventeenth century. Donegal Castle has flat sills, but their date is unknown; they may be part of a comparatively recent intervention to the ruins. Narrow slate sills were documented by Leask at Old Bawn, Co. Dublin.⁵⁸ Waringstown has sills on the main elevation, but these are thin, possibly added after the windows were changed to sashes. Very thin (one inch deep) sandstone sills have been retained to the rear of no. 7 Bachelor's Walk, Dublin, c.1740.

Although the moulded sill retained prominence until the middle of the eighteenth century, some earlier houses such as Ballyhaise were designed with very thick, two-part, block granite sills to the rear elevation, while the main elevation windows rest on string course (ground floor) and plat band (first floor). At Mount Ievers and Bonnettstown Hall, Co. Kilkenny, the basement windows are surrounded with a simple, ovolo moulded architrave which precludes a sill. The 1749 specifications for St. Patrick's Hospital include instructions for

“plain mountain-stone stools”. By this time the moulded sill was the exception, however detailing of the sill was still required, to allow adequate run-off for rainwater. One complaint about the sills of Georgian houses concerns their flat surface, on which moisture can sit, leading to damp at the base of window frames. Proving that this was addressed in at least some cases, Richard Castle often specified an upstand to the central joint (to encourage water run off), of which Powerscourt House, Co. Wicklow retains some examples. Beechwood Park has moulded sills with a bevelled surface, and the architectural drawings for Mount Kennedy (1780) also show a slight bevel to the block sill with a drip to the soffit.⁵⁹

Deserving of mention are two cases in which a block sill was singled out for treatment. At Middle Gardiner Street, Dublin, some mid-eighteenth-century houses (all now demolished) were given first floor sills which, seen on plan, have an ogee bow.⁶⁰ At Ballybritten, Co. Offaly the tooled limestone sills to the front elevation of the early eighteenth-century house are sloped to the front in an approximate quadrant section.

In Ireland it is found that stone is by far the most common sill material, with some limited use of brick. The occurrence of tile or timber sills is rare, and easily explained by the damp climate. Some late nineteenth-century painted timber sills have been seen, as at Carstown, Co. Louth, in a small extension window. The sills illustrated by Lipsett in Co. Derry in 1615 may have been of timber, as most of the plantation houses were of a framed construction.

c) *Decorated sills*

Very occasionally sills were decorated with highly stylised ornament, such as at Kilwaughter Castle and Glendaragh, both in Co. Antrim. In both cases (which together are probably unique) there is delicately carved foliage to the front face of the block sills (plate 130). The Coach Inn, Ashbourne, Co. Meath (demolished, early nineteenth century), had gadrooned sills.⁶¹

Mullions and transoms: stone

Large windows require internal structural support in the form of mullions and transoms. In Ireland stone window-cases persisted up to the late seventeenth and even the eighteenth century, a natural progression from the traceried Gothic stone windows of religious houses and churches in a country which favoured this more durable and readily available material. An

ornate mullion of c.1600 which shows clearly its ecclesiastical origin is under repair at Barryscourt Castle, Co. Cork, consisting of ogee and ovolo mouldings (diagram 7).⁶²

In one early seventeenth-century building, Royal Spur, Co. Tyrone, it is speculated that the mullions and transoms are timber faced with stone. More usual however, would have been the house in Limerick which was fitted with a six light stone window in 1645, or the reference to payments for freestone lights for the new dining room at Lismore Castle in 1637.⁶³ The use of stone mullions was rare in the eighteenth century. Stone persisted mainly in towns with a strong tradition of castle-style building; the mullioned basement windows at the Galway Mayoralty house and Patrick Street, Kilkenny have already been noted, while other houses were later rebuilt over basement level, retaining their seventeenth-century stone windows.

The typical cross-section of the mullions and transoms used in Ireland appears to be an irregular flattened octagon, typically eight inches deep by four wide, or nine deep by five wide (as are two examples from Lismore). The mullions are jointed to the head and sill; as the head carries the load above it is usually monolithic, but the sill is most often in several pieces, each length joined beneath the mullions. In transomed windows the mullions are jointed to the full-width transoms at the crossing and the transoms extend out into the jambs. Both internal and external faces are canted (Royal Spur) or chamfered (Carrick-on-Suir). At Roodstown (of possibly a century earlier) the uprights and heads have a slight quirk to the chamfer. At the Earl of Cork's Almshouses, Youghal (1613) there is a slate course to the top and bottom of the mullion where it joins the head and sill. Two Co. Cork examples comprise an exception to this design. At Barryscourt Castle and Doneraile Court the mullioned windows are square in section, with no concession to the refined appearance of the bevelled mullion. In the case of Doneraile, stone window cases from the old castle were re-used in the basement of the late seventeenth-century house. This style is seen occasionally; an undated (demolished) mid-seventeenth-century house in Kilmallock, Co. Limerick was recorded as having chamfers to the exterior and a squared interior, four and a half inches wide.⁶⁴ At Barryscourt the transom of one window is carved with script; this may have been taken from a window at another location (plate 131).

The position of the transom tended to be about half way down the mullion during the Tudor and Jacobean periods. While this division was not always observed, it appears that it was

the norm. Leask commented about Mallow Castle, Co. Cork that the transoms were placed just above the mid-height of the openings.⁶⁵ Extant seventeenth-century castles such as Portumna, Kanturk, Donegal, Athlumney and Royal Spur support this finding. At Donegal a twelve-light window cut into the old tower-house has two transoms, placed so that the lowest row is the tallest and the top row of lights the smallest. Similar setting of the transom occurs in surviving windows at Lismore Castle (see plate 5 ii). Such attention to detail indicates a measure, at least, of design in the arrangement. While transoms could divide the window into unequal parts, mullions were always positioned either at the centre or equidistant from each other and the jambs.

Internal embrasure

The shape of the internal window embrasure has always varied widely from the era of fortification onwards. During the fifteenth century, with the advent of handguns, a double splay was cut into the masonry, to allow for the traverse of the gun, but this had its disadvantages, and later sixteenth-century loops were splayed to the inside only. Musket loops were in use by the late sixteenth century.⁶⁶ Ormond Castle has windows with regularly ordered splays to the interior. On the first floor the single-splay of the loops in the projecting bays is clearly seen. The angles of the embrasure could vary widely with each window in any given building. The measured drawings by Leask of houses such as Brazeel, Co. Dublin, nineteenth-century plans of Portumna Castle and evidence on site of the canted window embrasures of Jigginstown and other buildings give some idea as to the diversity of this feature during the seventeenth century.⁶⁷

The influence of classicism did not extend to the adoption of a universally defined embrasure angle. It is found that the splay of the embrasure was tighter but not necessarily right-angled in most buildings examined which date from the Restoration. Eyrecourt, Beaulieu and the Royal Hospital exhibit this more square internal reveal. At Buncrana Castle (c.1718) and Springhill (c.1658, but altered c.1765) it is seen that the right-angle was used in most windows, but partition walls dictated some odd embrasures, to make internal plans comply with the exterior proportions. This is also found by examination of the drawings of Shannongrove,⁶⁸ where it is obvious by the wide variation that internal partitions or room dimensions influenced

the splay. In general, however, it seems that in architecture influenced by classicism the embrasure tended towards the right-angled.

Perhaps the influence of Palladianism was instrumental in this 'tidying up' of the reveal to produce a more angular and architectonic shape – classically geometric – on plan and elevation. A preference for the definition between light and shade it offered may also have played a part in the almost universal adoption of the squared embrasure. Pearce's Parliament House and Bellamont Forest are among the early buildings to observe very correct proportions in such aspects. There are always exceptions; the south front of Drumcondra House, an older house remodelled by the same architect, has some quite widely canted embrasures, with variations to each window. At Castletown, Co. Kildare the original, more widely splayed embrasures can be traced by changes in the flags of the hall floor at the windows (later work squared the reveals off to some extent and necessitated patching the floor). Some drawings of houses dating from the first quarter of the eighteenth century in Dublin help to illustrate the variations in this obscure aspect of window design. At Ardee House there was a four-inch offset in the embrasure, while the windows of no. 30 Jervis Street had a right-angled frame.⁶⁹ In stairwells and clerestory windows the embrasure was often splayed to obtain maximum light. At the much altered Damer House, Roscrea, the three stairwell windows are set at first floor level and in order to direct light downwards the sills are set at an angle. This is also found in the clerestory windows of the hall at Castletown, where the sill is sloped at about a forty-five degree angle. The Stairwell windows at no. 10 Henrietta Street, Dublin, and the House of Commons clerestory windows (see plate 111) were positioned within angled openings to gain more light in particular areas.

Changing fashions in interior decoration from the 1760s and the continuing preoccupation with increasing natural light indoors eventually assisted in the widening of the angle of the embrasure (as noted in Chapter One). New types of window dressing also played a large part in the change towards a wider window embrasure. Although shutters remained the primary method of obtaining privacy and security in buildings, ruched curtains and vertically hung blinds became increasingly popular in the mid-eighteenth century, as seen at Malahide Castle for example (plate 132 i). When later fashions dictated that curtains should be arranged at

the sides of the window, the amount of light received was substantially reduced. To counteract this reduction and at the same time give the appearance of a broad swathe of light indoors, the embrasure was progressively widened, and the accompanying joinery refined to match (plate 132 ii). Nicholson, in *Practical Carpentry*, summarises the trend. "For the more free admission of light and air the window recess has its sides splayed to a greater or less angle, the splay most frequently adopted appears to be from one-half to two-fifths of the depth of the window recess."⁷⁰ Notwithstanding this, provincial buildings (and indeed many urban houses) tended to retain tightly angled embrasures up to the end of the eighteenth century. A further reason for widening the splay may have been to lessen the projection of the architrave into the room in buildings that have thinner walls (usually brick).

A characteristic of the Irish Regency and early Victorian age in this regard is the treatment of the head of the canted opening; the wainscot soffit is sloped upwards to a similar degree as the splay of the sides, allowing maximum light and giving a visual importance to the architrave. Further refinements to the joinery of the embrasure are treated more fully below.

Stone dressings

The classical styling that was adopted in Ireland did not at first emphasise the window or window-bay with decorations other than stone hood-moulds, of the type found at Ormond Castle. Typically, the hood-mould was returned squarely or "eared" at each end, but Leask noted that some early examples finish in a tapered fashion, either to a point or a carved vine leaf or flower in relief.⁷¹ At Royal Spur (c. 1615) the hood-moulds over-reach to one side, and hang over the edge of the triangular bay (plate 133 i). Leask recorded the profiles of four types of hood-moulds of the mid-seventeenth century at a house in Kilmallock⁷² (plate 133 ii). Examples showing the skill of the carve occur especially in Galway city, where in one case the hood-moulds of a seventeenth-century window and door are finished off with decorated reveal stones (plate 133 iii). It should be pointed out, however, that many Jacobean houses that retain their stone windows show no sign of having had hood-moulds. At Lismore the only windows which are so treated are at the side of the seventeenth-century block, and not on the exposed river front. While buildings of the interregnum continued to employ hood-moulds they went totally

out of fashion when French classical influences came to Ireland with the return of the Duke of Ormond and his retinue.

The function of the hood-mould is to divert water from the window frame, which was seemingly aided in some rare cases by the weatherslating of the wall above and underneath the mullioned windows. Dunganstown, Co. Wicklow, a seventeenth-century castle, retains some of this slating, as does Clara Castle, Co. Kilkenny, a fifteenth-century tower-house (plate 134) (the slating may date from the insertion of a mullioned window on the second floor). That on Ballyowen Castle, Co Dublin, was drawn in the early nineteenth century by the watercolourist Samuel Frederick Brocas.⁷³

Other than squaring the stonework of the jamb and head, window surrounds did not usually receive classical decoration before the Restoration, but this changed in the late seventeenth century. Irish classical architects took up the Italian concentration on the dressing, not the content of the opening, although the use of the gridded sash-window was a neutral foil to embellishments of the surrounding masonry. The Tholsel, Dublin (see plate 26) was illustrated by both Dineley and Brooking with lugged architraves (although, interestingly, not so by Malton). Architects such as Robinson paid attention to these aspects of classical style that so distinguished English and French building at the time. Robinson's St. Mary's Church, Dublin (see plate 109) illustrates the power of baroque window styling in its East window, which has keystone, ears, and scrolls to the sill junction and over all this, an open, scrolled arch. At the Royal Hospital, alone of all the windows, the central window of the north elevation of the courtyard is dressed in a convincingly baroque manner (plate 135), though the flanking scrolls are incorrectly set. Thomas Burgh did not give any external features whatsoever to his Trinity Library windows; even the doorcase is understated, with only a solemn keystone.

In order to accentuate the windows at Bellamont Forest, and Castletown (though the main floor windows of the latter house underwent later alterations) Pearce used moulded cut stone dressings, some with architraves. To the Parliament House windows (many now blocked) he gave pulvinated cornices, while those at Drumcondra House were left plain but for a keystone. The Gibbsian dressing Pearce copied for no. 9, Henrietta Street, Dublin, is entirely different – more of a type with the windows of The King House, Boyle, Co. Roscommon, of the

1720s (possibly by Pearce⁷⁴). This is one of the many provincial houses, including Bonnettstown Hall, Co. Kilkenny that were decorated with the Gibbsian type of blocked dressing, used to weigh down the window in the desired classical manner. Castle gave many of his houses such as Ledwithstown, Co. Longford and Bellinter, Co. Meath prominent stone dressings. Browne's Hill, Co. Carlow has a typical dressing for the period (1760s) with the dropped lugs characteristic of many Irish houses (plate 136).

In conjunction with the stone architrave, the use of pedimented main floor windows (alternating segmental and pointed) was popular all through the classical period, and imparted, almost more than any other detail, an Italian flavour to the elevation. Castletown (plate 40), Leinster House, Dublin and Powerscourt House (also Dublin) are eighteenth-century examples, but see also Heuston Station (plate 80) for a fine mid-nineteenth-century illustration of this ubiquitous detail. At the Casino, Marino, Dublin (plate 73), the pedimented oversize windows are vital to the aesthetic.

Despite the grandeur imparted by this style of elevational treatment, many quite important Irish buildings were left plain, with little or no cut stone work to the windows. On the brick front at Kilshannig Ducart concentrated his emphasis on the stone entrance bay, while the other windows were left entirely without dressings (although the hidden basement windows have vermiculated voussoirs). At Powerscourt House, Dublin the ground floor windows have no architraves but sit well into the rusticated stonework which acknowledges them in the strongly described voussoirs. An alternative method of asserting the window without surrounding it with decoration is to place it within a shallow niche, so that the fall of the light will frame it. This soft play of planes is characteristic of the later classical period and often the niche is curved to suggest a greater variety of forms and dimensions than actually present (as a method of circumventing the severity of the neo-classical without introducing an undesirable fussiness into the elevation). Gandon's designs for Emsworth, Co. Dublin, illustrate the point: all of the main floor windows are set in shallow semi-circular niches, the diameter of the arch carefully calculated by the architect.⁷⁵

The windows of the Georgian Gothic display a variety of dressing styles, almost all related to classical tendencies rather than Gothic. It was in late examples of this style that stone

hood-moulds returned, but it was not until the neo-Tudor of Morrison and the Paine brothers that they once more became a part of the current vocabulary, as at Dromoland Castle, Co. Clare. (Stucco decoration, common in the nineteenth century, is discussed below, pp.111-2.)

Brick dressings

The use of brick for framing window openings is first seen at Jigginstown in the 1630s, but it was not until the Restoration that brick became common for structural purposes. At this time classically inspired architraves began to be used, though it must be said that brick as a dressing was probably limited in use (due to the necessity of importing quality facing bricks). The broad, slightly projecting flat architrave carried out in rubbed brick seen at Beaulieu (plate 43 i), and remaining under the plaster at the Royal Hospital, Kilmainham appears to have been termed a Boswell, as the following extract illustrates. The contract for Blessington House, Co. Wicklow (1672) specifies “to worke about every one of the upper windows a Boswell, fourteen inches broad and three inches projecting”. The word is not to be confused with pilaster, as the contract also states that the artificer was to raise brick pilasters eighteen inches broad and three inches projecting on the first storey. No other reference (Irish or otherwise) is known to confirm this nomenclature.⁷⁶ The drawings by Curld for Castle Coole show detail very similar to that at Beaulieu, suggesting that Boswells were a part of the design (plate 137 i). A house of c.1736, in Leixlip, Co. Kildare, still retains its original brick architraves, recently uncovered (plate 137 ii). This illustration shows the further refinement of rubbed brick pediments, which have not been found in substantial numbers in Ireland (as with sills, they are usually made of stone). Brick quoined architraves were usual on stone buildings in the early eighteenth century, but in later decades were plastered over, if used at all (usually in buildings of rubble stone) to be revived as a feature in the late nineteenth century.

Patent reveals

The patent reveal is the thin coating of lime plaster applied to the external reveal of the window opening, often found in brick and rendered stone buildings. Plaster was used as a sacrificial layer to give more protection to the exposed ends of the brick in the window reveal, to shelter the timber window frame and to provide more reflected light into the interior.

The patent reveal appears to be an early nineteenth-century development, seen predominantly in Dublin and Limerick, but the exact date of its introduction and even the origin of the term is unknown (examination of the index of patents has not proved fruitful). Recent evidence supports an earlier date than previously supposed. At Aras an Uachtarain (formerly the Vice-Regal Lodge, Dublin, of the 1750s) wings built in 1816 covered an original pavilion. An oculus window of the pavilion has been found intact in recent work, with tapered patent reveals to the rubbed brickwork dressings which must predate 1816.⁷⁷ However, a number of houses on Fitzwilliam Square, Dublin, a development started in the 1810s, do not have such reveals, leading to the assumption that they were either optional at the time of building or were introduced subsequently as they became fashionable. Stitt's *Builder's Guide* of 1819 prices "outside reveals plastered and coated" at 2s per foot lineal. The Articles of Agreement for the Gilson School, Co. Meath, state similarly, "all the reveals for the doors and windows are to be rendered with lime and hair." At the Royal Hospital Infirmary some windows were renewed in 1826, and the work included "plastering the reveals of the windows outside". Craig considers that this "local fenestration technique" possesses a brilliant light-catching and reflecting effect (plate 138).⁷⁸ Very many earlier houses were subsequently given patent reveals, which sharpened the look of the original opening. This has led to an inaccurate perception that the patent reveal is an integral part of the design aesthetic of brick Georgian houses.

The thickness of the plaster should be a half-inch or less. On the earliest examples (such as at 73 Merrion Square, Dublin, of the 1790s) this tapers to less than one-quarter of an inch at the arris of the reveal. Later patent reveals project slightly out from the wall face. On no account are nineteenth-century patent reveals thicker than about half an inch at the face of the wall, and neither do they project much beyond that amount.

A variation on the protective plaster reveal is that made in timber, of three lengths per window; some examples remained in living memory on houses at Mountjoy Square, but none survive.

Plastered dressings

Several seventeenth-century buildings – Powerscourt, Co. Wicklow (original castle), Brazeel, Old Bawn and Eyrecourt – are documented as having very fine grade plaster dressings

applied to the window surrounds in a vernacular quoined pattern (noted in Chapter One and illustrated in plate 30). The plaster at Eyrecourt is slightly recessed from the rougher rendering which surrounds it. At Old Bawn there were smooth plaster architraves under the later surface coat, which – according to Leask – might not have been original, but which pre-dated the extant window frames and sashes.⁷⁹ At Powerscourt the plaster is visible to the interior within the later house. No other examples of this feature have come to light. It does not appear that the quoined outlines followed or were dictated by the stone detailing of the opening.

Plastered window dressings are conspicuous by their absence on Georgian buildings, in which either well-delineated ashlar stone provided relief, or the opening was left untreated. The window surrounds of terraced houses and less important buildings seldom received attention until the nineteenth century, when the dilution of the classical elevation was hastened by the mixing of decorative motifs and the use of inferior walling materials. Typically, stock-brick and rubble-stone houses were rendered to prolong the life of the walls, and because these materials were not considered presentable. With the growing use of ruled-and-lined rendering came low-cost decorative solutions to the dressing of windows. At this time both patent reveals and stucco surrounds – made in mock-up of the earlier stone type – became popular decorative elements. In emulation of the moulded stone architrave, stucco surrounds caught the public imagination in many types of building. Stucco hood-moulds or keystones, the simplest solution offering individuality, were commonly applied retrospectively to earlier buildings until well after the end of the period covered in this study. Buildings of particular styles – neo-Gothic and Tudor – as well as those which made no other claim to architectural style were so treated. Among the latter vermiculated keystones were a perennial domestic favourite.

DEVELOPMENTS IN WINDOW FRAME DETAILS

Window frame particulars

The window frames of cage-work houses and occasionally of stone buildings in the seventeenth century were of timber.⁸⁰ The frames of casement and non-counterbalanced sash-windows were made of solid pieces of sawn or adzed timber, preferably oak. Some dimensions of early timber frames may be gleaned from evidence at Killincarrig, Old Bawn and Eyrecourt. Killincarrig was a pre-Cromwellian house in which the mullioned timber frames measured

about five inches square. The original window frames at Old Bawn were oak, of six by five inches. The frames at Eyrecourt, also oak, are of a square section seven and three-quarter inches by eight and five-eighths.⁸¹ In general, as far as can be ascertained, both iron and timber casements were fixed into timber frames.

In only two recorded cases has carving been carried out to window frames, at the cage-work Bathe House in Drogheda, 1570, and to some window frames at Eyrecourt, after 1660. Bathe House was examined before its demolition, and a “handsome semi-circular oval window consisting of four divisions” was noted, in which the “rails and styles were ornamented with projecting pins and trenails [tree nails, i.e. wooden dowels or pegs]”. A panel in the pedestal of the window contained a carved coat of arms.⁸² At Eyrecourt the windows flanking the door have very finely embellished egg-and-dart carving wrought out of the solid frame (plate 139 i-ii).

As so few mullioned timber windows remain to study their construction, the words of Moxon can be used to illustrate the method of framing used in late seventeenth-century brick building. “The tenons of the head-sill, ground-sill and transom, run through the outer jambs about four inches beyond them. And so they are set in a lay of mortar upon the brick wall before the piers on either side is brought up, at about three inches within the front, so that the brickwork over the head and about the jambs defend it from the weather”.⁸³ The mortice holes for the transoms at Eyrecourt are four inches long, while the tenons at top and bottom of the stiles are four and a half inches.

Early sash-window frames were usually solid but appear to have been made of slimmer sections than the dimensions given above. It would appear that timber began to be more economically used in the decades around the start of the eighteenth century. Some early sash frames survive, both single piece and cased (weighted and unweighted), giving some sample dimensions.⁸⁴ It was the refinement of the frame to accommodate both the weight and provide the solidity and stability needed for the operation of the window that led to the term “box” or “cased” frame. The cased frame has been noted in English accounts of c.1670 but the interpretation of it in Irish building accounts (of a later date) is not always clear, as the term may refer either to the actual pulley stile, or the wainscot casing that surrounded the whole window.⁸⁵ Louw has shown that two types of frame were used in the late seventeenth century in England

(and presumably in Ireland). As well as the cased frame (for which dimensions will be reasonably thin) a more solid frame was used with a cavity lined in wainscot to the interior to accommodate weights and lines.⁸⁶ A carpenter's account from Trinity College in 1729 prices window frames of "four-and-a-half by four squares" for "sliding cagements", which may indicate that these were solid frames, for unhung, possibly horizontal sashes.⁸⁷ Alternatively they may have resembled the Doneraile Court sash frames, in being solid with a weight box grooved almost the full length of the pulley stile.⁸⁸ A sash frame of "three & four squares" is noted in Trinity in 1742, which relates to either a thick, archaic type for a counterbalanced window, or a solid frame.⁸⁹ One can assume that improvements and modernisations were constantly taking place on individual buildings. The joiner at The Deanery, Kilkenny spent four days in 1747 "caseing ye sash frames and altering them".⁹⁰

The dimensions specified by Semple for St. Patrick's Hospital in 1749 may possibly be more representative of the time, for pulley pieces (stiles) of five inches by two and a half. New windows for Barrack buildings were specified in detail in 1760; the pulley pieces were to be of fir, five inches broad by four inches thick, the heads to be the same.⁹¹ As these examples are arbitrary, no conclusions should be drawn from them, but that the dimensions of the frame had not yet been standardised by the mid-eighteenth century.

The frames of the very large sash-windows in the chapel of the Royal Hospital, Kilmainham, installed in 1796, were to have pulley stiles of four by six inches and casings of one inch thick. All the joints were to be double morticed and double dowelled with iron interior joints.⁹² In 1813 Humphries priced both solid sash frames, stiles and heads (four and a half by two inches) and hollow sash frames and hanging stiles (five and a half by one and a half inches).⁹³ The inclusion of prices for solid frames is indicative of the continuing popularity of the unweighted sash-window (more on this below). The dimensions given in this book remained fairly constant during the nineteenth century. No. 150 Pearse Street, Dublin (c.1840) had a pulley stile of four and a half inches wide by one and three-quarters depth.⁹⁴

An article in the *Irish Builder* in 1883 notes some differences between Irish and English frames, including the positioning of the pocket pieces near the bottom of the inside casing of the sash-frame, behind the shutters. In England these are found mostly near the bottom of the pulley

stiles immediately behind the lower sash. "Putting the pocket pieces in the pulley stiles where the frames are not substantial tends to the weakening of the stiles, particularly when openings also have to be cut above for the insertion of the pulley boxes."⁹⁵ A rare refinement of the Irish variation is that found at Drumcondra House, first floor, where the pocket piece, instead of being jammed and nailed into position, is hinged along its length (plate 153).

Placing of the window frame: flush and recessed

The interaction between solid and void is an important one in classical architecture, and depends to an extent on the position of the openings. When recessed they provide a much more expressive façade, which is intensified in certain lights, whereas the flush window creates a flat plane, especially if unrelieved by other decoration. The English architect Nicholas Hawksmoor commented in 1715 about the windows of a building in Oxford "the more the Chasse frame of wood and chasse stands from the out face of the Wall, it is the better because the Wooden worke is defended from the rain and more strongly fixed, beside the Beauty it gives the overture by receding."⁹⁶

Seventeenth-century Irish stone buildings usually had recessed windows, borne out of considerations of practicality rather than fashion (as at Old Bawn and Eyrecourt). Leask noted an exception to this rule at Killincarrig. In this house the mullioned frames were set flush in external rebates.⁹⁷

The brick buildings of seventeenth-century planters and Cromwellian grantees (many of which were timber-framed) and those of the so-called 'Dutch Billy' style of the turn of the century had windows set at the external face of the wall. The builders of the latter were probably more *au fait* with foreign trends such as the Dutch preference for flush-set windows. The flush window gradually lost favour because of stylistic changes, but also as the externally fitted window was not held as securely into the opening and therefore the frame was liable to failure from wind pressure. According to Louw, the problem was resolved by thickening the framework of the window, by recessing it into the wall and by tying the frame back to the main structure with metal ties.⁹⁸

The London Building Act of 1707 was passed to lessen fire hazards, and specifically targeted structural timbers, including inflammable window frames that were flush to the façade,

as they were more prone to fire from embers blown by a wind-driven blaze. Parliament passed a Building Act (1729) in which Clause XVI outlawed the placing of timber within four inches of the face of front, party or back walls.⁹⁹ Bellamont Forest, designed at this date by Pearce, has windows set back seven and a half inches. In general, it would seem that the designers of fashionable buildings were more amenable to the recessing of the frames than those involved in speculative undertakings (probably due to the ease of fitting the flush window). At Drogheda Grammar School (originally the Singleton House, c.1735) a further refinement is found. All of the windows are recessed, but those to the projecting centre bay are exaggeratedly so, set back about twice the depth; this may have been done to enliven the play of light on the façade.¹⁰⁰

The construction of a box-frame was a new and specialised skill in the eighteenth century that perhaps at first was not further complicated by recessing it in order to connect it structurally to the masonry. A note by Francis Johnston in 1813, referring to the Royal Hospital, is explanatory in this regard: “the sash frames are in general faulty and badly connected to the jambs (which are not revealed as windows now are to protect the frames).”¹⁰¹ The more widespread use of double-hung sashes with the consequent need for two pairs of pulleys (and wider stiles with parting beads), led to greater wear and tear, entailing stronger construction, with well-crafted jointing and stability within the reveal. A tract of 1774 states that “sashes well made, require good execution and should always be put into the hands of men of merit and experience.”¹⁰²

The effectiveness of the Building Act of 1729 seems to have been minimal; subsidiary facades and even the main elevations of new buildings retained their flush windows for decades longer. Despite enquiries, it is not clear if fire insurance clauses stipulated recessed windows as a fire control measure.¹⁰³

The erratic progress of the change from flush to recessed window is seen in two Dublin houses of the 1740s and '50s, no. 7 Bachelor's Walk and nos. 10 and 11 South Frederick Street. No. 7 has a mixture of both settings, with the more archaic type to the rear. No. 10 South Frederick Street was fitted with flush boxes, while its contemporary no. 11 has, and seems to have always had, recessed sash-windows. The Wide Streets Commissioners officially enforced the use of recessed windows, but rear windows (even in schemes directed under their control)

did not seem to be regulated, as noticed on some houses on Parliament Street, Dublin (opened in 1762). The sashes of many such buildings have been replaced while the frames and the flush positioning are retained. Isolated examples of flush windows in fashionable new building projects appeared even at the very end of the century, for example at the rear of Westmoreland Street, Dublin, a terrace which was designed c.1800 by Henry Aaron Baker for the Wide Streets Commissioners (seen during renovation works in 1994).

In provincial towns, especially in Ulster, flush-set windows persisted (mostly on stone houses) into the middle decades of the nineteenth century, and in the early years of the twentieth-century the Queen Anne Revival included flush-set windows with exposed frames in both brick and stone buildings.

Exposed and concealed sash-frames

The setting of the sash-window frame into a nib in the masonry reveal rather than merely placing it in the opening was not strictly a chronological development, but was related to the influence of light on classical architectural fashions and practical (weatherproofing and timber preservation) considerations. As will be seen in Chapter Four, the visibility of the frame had come to play a role in the aesthetic of the Palladian architect, and whether or not the frame was flush or recessed some part of it had to be exposed. Robert Morris, in other respects a typical Palladian, was scathing of the exposed frame. "I have often reflected on the useless frames of the windows, which our Moderns show, to convince the thoughtless that they are necessary to be seen and to inform them that they are made for concavities for the weights." He also commented on the increase in light to be gained from recessing the frame into the wall "for were the frame set in recesses, and only just so much of it seen as is necessary, the general opening would be contracted one-fifth the part of the width of the window at least".¹⁰⁴ Because of the strict guidelines concerning proportion, the ad hoc enlargement of windows to increase light was not possible, so the only alternative was to streamline the frame.

A number of the early buildings examined have exposed box frames which protrude less than later Palladian types. Kilmacurragh, Marsh's Library, Castletlough, Waringstown (front), the Red House and the Old Library, Trinity can be noted in this respect. Some of these examples may well have frames similar to those seen (above) at Doneraile, Fenn's Quay and

Clochistic.¹⁰⁵ At Marsh's Library a slightly later window (probably a doorway altered during the early eighteenth century) has considerably thicker frames (shown in plate 42).

The change from exposed to hidden frame cannot be dated accurately. It would seem that by the late 1720s windows were designed with a portion of the frame concealed, as is the case at Castletown, although one did not necessarily progress to the other. The window frames at Mount Ievers and those at Howth Castle are recessed into the masonry, but are partially visible. At no. 13, Henrietta Street, Dublin, the frames of the original windows to the front basement and top floor are wholly concealed (this is the earliest dated example of such a refinement found in during the current research).

Generally, from the mid-eighteenth century the frame was concealed; in the refurbishment of older houses sashes especially were removed in favour of the new lighter style but it was also deemed desirable to change the frame for a hidden one. This, however, necessitated such an amount of structural work that many more early frames were retained – especially on rear elevations, and most often stairwell windows – than otherwise would have happened. Where the flush-set window continued, naturally the frame remained exposed, but this method of construction retreated further into the provinces during the nineteenth century.

Full and half timber-sills (sash-windows)

The half timber-sill is indigenous to Ireland. As noted by Nicholson in 1819 and explained in the *Irish Builder* of 1883, "in English work the sill of the sash-frame ... extends out the whole way, and stands flush with the outside casing of the sash-frame. In Ireland, as is well known, the sill of the sash-frame extends out only as far as the parting bead, generally something less to allow the lower sash to lap over, and throw off the drip of the rain"¹⁰⁶ (diagram 8). The earliest Irish sash-windows were similar to the English type, having timber sills of the width of the pulley stile into which they were jointed. The majority of buildings in Ireland dating from the 1750s have half-sills of timber (the exceptions to this rule are outlined below). The reason why there should have been a departure from the original sill type is unclear, but may be related to the particularly damp nature of the country, with wind-driven rain very hard on exposed timber. A secondary reason may be timber economy, which is hinted at in the careful husbandry of timber in windows and elsewhere. The identity of the person who departed

from the accepted practice of several generations to fashion the half-sill is unknown. As stated elsewhere, many mid-eighteenth-century joiners in Ireland worked from English pattern books whereas earlier joinery developments were empirically based. Had this departure happened at an earlier date, it would have been understandable, but by this date there was a greater degree of standardisation employed in such details.¹⁰⁷

The earliest windows examined in this study which have the half sill are those of no. 13 Henrietta Street (1743), and Trinity College West Front and Regent House, of the 1750s (and Glasnevin House, Dublin, c.1750). There were geographical and chronological exceptions to the use of this sill type, as well as the predilection of individual architects, overseers or joiners; for example Munster builders seem to have used the full sill long after the other provinces changed to the Irish type. The buildings of Davis Ducart (of the 1760s and 70s) have windows with full-sills, all apparently original (though it should be said that most are located in Munster). Coollattin House, Co. Wicklow(1801-4), by John Carr of York is one of several such houses with the full sill, explained by its English designer. In the nineteenth century Irish railway buildings such as Heuston Station were designed with full sills, probably due to the numbers of English architects and carpenter / joiners working in this field. At Mount Ievers, Doneraile Court and Leixlip Castle many of the full sills have been cut back in long-forgotten repairs to half or three-quarters, presumably as the exposed section became decayed.

The earliest windows of Marsh's Library have sloped weather-board sills, which have not been found elsewhere in Dublin; they may date from the Victorian restoration. Similar sills have been seen on some of the windows of the early nineteenth-century addition to Royal Spur.

As the bottom rail should fit closely with the timber sill, various refinements were evolved throughout this period and after to give a more weathertight seal, including putting a step in the bottom rail and window-sill (seen clearly at Glasnevin House), and bevelling it to the outside. This slope to the surface of the sill became universal in the second half of the eighteenth century. The earliest evidence for it dates from c.1740, in a payment to a sawyer for "57 bevil cuts for sash cills".¹⁰⁸

Irish architectural historians are divided on which is the better type from the point of view of performance. Maurice Craig thinks the half-sill inferior in that the bottoms of the pulley

stiles rest directly onto the stone sill, leaving the end-grain exposed and prone to rot. David Griffin on the other hand sees an advantage that in not projecting beyond the lower sash the sill is not exposed to weathering to the same degree as the full sill.¹⁰⁹ In most modern “restoration” projects the full sill is used, due to a break in tradition (and training methods) which has caused the Irish variation to be forgotten.

Shutters

Internal window shutters, of “single” or “double-wrought” timber¹¹⁰ have been documented from the seventeenth century, but their earlier use in Irish buildings may be inferred from surviving sockets to sill and lintel of many castle openings.¹¹¹ Shutters were fitted to the windows of main floors, usually housed (or cased) in architrave frames to contain them when folded back. Eyrecourt had internal panelled shutters, shown in a photo of c1900.¹¹² The Articles for Blessington House detailed the builder to “make and provide handsome painted wooden window shutts for the inside of the windows of the two lower storyes.”¹¹³ Plate 140 illustrates a shutter at Buncrana Castle of perhaps forty years later.

In general (but not always) the timber shutter was an integral part of almost all Irish building types until the latter half of the nineteenth century. It provided a three-fold use, security, privacy and heat conservation. Although the purpose of the shutter was mainly functional as much attention was paid to its design as to the other parts of the window.

The provision of security played a role in the use of shutters at all periods, especially on the basement and ground floors of domestic houses. The fastened shutter guarded against common burglars and, more seriously, against organised mobs. At Springhill the top panels of the upper floor shutters have what could be a gun loop (though more prosaically it may be to let in just enough light to guide the occupant opening them in the morning; similar cuts are found in some early eighteenth-century English houses). A similar feature is seen in the external shutters of the front elevation at Waringstown. The entrance sidelights at Bonnettstown Hall are protected by shutters fitted both with long iron bars – which cross in an ‘X’ – and beams which slot into holes in the masonry either side. Shutters made of iron are discussed below, p.125. Upper floors (and windows along passages) of buildings less at risk from attack were often left

without shutters. At Richhill the stair windows do not appear to have had defensive shutters, as the embrasures are finely finished in oak boards (see plate 28).

The most basic type of shutter – not held in a housing or box – remains in some windows at the Rubrics of Trinity College (those examined have two raised and fielded panels per shutter). Howth Castle has two-panel shutters to the sash-windows of the kitchen and first floor passage which are not housed or held fast against the wall. The un-boxed shutters to the basement at Ballyhaise, Co. Cavan (1733) have a double thickness of timber, apparently for extra security.

Tall windows often had two-piece shutters, divided to correspond with the upper and lower sashes. There does not seem to be a definite date of introduction of this development, which can be seen in both early and late eighteenth century windows, and also in windows of quite modest heights. Apart from admitting light to the top half of the opening while enjoying privacy with the lower shutter closed, or using this device to lessen the breeze from the open sash, the two-part shutter would have considerably alleviated strain on the hinges.¹¹⁴

As discussed on page 53, the splay to the window embrasure became steadily wider which was followed by developments in the associated joinery. The most obvious mid-nineteenth-century development was the projection of the architrave into the room to such an extent that the assemblage stands almost entirely proud of the wall, especially in speculative urban housing built of brick. This feature, more pronounced in Ireland than Britain, was denounced by the *Irish Builder* in 1883, which called it “an encumbrance and obstruction ... a good and sufficient splay of window jambs is obtainable in 14in. or 18in. brickwork, so that the whole of the boxings, shutters and trimmings, can stand within the inside face of the wall, and the architrave alone projecting beyond the plaster work.”¹¹⁵

The panelling fashions of regular joinery influenced those of window shutters.¹¹⁶ Seventeenth-century panelling is plain, with quite small panels edged by thick framing. Bolection moulding (curved, projecting moulds at the junction between panel and frame) was fashionable from the Restoration, but gave way to raised and fielded panelling in the very early eighteenth century. If original, the shutters noted at Springhill, Eyrecourt and the external shutters at Waringstown (all raised and fielded) are early examples of this type. The stair

window at Springhill (which was originally taller, and later altered to fit a semi-circular headed window) shows large fielded panels to the sides of the shutters, worked in oak. The adjacent panelling and apron of the window seat were given raised panels. At Waringstown the shutters of the cross-windows do not have raised panels (as do the mullioned sash-window shutters at this house). Marshs' Library has similar plain panelling to the shutters of the original passage windows in which there are two panels per leaf, fielded to the inner folds. These do not extend the total height of the window and the panels do not correspond to the divisions on the sash (see plate 46). The Queen Anne windows at Leixlip Castle retain shutters in which the panels are not raised. Original raised and fielded shutters remain on the ground floor windows in Bunrana Castle, c. 1718, but the upper floor has bolection-moulded shutters which judging by their erratic divisions, are probably original (plate 140). At Beaulieu the gallery windows have their original raised and fielded panelled embrasures (see plate 43 ii), which correspond to the sashes; presumably the other windows of 1722 had shutters to match. The original raised and fielded shutters at Castletown, Co. Kildare have the same internal dimensions as the panels of the wainscot walls (though there is no indication that the clerestory windows of the entrance hall had bolection-moulded embrasures to complement this type of panelling on the walls).

The detail specified at Castle Durrow in the contract for panelling between John Rudd and William Flower, the owner, may describe the contemporary design of shutter panels, both bolection and raised and fielded. The former is "a full ogee stuck on the framing and a small ogee stuck on the margent of the panels" and the latter "framed work with a full quarter round on the framing and the pannels raised."¹¹⁷ Raised and fielded panels were slow to go out of fashion; Kilshannig retains its original shutters of this type, as does no. 86 St. Stephen's Green, both of the 1760s. The finer line of neo-classicism eventually influenced shutters, with simpler understated mouldings becoming universal from the 1770s and retaining their primacy until the mid-Victorian period. William Pain must have been catering for eclectic tastes in the 1789 edition of *Practical House Carpenter*, as he illustrates raised and fielded shutters. The 1791 revision of Chambers' *Treatise* directs that shutter panels are to have ovolo or ogee mould in the thickness of the panel framing, and when the profiles of the room are enriched, so must these

mouldings be.¹¹⁸ Around the middle of the nineteenth century the Grecian ogee became the standard moulding in shutter (and door) panels, lasting in popularity until the end of the century.

Decoration was not overlooked, even during the fortified era. The seventeenth-century castle Lixnaw, Co. Kerry (long destroyed) was described as having had “the shutters of the windows inlaid with silver”.¹¹⁹ The immense attraction held by light is seen in the mid-eighteenth-century fascination with mirrors angled to capture it – and the reflection of the landscaped view. At Westport House, Co. Mayo (by Castle) the shutters panels of one principal floor room are fitted with mirror (and were so by 1787¹²⁰), as are the lower panels to a reception room at no. 52 St. Stephen’s Green, Dublin and the boudoir at Castletown. A variant of the mirrored shutter may have been the decoration admired by John Wesley in Moira House, Dublin in 1775, in which the windows were inlaid from floor to ceiling with mother of pearl.¹²¹

The architrave joinery at Bellamont Forest has a fine perimeter moulding, with beading and leaf motif. At no. 85 St. Stephen’s Green, the reception room architraves are decorated with curled fronds and oversized brackets (plate 141). Shutters themselves were occasionally given the same motifs as adjacent doors, as is the case in nos. 4 and 13 Henrietta Street, Dublin and in the Chambers’ interiors at Castletown. A leaf motif decorates the junction of panel and frame on the ground floor windows of no. 13, Henrietta Street, with the raised panel surrounded by a bead and reel moulding (plate 142 i). The shape of the shutter architrave could be designed to complement other features, with lugs to the top corners. Nos. 27 and 28 South William Street, Dublin, of the mid-eighteenth century, have a gracious outward curve to the lower corners of the architrave and lugged ears. Powerscourt House (1771-4), in which the ceilings were designed by the well-known stuccadore Dublin Michael Stapleton, has similar highly decorative ‘composition’ work on the shutters of the reception rooms. At the joint of panel and frame these are decorated with floral motifs (plate 142 ii). The ground floor internal architraves at Castle Coole, designed by James Wyatt in 1791, have round-arched heads in which the semi-circle over the (flat) window head is ornamented with a fluted plaster fan. In his designs the architect drew ruched curtains hung from the top of the architrave to illustrate the desired effect.¹²² At Carton there are two types of decorated shutter designed by Morrison; the plainer of the two has four fluted fans to each panel, while the more elaborate type has haut-relief timber putti heads in

a circular panel to the centre of each shutter (plate 142 iii). The library window shutters at Mount Stewart, Co. Down (extended by Richard Morrison, 1825) are decorated with book spines to simulate the actual bookshelves in the same manner as many library jib doors.

Late Georgian and Victorian fashions for fluted fan shapes (seen as early as 1789 in Pain's *Practical House Carpenter*¹²³) were taken up in the decoration of the splayed embrasure. In an effort to attract maximum light, the soffit was also set at an upward cant and the resulting triangular shape was ideally suited to decoration with a delicately carved fan. This detail seems to be peculiarly Irish, according to Craig, who finds that the best examples of this work are reeded or fluted and shaped like a segment of a hollow cone (plate 143). An Irish builder's guide of 1819 describes and prices them: "one pair of fluted or counterfluted spandrill fillings over shuts, sprung to raise soffit in front, 10s".¹²⁴ If those at Townley Hall – dining room and bedrooms – are original, then the date of their introduction must be presumed earlier, and may represent an original idea of the architect, Johnston.¹²⁵

At Castletown in the 1760s the interior was updated in a grand manner, by replacing the entire set of windows on the main facades above basement. The new shutters were fashioned with carved mouldings to the panel edges that reflect the other decorative alterations of the architect (probably Isaac Ware). Castle Durrow too had its windows replaced in the late eighteenth century with new architraves and shutters of the distinctive Adamesque style. More ordinary buildings were not treated with such attention to fashion at any date, for example in the repairs to officers' quarters to be carried out in 1760 which simply specified "shutters framed in two Pannels three-quarters of an inch thick."¹²⁶

Frederick O'Dwyer has argued that in Dublin the arrangement of the shutter panels is usually related to the panes of the sashes.¹²⁷ That is to say that an early window with nine panes per sash would have a shutter reflecting the five horizontal divisions, with a wider rail at the centre division. This rule did not extend to institutional buildings, nor should it be assumed that it applies outside the capital, nor at every period. Munster Georgian shutter patterns rarely correspond with the glazing bar pattern, often showing individuality (or lack of finesse) in this minor feature, as at Mount Ievers, Castletown Cox and Castlough, where apart from mirroring the meeting rail, the shutter panels do not relate to the horizontal lines of the window. At

Bonnettstown Hall and other contemporary houses outside Munster even the meeting rail is ignored in a three panel pattern. Very little is known of the input of the architect into such minor details, but one drawing by James Gandon does illustrate the care which could be taken in this regard. A window (location unknown, but possibly of Beresford Place, Dublin of the 1790s¹²⁸) is drawn with panelled shutters, which, apart from having a central line, are divided up in what might be called an idiosyncratic manner (plate 144). Those at no. 2 Pery Square, Limerick, have one single panel on the long first floor windows, giving a very effective result.

Shutters that are drawn up vertically from a cavity in the apron below the window by a pulley mechanism have been noted in England but are rarely found in Ireland.¹²⁹ The sole examples found – two – date from the late nineteenth century. A shutter design at Seafield, Co. Dublin of a similar date, is interesting. The window architrave extends outwards on both sides, in a flat box into which the shutters slide, parallel to the wall. They are contained by grooves at the top and bottom of the casing (plate 145 i-ii).

As with window frames and sashes (or casements) the preferred material for shutters would originally have been oak (as in the upper floor cross-windows at Waringstown), though in practice softwood was most commonly used. However, the exception to this, the iron shutter, is worth commenting upon, as it throws light on security considerations in Ireland. Thus far, four late seventeenth- and early eighteenth-century houses have been noted that have (or had) iron shutters: Kilmacurragh, Buncrana Castle, Santry Court, Co. Dublin and Ballyhaise. There are conflicting opinions on the dates of such shutters; in the absence of concluding proof the following information should not be taken as complete, and it may be found that most or all of these shutters date from a much later period. However, the *Practical House Carpenter*, 1794, supports an eighteenth-century date as it gives prices for both iron doors and shutters.¹³⁰

There are two types seen in Kilmacurragh: oak backed by sheet (ground floor) and strap iron (upper floor) (plate 146 i-ii); in both cases the iron is attached to the interior of the shutter by very large, forged round-headed pins. The basement shutters at Buncrana Castle were of sheet iron; some remain. The ground floor of Ballyhaise has a sheet iron backing to the separate lower part of the shutters (indeed the main door is also of sheet iron). About Santry Court the comment was made that it “seems to have been prepared to stand a siege as there are iron

window shutters".¹³¹ The relative peace of the eighteenth century did not lessen the siege mentality; these immensely heavy shutters were never replaced and must have been useful for withstanding later rebellions.

External shutters were used in many buildings in Ireland up to the early nineteenth century, especially in urban houses. In 1621 a house in Mungret Street, Limerick had "leafes" made to all the doors and windows by a carpenter, William England. Knocktopher Church, Co. Kilkenny had "deal" external window shutters made in 1675 to the chancel, which may have been similar in appearance to those which are retained at the eighteenth-century chapel at Piltown in the same county, and several nineteenth-century churches.¹³² The external raised and fielded shutters to the ground floor of the front elevation at Waringstown appear to be either late seventeenth or early eighteenth century, hanging on wrought-iron parliament (projecting) hinges to allow the shutter lie flat against the wall (see plate 17 i). Oak window shutters worked by Sisson at Trinity College "in front of the Coledg" in 1705 may have been external shutters. Houses in Sweeny's Lane, Dublin (date stone 1721), and others photographed at the start of this century had external shutters to the ground floor windows which may indicate storage or commercial ground floor use.¹³³ The 'Lunatick' gallery windows of St. Patrick's Hospital were specified in 1749 to have outside shutters in rebated but unglazed windows.¹³⁴ Aras an Uactarain (the Vice-Regal Lodge) had louvered external shutters by 1838, as they are shown in a watercolour of this date (they are now gone, but some hinge marks remain).¹³⁵ An unusual design for Ireland is that to the rear elevation of Kilpeacon, Co. Limerick (by Richard Morrison), where the upper floor windows are fitted with louvered external shutters which slide across to cover the openings (in the same manner as the kitchen shutters described above at Seafield).

Shops were not usually glazed until the later eighteenth century, instead they were fitted with shutters which folded back or were removable. A 1738 account mentions a "shop frame fill'd with Doors and windows Shutts", with associated posts and rails in Church Street, Dublin. Outside window shutters are accounted for on the same bill.¹³⁶ Shop windows could be a nuisance; a corporation ruling of 1722 in Cork a woman was ordered not to have window shutts (or anything else) standing out from her premises.¹³⁷ While changing fashion for portraying

goods for sale influenced the inclusion of prototype decoratively glazed shopfronts in later eighteenth-century builders' pattern books, the evidence of late nineteenth-century photographs and surviving worn stone stallriser plinths show that unglazed, shuttered shopfronts remained in existence in Ireland until comparatively recently.

Counterbalancing of sash-windows

Early vertically sliding windows had no internal mechanism with which to ensure that they stayed open in a desired position, making external props necessary. The work of Louw on the evolution of the sash-window chronicles the progression from doors held open by ropes hung on pulleys which were weighted down, to the application of this mechanism to windows, first used at the end of the 1660s.¹³⁸ Information on the earliest Irish sash-windows (at Kilkenny) does not relate if they were hung, though as Louw has explained, the term itself was coined to describe the counterbalanced window type.¹³⁹

The unweighted window is rudimentary in its operation. Pegs are inserted into the frame at a number of points to give ventilation, or swivelling quadrant catches hold the open sash under its rail. Pegs or catches continued in use on some areas and on some otherwise more socially important buildings for decades, occasionally being used up to the present. Well-maintained examples remain at Waringstown House, to the front elevation (plate 147 i). At Beaulieu the 1722 sashes are held open by quadrants, as are the stair window at Castlough and the Queen Anne windows at Leixlip Castle (in actuality, none of these windows have been opened for decades using the catches as most would stick without assistance if pushed up). The terrace of houses at nos. 1-4 Vicar's Hill, Armagh (1724) retain two quadrant pegs per top six-pane window (which slides up into a cavity in the lintel) (plate 147 ii). On some sashes of the original windows at nos. 3-4 Fownes Street, Dublin, the indentation of a peg can be seen clearly on the edge of the bottom rail (these sashes later fitted with pulleys and weights).

An even more basic operation consisted of jamming the windows up (or down) without the use of any mechanism to hold them in place, except perhaps a length of stick. Many examples of this type of window, usually with the upper sash sliding down to a fixed point (below which the pulley stile is not stopped to take it) are seen in Kinsale, Co. Cork and are similar in operation to those at Skiddy's Almshouses, Cork (plate 148). At Bonnettstown Hall

there are neither pulleys nor quadrant stops – even on the sashes replaced in the late eighteenth century – but on most windows either the upper or lower sash can move. Maintenance accounts refer regularly to “easing the sashes”, a job which entailed soaping or waxing the pulley stiles to help them slide, presumably a more frequent job on unweighted sashes.

This basic unweighted sash never quite became obsolete even in fashionable areas; at least one terrace of the 1860s in Leeson Park, Dublin, has unhung basement windows, and many smaller windows especially in rural areas remained unhung. Larger windows, however, were rarely left without weights at this late date.

The double-hung sash-window was used in Ireland very early in the eighteenth century in the Governor’s Lodgings of the Royal Hospital, Kilmainham.¹⁴⁰ However this advanced type was very rare, as far as can be judged from the scanty information available. Most sashes up to the mid-eighteenth century were single-hung with an operable lower sash. An anonymous early nineteenth-century comment illustrates the practical motive behind this type (which lasted as long as the unweighted sash, mainly in smaller buildings): “if all the parts were to move or slide up and down there would be a constant repetition of repairs both to glass and sash”.¹⁴¹ It appears to be the case that windows in projects by prominent architects such as Burgh, Pearce, Cassells and Bindon were more likely to have the more sophisticated double-hung version.

Many windows had the sash-frame altered in the later eighteenth century to accommodate the hanging of both sashes. One such case is the early eighteenth-century no. 98 St. Stephen’s Green, Dublin. A pulley stile from the ground floor shows several changes, with the original pulley blocked off at the front and a mismatched pair fitted in below it (plate 149). After the 1750s, the double-hung sash-window was more commonly fitted in new buildings, but many exceptions to this rule occur, as at Brownes Hill, Carlow, of 1763. Here the windows of the main floors are single-hung to the lower sash, excepting the top nursery floor, in which windows the top sash is hung, with the windows barred for safety. Neither did the 1760s and 1770s work at Springhill and Ardress respectively include changing the frames to accommodate hanging the upper sashes. At Castletown the frames (as well as the sashes) were replaced in the 1760s but due to the narrowness of the weightbox rectangular lead weights (probably the original ones) were (re-)used which each take up the whole width of the box, thus allowing only

one sash to be hung. Louw is of the opinion that the single-hung sash remained the most usual type well into the second half of the eighteenth century.¹⁴²

Parting and staff beads

Parting and staff beads are necessary to hold the sashes in position especially when being drawn up or down. Single-hung sashes did not have a use for parting beads but staff beads were necessary from the inception of the sash-window. The comparatively recent brass wood screw (possibly French in origin) was enormously beneficial to the designer of the sash-window, as beads could be removed and replaced with ease.¹⁴³ Only one Irish example of the screwed-in bead has been noted, to the main floor windows at Castletown (the date is unknown, but the beads could belong to the 1760s work).

The width of early pulley stiles corresponds exactly to the width of both sashes (plus staff bead), limiting lateral movement but causing some friction in the drawing up of the sash. From the second quarter of the eighteenth century (in progressively designed windows only), the extra width necessary for the more refined, bevelled meeting rail allowed the insertion of a bead or slip of timber between the two sashes. The result was a more weather-proof frame which at the same time provided a secure channel in which to slide the sash.

It is not yet known if the earliest beads were tongued into the pulley stile or just pinned in place, as the following three mid-eighteenth-century houses retain conflicting evidence. No. 11 South Frederick Street, Dublin, has short lengths of parting slips to the single-hung ground floor windows, at the top corners of the frame. A salvaged frame from single-hung windows of nos. 3-4 Fownes' Street, Dublin, shows the mark of a parting slip placed above the fixed lower sash, to aid sliding the upper sash. At no. 42, Manor Street, Dublin, the upper sash-frame is grooved to the interior to accommodate the parting slip. In this house it appears as though the groove was cut subsequent to the making of the frame, as it is gouged out in an amateurish manner. Interestingly, many double-hung windows of mid-eighteenth-century date seem to have been designed to slide by each other without the aid of slips, giving a path of movement contained only by the pulley and cord mechanism (as at no. 2, Palace Street, Dublin).

Several centuries of re-cording sashes, and removing or re-hanging them after routine painting or maintenance has ensured the destruction of almost all original slips and staff beads.

Some rare surviving examples from the 1760s, at nos. 52 and 86 St. Stephen's Green, Dublin have carved staff beads (plate 150). The rate of replacement also renders it very hard to discern which windows originally had parting slips and which were fitted as part of a subsequent improvement. Grooves could have been – and apparently were – made in window frames at any period to accommodate the slips.

Pulleys and ironmongery

Timber and iron-framed casement windows require hardware consisting of hinges or turns, hooks, screws, springs and iron bars and other ferramenta. Tacks, nails and glue were also indispensable. The contract for Burton Hall specifies that William Kenn (the contriver) “at his own charge shall provide viz bars for windows, hooks, hinges, cross garnetts, casemates”.¹⁴⁴ Pulleys, sash cord, hinges, hooks, locks, woodscrews, bolts and keys, springs, weights (lead or iron), shutter rings and knobs and iron bars (for shutters or external security) are all indispensable to the operation of the counterbalanced sash-window.

Iron bars were a vital feature of window construction in Ireland for obvious reasons of protection and safety; four bars of at least one inch square were specified for the basement and hall floor windows of Burton Hall, all the other windows to have bars of timber to them.¹⁴⁵ Bars of a similar dimension are still discernible at Eyrecourt. The evidence at Ormond Castle, Jigginstown, Eyrecourt and Rathfarnham is that the square sectioned bar was set at an angle, shown by the diamond holes remaining in the sill and lintel of the window frames. At Ormond Castle for example there are bars running laterally with forged loops in them to take the upright bar (plate 151).¹⁴⁶ The bars on the basement windows of Eyrecourt were attached to the exterior, the bar ends having been forged out into a flat shape, and hammered into position with large nails. Similar ironwork still protects the basement windows at Castletown, with the additional strength of bars running laterally across. The two casement frames examined for this study have oak bars to the exterior of both the casement and fixed lights, set at an angle. Although internal bars on casement windows would facilitate them opening outwards, it seems that the risk was too great, far better to allow just a modicum of air with the casement opening against the bar.¹⁴⁷ The early eighteenth-century stair sash-windows at Ballybritten are protected with two square iron bars to the interior (unusually), in front of the glazing bar lines. The “Lunatick” galleries

and cells at St. Patrick's Hospital were to have "stanchils" of iron, two per windows, according to the specifications, whether in- or exterior is unknown.¹⁴⁸

Though iron bars were essential at all periods, especially in vulnerable basement windows, apparently not all buildings were so protected. At Malahide Castle plugged bar holes are visible to just one of the sixteenth-century mullioned dining room windows, and not all of the lights to the ground floor of the Youghal almshouses bear the plug marks of stanchion holes in the sill. Conversely, some windows were given bars to both interior and exterior: at Waringstown the small, low-set casement window has iron bars to the exterior and there is evidence that there were also bars formerly to the interior.

Iron or steel springs are mentioned in several eighteenth-century accounts, but the exact use of these objects has not yet been ascertained (they may have been spring bolts). They are found in relation to both casement and sash-windows.¹⁴⁹ A tantalising snapshot of eighteenth-century innovation is recorded by Philip Luckombe in 1779, which may answer this point; a summer house (built after 1765) at Powerscourt Demesne was fitted with windows "which, by springs, fly up and down with great expedition."¹⁵⁰

Most pulleys of the early period (up to the 1760s) were made of various hardwoods (see Chapter Two, p.79 for the timbers used). Though brass pulleys were the earliest type noted in England in the seventeenth century, the earliest mention of brass found in Ireland occurs in 1749, in the "lignomvite pulleys, bush'd with brass", specified for St. Patrick's Hospital. A transitional style appears to have been to insert a brass pulley into a timber housing, the type which is found at no. 13 Henrietta Street, Dublin, dating from c.1770. Brass pulley boxes were used in the Hibernian Military School, Dublin, in 1805.¹⁵¹ The pulley box, block or housing (all terms found) was also originally of wood, as was the inner pin upon which the pulley turned, although iron pins became standard in the later eighteenth century. From about 1780, due to industrial advances, iron and brass pulleys were mass-produced and different metals became usual for both wheel and casing.¹⁵² The oldest metal pulleys had rounded metal casings and timber housings, while later nineteenth-century ones were wholly of iron, and made in a teardrop shape with a flat iron plate affixed to the front of the pulley stile. Plate 152 i-ii shows a

selection of pulleys from no. 98 St. Stephen's Green and no. 3 Fownes Street (both possibly second quarter of the eighteenth century).

Some very large windows have pulleys positioned in the centre of the soffit; these were known from the late seventeenth century in England.¹⁵³ The central pulley is a convenient method of operating what could otherwise be a cumbersome sash. A cord is run from the meeting rail of the lower sash through the central pulley. The central pulleys to the Venetian window at Glasnevin House and the gallery windows of St. Werburgh's are perhaps contemporary with these buildings.

Locks and keys are sometimes mentioned in accounts. Six two-light leaded windows in the Royal Hospital were fitted in 1701 with "locks and keys with hooks and hinges". The terms sash screw, fastening and bolt are often found in the eighteenth century, denoting the style of the catch.¹⁵⁴ Most windows up to the mid-eighteenth century did not have catches on the meeting rails, but very many have been subsequently fitted with them. For security, bolts were placed at the side of the sashes, bolting into the pulley stile. The barrel locks to the meeting rails of the very slim oak sashes at no. 13, Henrietta Street, Dublin, appear to be original; if so, at c.1770 they are early examples of the type.¹⁵⁵ Among the increasing numbers of patents during the eighteenth and nineteenth centuries were many for sash catches and locks. There is little mention of the ironmongery associated with securing shutters, which was possibly of more importance for domestic security. "Bolts and staples" were fitted to the shutters of a shed in Trinity College in 1719, while in 1763 at the college ironmonger charged for "large strong swinging window bars with hooks and ... screws and fixing to the shutters".¹⁵⁶

Ironmongers' and joiners' bills rarely detail any information on weights, making the following information highly selective. Early weights were oblong, cast in lead. Weights of this shape remain in Castletown, of scarcely over an inch thick, and some also remain in later windows at Carton. Cylindrical cast lead weights (and one which appears to be of flattened lead piping) have been found at Mount Ievers. The sash line was attached to the lead weight either by a wire loop embedded in the top of the weight, or by flattening the top and cutting a hole through for the line. Oblong cast-iron weights were used before the middle of the eighteenth century while the cylindrical appear to be a slightly later development. The joiner at Trinity

College, John Sissons, billed for “20lb of lead for ye sashes” (of the laboratory) in 1718, while in 1733-4 iron weights were included in the estimates for the Printing House, and in 1742 iron weights of sixteen and a half pounds weight were accounted for. The windows of St. Patrick’s Hospital were to have “mettle” weights.¹⁵⁷ Although cast-iron was cheaper, the additional mass (and length) of the cylindrical weight could cause problems in the weight-boxes of existing buildings which were insufficiently wide or long to take them. The cast iron weight commonly has a small recess to the base, to enable the exact poundage to be gauged by the addition of small quantities of molten lead. As most surviving weights are inaccessible behind painted-over pocket pieces further conclusions on these developments cannot be drawn.

Wrought-iron hinges, necessary for both sash shutters and casement lights, came in several shapes and were sold by the dozen.¹⁵⁸ They were fixed in place with forged nails or rivets. The earliest hinges are of the medieval pintle type (seen at Donaghadee) sunk into the masonry or timber frame. The most common type, found on the frames at Eyrecourt and the casement at Rathfarnham as well as on many original shutters, is the H-shaped hinge. On some H-hinges patterns were cut in the ends of the wing, denoting an unusual amount of attention to such a commonplace item. Another type is a composite I-L as seen on the bookcases of Dr. Steevens’s Hospital, the casement at the Brazen Head and that at Leixlip Castle. ‘T’ hinges were mentioned in connection with the parlour windows of (old) Townley Hall, c.1700.¹⁵⁹ The long hinges seen in the weight boxes at Drumcondra House (plate 153) have not been found elsewhere. Wrought-iron hinges began to be superseded by the brass butt hinge in the last quarter of the century, although it is certain that both types co-existed for a number of years.¹⁶⁰

Sash cord or line is vital to the operation of the sash-window. Different thicknesses were required for sashes of particular weights. Early sash cord was made from plaited hemp or flax. Some early accounts detail “best red sash line”, or “strong cord (to draw them up)”¹⁶¹ but in general there is little information specifically relating to Ireland. Louw notes several types in use in England in the seventeenth century: clockline, fine, double, silk or thread line. The *Builders Price Guide*, 1781, gives patent line, bell-rope and large jack-line.¹⁶² Very large windows were hung with chains in the nineteenth century, as they were especially heavy. The

use of plate glass (at any time but more usual after this date) increased the weight of the sash considerably, rendering cord breakage a common hazard.

Timber mullions and transoms

Timber mullions and transoms were not commonly found in Ireland until the Restoration, the most notable exception being the Jacobean house Jigginstown, Co. Kildare, built for an Englishman by a Dutch contriver.¹⁶³ There are several others; the nursery room bow window made at Lismore Castle during the 1630s appears to have been a wholly timber construction, while the early seventeenth-century house Killincarrig, (in Delgany, Co. Wicklow) had, as documented by Leask, mullioned frames of timber.¹⁶⁴ After the Restoration the timber or iron framed glazed light spread, fitted into timber frames, mullions and transoms, with less of an emphasis on defensiveness. The timber cross-mullioned windows at Waringstown have moulded members of five and a half inches wide in openings of fifty-one inches (from soffit to sill) (plate 154). Such bulky dimensions illustrate very clearly the improvement in daylight to be obtained from the removal of these cumbersome elements. Louw has found three types of seventeenth-century mullioned sash-window, those with a simple mullion, a cross-mullion, and one type with a transom and no mullion. No examples of the latter two types have been noted in Ireland. The central mullion in the earliest sash-windows was usually four and a half inches wide when hollow, and as little as two inches wide when solid, according to Louw's findings.¹⁶⁵

No dates have been ascertained for the few early mullioned sash-windows found in Ireland. There are several at Waringstown which appear to be early examples of their type, belonging to one of the categories suggested by Louw (the sashes are of the earliest variety, with the glazing bars made in two parts, the sashes not hung) (plate 155).¹⁶⁶ On these windows the mullions are narrow. The mullioned two-light sash-windows at Skiddy's Almshouses (1718-9) may represent a late example of this by then archaic type, especially as they are not hung. The stair window at no. 50 Pope's Quay, Cork of about forty years later, has two mullions of a similar width, with cavities cut out for weights. The paucity of surviving early mullioned sash-windows and a complete absence of detailed documentary evidence militates against further conclusions on the prevalence of this transitional form of sash-window in Ireland.

Timber mullions and transoms continued to be used in new buildings in conjunction with leaded lights into the mid-eighteenth century, but only on the lesser elevations of speculative housing (as found in England; none survive in Ireland), or in buildings deemed unworthy of fashionable considerations. The structural stability afforded by building the framework partly into the wall may have ensured its continued use. The specifications for St. Patrick's Hospital include transomed windows for the "Lunatick" galleries. Mullions and interior rails of timber were fabricated for the chapel at the Royal Hospital in 1796.¹⁶⁷

The timber mullion was seen throughout the latter half of the century in the ubiquitous Wyatt window, and to a lesser extent for the two-light sash-window which was occasionally used within the classical format (although it contradicts the proportions usually sought). However the transom was almost totally neglected, later to be resurrected by Georgian Gothic and Gothic Revival builders who often used timber mullions and transoms, some with elaborate carving. Several buildings with windows of the early nineteenth century such as the Chapel Royal (Dublin Castle), Kilkenny, Glin and Dromoland Castles have timber elements which are tooled to resemble stonework (plate 156). George Wilkinson, the mid-nineteenth-century architect, disparaged such frames of timber and iron, "which, to heighten further the deception, [are] painted and covered with stone-dust".¹⁶⁸ Some builders of the nineteenth century adapted the Wyatt window for casement lights of timber, with slim mullions. One (undated, demolished) house in Bishop's Court, Dublin is illustrated, showing the detail of the bracket (plate 157 i-ii).

DEVELOPMENTS IN SASH AND CASEMENT LIGHTS

Leaded lights

Accounts dating from the thirteenth century refer to glaziers, glazewrights and glassworkers and in the pipe rolls of 1332-3 a sum is mentioned (Dublin Castle accounts) as "wages for a glazier working on divers occasions and for divers colours bought for making the glass windows in said castle".¹⁶⁹ However, glazed windows were extremely rare in domestic buildings for several more centuries. Ormond Castle had glazed windows, the glass ordered from Antwerp in 1567.¹⁷⁰ This was possibly the earliest non-ecclesiastical Irish building project to be designed with large glazed windows. The fragility of the leaded light limited its size; the largest lights in Lismore Castle measure thirty-two inches high by sixteen wide, which may be

taken as representative.¹⁷¹ Taller lights would have contained several panels fitted on top of one another (as still done with stained glass), held at the joint with lateral ferramenta.

Fixed leaded lights were not always inserted into frames; when small, as in the typical tower or castle window, the leaded light did not require structural reinforcement either by frame or other ironwork. Casement lights must be fixed into a side-hinged frame, which may have been predominantly fashioned in wrought iron, as was the case in England until the late seventeenth century. English examples have frames of about one inch wide.¹⁷²

The diamond lattice, the earliest pattern in lead glazing, is said to have originated from unglazed screens of wires crossed in a lattice pattern (which was still used in kitchens and other menial areas into the eighteenth century).¹⁷³ As recounted in Chapter One, in many continental countries the square pane gradually superseded the quarry style of glazing during the early seventeenth century. Information is very sparse for this period in Ireland; the glasshouse at Ballynegerah sold its broad glass in quarries (at a higher price), but larger squares may have been cut from the expensive Normandy crown glass in buildings such as Lismore Castle due to the superior transparency it offered.¹⁷⁴ Neither is it known if there was a tendency towards the adoption of squared glazing during the period of changeover from iron light to timber sash in the late seventeenth century. Documentary proof such as the specifications for Blessington House – where quarry glazing was stipulated – may indicate a general preference for the older form. The contract for Burton Hall, c.1670, also specified “dimont quarry glass” in iron frames.¹⁷⁵ The West Front of Trinity College of the 1680s was fitted with quarry glazing, as far as can be ascertained from the Muniments, but squares are mentioned in lead-work at the Purser’s study in 1685.¹⁷⁶ The Diocesan Library, at Kilkenny, a medieval building refitted c.1695 as a library, had square paned leaded lights, with a pattern to one row of panes in a top light (see plate 32). Quarry glazing did not die out; as has been seen, there remained a limited market for it right through the eighteenth century.

Maintenance accounts do not always clearly indicate whether the term “square” described timber or lead glazing (sometimes noted as “sash square”). Leaded panes in new buildings of the early eighteenth century appear to have been predominantly squared.¹⁷⁷ Most barracks in Ireland built early in the eighteenth century were fitted with quarry glazing, replaced

in the 1750s because of widespread dissatisfaction (as reported in Chapter One). The economic advantage of cutting quarries was most likely a factor in their use in these buildings. The cheapest broad glass could be used, with far less waste from the sheet as almost every fragment could be cut up for the odd-shaped pieces at the edge of the lights.

There were standard dimensions to quarries, with two main types used, "square" and "long" (as detailed in Chapter Two). The price of quarries given in Irish accounts do not tend to differentiate between larger or smaller sizes, uniformly at one pence per piece and five to six pence per foot for leading (during the first half of the eighteenth century), they perhaps indicate the use of some few stock sizes. Square panes for lead work were sold per foot or per square inch of glass: in 1740 square sizes ranged from eight inches square to sixteen inches square. Squares bought in 1783 by a Dublin glazier were six by four inches.¹⁷⁸ However, prices for lead glazing do not appear to have varied much for glazing quarries or squares.¹⁷⁹ The panes of the leaded light at Rathfarnham are approximately six and a quarter inches high by three and seven-eighths wide. The maximum safe size for glass squares set in lead is about five inches by seven, larger sizes than this being unwieldy to hold in the calme.

No surviving iron-framed leaded casement light remains in Ireland to illustrate the method of attaching the panel and fixing it. According to Neve, lead pins were hammered through holes in the frame of the casement and soldered to the lead to fix the light. Iron collars on the corner of the wrought-iron casement-frame, which pivot on pintles, provided the means of opening and make it easy to lift off for repair.¹⁸⁰ At Rathfarnham (plate 62) the remaining leaded panel is fixed to the outside of a timber casement-frame. It is externally grouted, with a canted inner edge on the frame. The rear of the panel is held by horizontal iron saddle bars tied to each joint with soldered wire.¹⁸¹

Timber casement lights

The use of windows with a jointed timber grid is thought to have been limited in Ireland until after the Restoration.¹⁸² The relatively strong wooden armature of jointed timber made larger opening sections possible with more sizeable panes and better weather-proofing capabilities. No contemporary information has yet indicated a wide use of such windows, either sliding, casement or fixed, in Ireland before the end of the seventeenth century. There is a

difficulty with identifying this type of window from manuscript sources in that the terms casement and sash have been found to be interchangeable, and so accounts do not always read clearly.¹⁸³ As timber casement windows were the inheritors of the leaded casement window type, a cursory look is taken here at the surviving examples that may date from the seventeenth century. The cross-windows at Waringstown (plate 17) are perhaps typical of the period, in that there are two opening casements each and two fixed lights. Those in the library window may be original.¹⁸⁴ Lack of reference to leadwork and smithing may indicate that timber casement windows were installed at Tailor's Hall, Dublin, in 1705-6.¹⁸⁵

The timber casement window at the – undated – Brazen Head (see plate 42) appears to be the lone survivor of its type, that is, a large inward-opening light the full width of the window. A later (and smaller) example can be seen at Lexlip Castle. A horizontally aligned timber casement window at Waringstown is also unique of its type, though made on a much smaller scale. The Deanery, Kilkenny, which was rebuilt in either 1718 or 1734¹⁸⁶ retains a small timber casement to the basement of the garden front. There is a circular light cut out of the square, the two glazing bars connected by a blocked joint.

All of the examples given above open inwards, in contrast to the leaded casement. There are two likely explanations for the change; first, the disruption caused to the façade of the classically composed building when open, and second, the vulnerability of an external hinge (as much from weathering as lack of security).

In the early nineteenth century Nicholson wrote that timber casement windows were usually employed in Gothic buildings, and that when used in other types of architecture they were called French windows. He was not much in favour of them; “the objection to these windows is the difficulty of making them water-tight, with rendering them inconvenient to open and shut”.¹⁸⁷ The French window properly describes a casement window brought down to the floor to open like a door. It was known in France in the early seventeenth century, and knowledge of it (if not actual use of it) must have been known to the Irish members of the expatriate Caroline court. As illustrated in plate 120 the unexecuted Bellamont Forest design by Pearce appears to have French doors.

Window-pane dimensions

Pane sizes were small in early timber windows with a greater number of panes per sash than later was the case, but it would be an over-simplification to say that there was a chronological progression from small to large sizes. The smallest panes measure about seven and three-quarter inches by nine (in the library cross-window at Waringstown), whereas some others of the late seventeenth and early eighteenth century were about twelve inches high (all measured in the clear).¹⁸⁸ Sizes were ideally based on the “golden section” or 3:2 proportion. Roger Pratt pronounced that pane sizes “had to be beautifully proportioned which will be either about one square and a quarter, or which is yet better, one and a half”.¹⁸⁹ In reality, a far more truncated rectangle was common until the second half of the eighteenth century. The accounts of Trinity College rarely elaborate on the sizing of the “square” in the early eighteenth century, except in one bill, which gives panes of one foot square, eight inches square and sixteen inches square, showing that they were calculated for sale by squared measurement.¹⁹⁰

Although such sizes appear today to be small, they still represented a huge improvement on those achievable in lead glazing. Sizes were restricted to these limits as glass was only available in relatively small crowns, and larger (plate glass) panes cost exorbitant amounts. Observation of surviving windows and documentary evidence tends to show that the size of the pane depended on the overall size and dimension of the particular opening; larger windows usually had correspondingly larger panes. However, at Bonnettstown Hall the panes measure twelve inches by nine and a half, while the far larger windows of the contemporary Mount Levers has panes of eleven inches by eight and three-eighths.

At all times, and especially after the introduction of Palladianism, the vital factor in determining the division of the sash into panes was the proportional relationship of the windows on all floors. These had all to be related, and so as not to give offence to the eye all were arranged in regular bays. The result was a pattern of gridded windows which was inherently neutral, not accentuating either the vertical or horizontal on the facade. To achieve this, the panes could not stray too far from the norms which were promulgated by the writers of architectural guides (who tended to copy the Renaissance proportions preferred by Pratt).¹⁹¹

Cruickshank and Burton highlight the difference between practice and principle in the proportioning of sash panes. Ideally each pane should be the same size and proportion no matter the size of the window opening. This is possible if the all of the windows are based on a common measure, ranging from square to double square in size and if it is accepted that windows of different sizes should have a different number of panes. In practice this was abandoned regularly, according to the authors, with the total number of panes matched per window, rather than matching their size and proportion.¹⁹² The use of smaller panes in basement and top floor windows must in most cases be ascribed to their less important function (glazed with small, cheaper glass) and their seeming invisibility in the eyes of the classical architect.

Sash pane sizes of the late eighteenth and early nineteenth century were commonly over twenty inches tall, cut to the maximum size possible in crown glass. Panes were enlarged considerably as a result of the ever-increasing improvements in the sizes to which crowns could be blown (previously, very large panes had to be made in cast plate glass). A project contemplated by Louisa Conolly (of Castletown) in 1775 at Frascati House, Co. Dublin, was designed with window-panes of about twenty-eight inches high.¹⁹³

Replacement sashes installed in the later eighteenth century in Dublin tended to be both of six panes instead of the original nine over six and the pane proportions changed accordingly. As discussed above there were many small deviations from the standard proportions to suit individual cases. However much the size of the window increased, whether using either the twelve or fifteen pane window, the proportion of the individual panes still corresponded to the overall window dimensions and in most cases kept within parameters which did not attract undue visual attention. With the advent of cylinder sheet and patent plate glass in the mid-nineteenth century, single and two pane sashes became a fashionable alternative. Many earlier buildings were altered to suit this fashion, almost always being given two sashes of equal dimension, even when the original windows had had sashes of nine panes over six.

Exactly square panes are rarely found although the windows in St. Werburgh's are almost square in shape, as are the basement windows of 13 Henrietta Street, Dublin. Some of the basement window-panes at Bellinter are horizontally set.¹⁹⁴ Ducart flouted convention in

several ways at Kilshannig in the 1760s, not least by using square and horizontally set window-panes to the entrance front and gable end windows.

Very rarely apart from forays into Georgian Gothic, sashes were designed with the panes forming a pattern. The Venetian and single-light round-arched windows at Dollardstown, Co. Meath (remodelled by Castles in the 1730s) had panes forming a decorative device (plate 158 i-ii). Ducart was also interested in styling motifs in the glazing. Two noteworthy examples of his ornamentation are illustrated here (see plates 116 i and 123).

The prospect of filling the whole of a sash with one pane of glass became a reality with the commercial success of improved cylinder sheet and patent plate glass in the nineteenth century. However, some could afford to experiment with large panes of glass even before the 1830s. Work carried out to the seventeenth-century stone windows at Lismore Castle in the 1820s earned the admiration of the author Ryland: “the windows, composed of large squares of glass, each pane opening on hinges, combine accommodation with harmony of appearance”.¹⁹⁵ To contemporary architects, the advent of (almost) unlimited sizes of glass meant freedom from centuries-old restrictions, and unsurprisingly the new glass was used liberally whenever possible. By the 1850s, large windows with single expanses of glass were employed in classical architecture, but mainly in the design of shopfronts which received contemporary criticism for the manner with which they left the remainder of the building apparently supported on nothing but cast-iron columns. The arrangement gave “the upper part of the premises the appearance of being either very feebly supported, or else of having no connection whatever with the ground.”¹⁹⁶

Sash joints: mitring, scribing and blocking

There are two types of glazing bar joint, mitred and blocked. The placing of a block at the joint may have led to the coining of the term “block sash” which is found in two mid-eighteenth-century documents.¹⁹⁷ An early twentieth-century comment explains the type: “[glazing bar] mouldings, like those in the Lord Mayors House on Dawson Street die against a square instead of mitring.”¹⁹⁸ The earliest timber glazing bars (in seventeenth-century French sliding timber windows) were jointed together with an applied block that was dowelled through to fasten both bars together.¹⁹⁹ The Brazen Head timber casement window and those at

Waringstown may prove to have the constructional form of block, which would help to estimate an early date. The mitred glazing bar joint, with the moulded part of the bar scribed to fit, was a later development, found at Kilmacurragh. This of course is not true mitring, as scribing the separate moulded sections over the continuous moulded bar running at right angles forms the 'X' angle. At Marsh's Library (and other contemporary windows) the (separate, vertical) moulded lengths are mitred to fit Vs cut out of the perpendicular (horizontal) lengths of moulding meeting them.

That the return of the block, in the very early eighteenth century, was a design consideration rather than a constructional one has been proven by a 1715 joiner's account seen by Louw which stated that the sash bars were to be fitted with blocks instead of mitring as before.²⁰⁰ The block suited the more baroque designer but opinion was obviously divided on its aesthetic merits during the Palladian era – in Ireland at least – as both are found in the work of most prominent Irish Palladian architects. The gable window of Burgh's Trinity Library (c.1723) has the glazing bar joints covered with a square block.²⁰¹ Pearce designed buildings with both blocked and mitred windows as did his successor, Castles. Particularly well detailed examples of the blocked glazing bar are found in the 1730s work at Howth Castle, Co. Dublin (plate 55) and Bellinter (among several examples) in which all of the internal joints including those at the sash stiles and rails were treated with blocked cornering (plates 54, 159).

The block sash lingered on for a while into the latter half of the eighteenth century but died out around the end of the 1760s.²⁰² The conclusion drawn is that the use of this detail was totally dependent on the design or inclination of the architect, clerk of works or joiner, and was unrelated to necessity, in other words it was a trend which eventually declined with the advent of thinner bars.

A number of methods of constructing the blocked joint were used, possibly according to the preference of different joiners. Sashes were examined from several mid-eighteenth-century houses which had the glazing bars constructed in different ways (diagram 9). One was assembled with the square block (a full cube) inserted over the joint which had the moulding cut out. In a second sample the block was shaped underneath to sit onto the moulded bar (which was fully moulded but without the fillet) at the joint. A third type is similar, except that the

block was made in two halves which were stuck onto the fully moulded bar. In all instances the block was fitted last, either tacked or just pressed in tightly to the bar and glued.²⁰³ It is hard to tell whether the blocked or the scribed type of glazing bar intersection was cheaper for the joiner in materials, however the block probably allowed quicker construction as less attention needed to be paid to the standard of the joint itself.

The construction of both sash and frame seems to have become standardised quite early. The earliest examples examined were constructed with morticed joints, the tongues wedged in place, a method similar to that still used. Dowelling of the joints was usual practice from the earliest period (as found on the window-frames at Eyrecourt). Developments in joinery tools during the course of the eighteenth century made routing tools and specialised planes more accessible to the average joiner. As Louw has found, in the early nineteenth century more complicated joints such as the mortice and tenon began to replace the structurally weaker but simpler open-mortice and combed joints. O'Dwyer mentions the use of dovetail joints on slim early nineteenth-century sashes.²⁰⁴ As the members of the sash became thinner in the later eighteenth century, the joints became correspondingly weaker, which necessitated reinforcement by other methods. Dowelling of the sash-stile and rail joints was a common method of ensuring a strong sash grid, as done to the 1760s oak sashes at no. 13 Henrietta Street (and those of a similar date at no. 86 St. Stephen's Green). It is interesting to note that the extremely thin rails and stiles of the Henrietta Street sash (in which the meeting rail is three-quarters of an inch wide) were finely dowelled without recourse to machine tools. The dowels themselves are of a different hardwood.

At all periods, the majority of windows examined have scribed or mitred joints to all the sash intersections (diagram 10 i-iv). It is thought that Irish scribe joints usually had the visible edge scribed with the internal joint roughly mitred. One such joint is visible at no. 2 Palace Street, Dublin where a section of ovolo and fillet glazing bar has come away revealing that the stile was gouged out at this point to accommodate the bar. On stile to rail joints a well-cut scribe is necessary, which requires skill and precision. Most sashes, even of the earliest period, show a very close fit to these joints. The use of the simple ovolo (universal until the second half of the eighteenth century) overcomes the difficulty of cutting a complicated scribe moulding. Where

scribing was carried out, a beech block was shaped to fit closely over the moulding, with the end cut out to form a guide for the scribing gouge or scribing plane. This operation took place while the bars were still rectangular lengths, as they had to be tightly cramped together to avoid tearing the timber.²⁰⁵ More complex mouldings which finish with a bead or point (such as astragal and hollow) were mitred at the joints to overcome the difficulty of gouging the delicate shape out of the end grain of the glazing bar timber.

Glazing bar construction

The earliest sashes examined had the glazing bars constructed in two parts as mentioned above, with a T-section jointed grid onto which separate lengths of moulding were glued and tacked (diagram 11 i). At Marsh's Library, Leixlip Castle and No. 21 Aungier Street, Dublin, the joints of the internal moulded lengths were mitred, with the horizontal bar running through.²⁰⁶ Cutting the moulded length of timber at each joint is an inherently less stable procedure, as structurally the grid is not as strong, and the short, tacked pieces are liable to become disconnected. The later single piece bar continues this construction, with the vertical bars running the whole length of the sash as seen from the exterior, crossed internally by the horizontal bar.

Louw has found that there was not a strict chronological progression from composite to single-piece glazing bars. One building examined by him (Boughton House, Northants, 1699-1708) has one-piece bars (these possibly later than the dates given), whereas many early eighteenth-century sashes (and even some of the mid-eighteenth century, such as at Ledwithstown) have the more archaic two-piece bar.²⁰⁷ The early Gothic revival sashes made with octagon-and-diamond panes have two-part bars as illustrated by a window at Leixlip (plate 160); obviously the construction of the sash was considerably simplified by this move. Mechanisation helped to standardise the construction of the sash bar. Very early in the eighteenth century the sash fillister was developed, which enabled the rebate to be worked without having to turn the wood around after making the moulding. This ensured that the rebate and fillet remained "true" and centred. Moulding planes became more varied and specialised than those listed by Moxon: rabbet-plane and moulding planes (round, hollow, ogee, snipe's bill, grooving). Around 1760 the "sash plane" was developed, with could be used for both

moulding and rebating. At the end of the eighteenth century the double iron plane (with top and cutting iron) was invented, allowing a finer adjustment of the cutting edge and consequently a better quality finish. In 1840 Joseph Paxton invented a machine for making sash bars which came into general use in the latter half of the nineteenth century.²⁰⁸

Glazing bar mouldings

Ovolo and fillet (also known as quadrant) and astragal profiles are the earliest types of glazing bar moulding, found in England (both types) and France (astragal only) during the mid-seventeenth century. These two shapes were the easiest to work with the basic tools available to the joiner. Louw postulates that the ovolo and fillet is a stylistic continuation of a moulding used since Elizabethan times.²⁰⁹ Early Irish sashes have both ovolo and fillet and astragal glazing bars (diagram 11 i-vii illustrates a selection of Irish examples). The astragal, found at Marsh's Library appears to have been concurrent with the ovolo and fillet seen at Kilmacurragh, which became the norm in the 1720s, lasting as a popular type until the present day (with a thinner profile on later windows). One variation of this moulding involved rounding the fillet, as found in Trinity Library, the bookcases of Dr. Steevens's Hospital and Ledwithstown. A second variation has a small reed to either side of the moulding, as found at Killinane, Bagnelstown, Co. Carlow (the mid-eighteenth century sashes are now destroyed). The one example of a more elaborate ovolo and fillet glazing bar is found at Carton (c.1730 work) where egg and dart carvings decorate the ovolo (plate 161).

The windows of the West Front of Trinity College (1751-9) have a slightly more elaborate ogee moulding than previously seen, on a deeper bar. This intermediate style of glazing bar is rarely found; the ovolo moulding was the most common type until the advent of the slimmer glazing bars of the later eighteenth century, when progress in the design of woodworking tools made possible a wider range of slim and elegant profiles. Although narrow glazing bars appear to be attenuated, and had ever more elongated versions of the usual mouldings, there is little actual increase in the overall depth, more an impression of elongation. New sashes in buildings such as Castletown (1760s and later work) and Rathfarnham Castle (1770s) were formed with a lamb's tongue moulding, while at Ardress House the bars in the sidelights are particularly finely designed (illustrated in diagram 11 vii). Until the late

nineteenth century astragal and hollow, lamb's tongue and ovolo and fillet were the most common types of moulding.²¹⁰ No. 2 Pery Square, Limerick has very slender lamb's tongue sashes similar to those used by Francis Johnston and Richard Morrison at the end of the eighteenth century. Peter Nicholson illustrates many varieties of moulding in his *Dictionary* of 1819, but Humphreys and Stitt are silent on the matter in *The Irish Builders Guide* and *The Practical Architect's Ready Assistant*. Both astragal and "ovella" sash are mentioned in the 1790s in the Bryan Bolger papers, while the Gilson School was given astragal and hollow.²¹¹

The sashes of the mid-eighteenth-century Batty Langley school did not at first have glazing bars with dedicated "Gothic" mouldings. Those at Leixlip have ovolo-and-fillet bars, while later pattern books illustrate many alternatives for the client looking for a complete Gothic flavour, arising from the growth in antiquarianism which helped to foster a belief that there should be a glazing bar moulding more particular to the Gothic style. At Castle Ward and other early Gothic sashes the moulding is simply based on the pointed arch.

An important detail to note when ascertaining the date of sashes is the design of the meeting rail to the top sash. In windows up to the middle of the eighteenth century this is moulded with an ovolo as are the other sash-frame members. However, at about this time, a change took place which may have been related to the contemporaneous development of the bevelled meeting rail (see p.149). The normal moulding is omitted, the rail instead having a flat surface at a right angle to the glazing.

Glazing bar dimensions

The glazing bars of the earliest extant windows (in Ireland and elsewhere) are generally slimmer in profile than those popularised by Pearce and his followers. As pointed out by Louw, the existence of different sizes, including relatively narrow glazing bars on seventeenth-century windows, shows that the standard of joinery was quite advanced at this time (especially as joiners were constructing bars out of oak).²¹² At this early date glazing bar width was not closely related to architectural precepts. An emphasis on the wide glazing bar arose due to the preference for a thicker, more solid bar which are most probably from numerous instances of early failure as much as from a Palladian predilection for substantial grids. As early as 1706, Vanbrugh wrote that "I have now proposed a different sort of sash, which is not only thicker

than the others we design'd, but made in a manner much more close and lasting.... all solid, without anything glued, of 2 inch and ½ Stuff.”²¹³

Ballinderry Middle Church has (apparently) original glazing bars of just under two inches wide on the northern windows of the nave. The bars at Marsh's Library, Kilmacurragh and the earliest sashes at Leixlip Castle are one and a half inches wide (the same as the 1690s work at Hampton Court²¹⁴), and have an overall depth of less than one and a half inches, while the small timber casement window at Waringstown has glazing bars of just one and a quarter inches wide. (Comparisons may be seen of glazing bar depths in diagram 11 [to full scale].) The original windows at Castletown are glazed with two and one-eighth inch bars which have a corresponding mass. Sashes and frames of two inch wide section were used at Trinity for the Printing House, 1733-4, which appears to be representative of the sashes examined of the Palladian period.²¹⁵

While Palladian architects were slow to relinquish the wide ovolo and fillet bar until the mid-century, other architects and builders were probably less influenced by the strictures of the prevalent style. The architect Michael Wills listed sashes of “one and three-quarter inches thick” in his bill of scantling for the Schoolmaster's house in Drogheda (c.1728), while the original sashes at Leinster House, Dublin (1745 onwards, designed by Castle), have glazing bars of one and three-quarter inches wide.²¹⁶ One and a half inch wide bars were used on Trinity College Regent House less than ten years later. Contemporary with this latter building is Bellinter (by Castle), which has some remaining windows with two inch thick bars. Such specifications do not indicate any deference towards improvements in internal lighting levels.

Isaac Ware's castigation of the thick glazing bar in 1756 was one of the first signs of dissension from within the Palladian school.²¹⁷ But other factors were also encouraging patrons to look for more finely wrought windows and forcing joiners to hone their skills. The competition brought by the use of slim metal glazing bars threatened the timber industry in England which reacted by making what the customer desired; windows with the least visual obstruction between interior and prospect. The narrow glazing bar quickly became an indispensable part of the neo-classical repertoire, along with larger glass panes.

Apart from the long-destroyed bow window of Mrs Delany (see Chapter One, p.34), the earliest evidence for the new narrower glazing bar in Ireland is at the Casino near Dublin, designed by William Chambers, started in 1758, in which the surviving glazing bars are one inch wide. The desire to achieve a narrow profile resulted in the width of the glazing rebate being compromised, which was compensated for by increasing the length of the tongue. The cross-section of the common types (see diagram 11) shows the extreme narrowing of the profile and lessening of the volume of material.

The alterations of the 1760s and 1790s at Castletown show how refined the glazing bar was becoming (shown in plate 81), narrowing to seven-eighths of an inch in the 1760s work, and five-eighths of an inch in the later sashes. The fashion spread unevenly throughout the country, as joiners appeared to be reluctant to trust the materials to that extent; they were probably also limited by their tools. The glazing bars at Brownes Hill no. 2 Palace Street, Dublin are one and one-quarter inches wide which is probably representative of the more fashion-conscious builder of that date and similar dimensions have been measured on several other buildings of this decade. Barrack Bills of Scantling of 1760 specified the "inside framing of (said) sashes to be red deal one and a half inches broad, and the thickness to be seven-eighths".²¹⁸ The Provost's House, Trinity College was given sashes of this glazing bar dimension in the early 1760s, which is rather more robust than would be expected in prestigious work. The sashes at no. 13 Henrietta Street of c.1770 are seven-eighths of an inch wide; unglazed they are so spindly as to seem unsound.

The apogee of the thin glazing bar came at the start of the nineteenth century in the work of Francis Johnston. This architect was concerned with achieving the slimmest and most elegant profile possible in his windows. In softwood the slimmest glazing bar feasible would appear to be the nine-sixteenths of an inch width used by Johnston with a lamb's tongue moulding (in his own house of c.1800 in Eccles Street, Dublin, examined on site). More mundane matters assisted in a mid-nineteenth-century tendency to bring glazing bar dimensions back to more robust measurements. The increasing availability of heavier cylinder sheet and patent plate glass from the 1830s led to the use of wider glazing bars for structural strength. Sash stiles and rails were also broadened to take the extra weight.

There is a school of thought that the glazing bars on unimportant windows such as basements were made in less fashionable dimensions than those on main elevations at the time of greatest change in the third quarter of the eighteenth century. At this time when sashes of a particular glazing bar pattern of material (hardwood or metal) were purchased for the main elevation windows, cheaper softwood sashes were often inserted into the basement and upper floors. No evidence has been found to prove that glazing bars of different dimensions were specified, although circumstantial support does exist for this theory; several buildings of the late 1760s in Dublin retain two inch bars in the basement windows. The fact that none survive on the main elevations can easily be accounted for by the pervasiveness of fashion. When modernisation took place, generally the least visible windows would have been ignored, which has probably contributed to the thought that expense was a consideration in designing a thicker bar for the basement.²¹⁹). The re-use of materials and elements was common, so it is quite possible that older sashes were inserted into the basement frames of new buildings – providing of course that the dimensions matched. On several houses the material used or type of moulding of the glazing bar was more rudimentary to the less important floors. At Ballynagall, Co. Westmeath, the principal floor had metal glazing bars covered with mahogany whereas the sashes on the other floors were made with pitch pine bars, and at Castle Coole the basement and attic storeys were fitted with plainer glazing bars, both presumably carried out as cost-cutting measures.

Bevelled meeting rails and sills

Up to the mid-eighteenth century, the meeting rail of the sash-window was square in section, but around this time a refinement was made to it to help improve the weather-proofing capabilities of the window. The meeting rail of the inner sash was bevelled (or stepped) to the outside, with a matching angle (or step) to the inside of the outer sash rail (diagram 12 i-ii). This was done in conjunction with the insertion of parting beads (see p.129) into the pulley stile, which separated the sashes and allowed a wider meeting rail with which to form the bevel or step. Perhaps this refinement was initiated in a conscious effort to reduce the size of the pair of meeting rails (for a less visible “cross-bar” effect), as it ignores the fact that a flat surface encourages the collection of condensation.

Another, probably earlier development, was the planing of an outward bevel to the bottom rail (and sill), done to repulse wind-driven moisture (treated above). Some early eighteenth-century buildings examined for this research (such as Howth Castle) have bevelled bottom rails (and sills), apparently original, but flat meeting rails without parting slips. Buildings of the 1740s and 50s (no. 7 Bachelor's Walk and nos. 10 and 11 South Frederick Street, Dublin) have both the straight and bevelled types of bottom rail (in both flush and recessed frames). On windows designed to high specifications (such as at Glasnevin House) a step was cut in the bevelled bottom rail bevel to further prevent water and wind ingress. A clever detail to the meeting rails of the single-hung Gothic windows at Leixlip Castle is the provision of a hook joint at the meeting rails so that they fit snugly together (more usually found on nineteenth-century casement meeting stiles). These weather-proofing refinements were usually found in fashionable work in the latter half of the eighteenth century, gradually becoming standard in the nineteenth century.

*The horn*²²⁰

The sash-horn is apparently an early nineteenth-century innovation in sash design. The supposition is that structural considerations led to its invention, as at the time it was first noted glazing bars were at their thinnest and the lower corner joints of the stile and rail were held by a tongue which was fitted into a tenon placed very close to the lower edge. The provision of a stronger morticed joint by lengthening the stile ensured a more secure construction and the better performance of the sash. Louw is of the opinion that the popularity of the horn is linked to increased mechanisation in nineteenth-century joinery.²²¹ It is widely thought that horns were introduced to cater for the increased weight of cylinder sheet and other larger panes available from the 1830s, especially in single pane sashes and the corresponding weakness of the sash-frame. However, the horn is found in sashes of the 1820s, considerably earlier than the use of this glass in Ireland. Nevertheless an exact date for its introduction is extremely difficult to establish.²²²

From its inception the end of this timber protrusion was shaped to give a pleasant appearance. Initially horns were small, and usually either concave or convex in shape. A Dublin example of the early 1820s (from Mountjoy Street), of less than two inches long, ends in two

small convex mouldings (diagram 13). The Argory, Co. Armagh (designed in 1819) has small cyma recta horns. Heavier glass, common after the repeal of the glass tax in 1845, led to the larger horn, which was often decoratively shaped. Very few sashes of a later date are without horns, whether single, two or six pane. Almost all single and two pane sashes have horns, although many earlier sashes from which the glazing bars were removed have survived without their support.

Given the prevalence of fine joinery detailing in general and on sash members in particular, the introduction of the horn probably answers possible concerns over performance, applied in a manner to please the eye. However no evidence has yet been found of dissatisfaction with or early failures of sashes in the decades prior to its introduction.

The use of the horn on both upper and lower sash is universal in Ireland, while in England and Scotland many windows have horns to the upper sash only. The only similar examples noted in Ireland are in buildings designed by English architects.

Metal sashes

The relative lateness of the use of metal in Irish sash-windows (as noted in Chapter Two) indicates that there was little if any innovation or competition from ironworkers during the early days of the industrial revolution, and that Irish joiners merely copied English developments. The earliest evidence thus far for the use of iron glazing bars in Ireland is found in three Dublin buildings: at Rathfarnham Castle, no. 4 Henrietta Street and no. 23 Upper Merrion Street, Dublin. In these three cases the sashes were probably installed in the 1770s. They were essentially mahogany sash-frames having a plate iron glazing grid concealed by mahogany slips (as shown in plate 105). The iron grid was attached at the sides to a round-section internal iron rod (for which a hole was bored down the length of the stile). The ends of the metal glazing bars were drilled, and the rod driven through them, leaving no trace on the exterior of the method of fixing.

In 1787 the first documentary evidence occurs in the *Commons Journals* for metal sashes, in bills for patent metal sashes at the Phoenix Park residence and at Parliament House. Some, at least, of the sash-windows at Gandon's Law Courts were metal, as were sash-windows in the King's Inns, all in Dublin.²²³ All of these windows may well have been of the type

described above, at Merrion Street. Very little evidence for the use of iron-core glazing bars has been found outside Dublin. The single documented instance occurs in a mention in the *Georgian Society Records* that an eighteenth-century house, Kilboy, Co. Tipperary had oak sashes with mouldings of iron covered with copper.²²⁴

Milton House, Shillelagh, Co. Wicklow has very unusual sash-windows, with cast iron quarry glazing inserted into the sashes, designed in what may have been an optimistic embracing of contemporary technologies in the mid-nineteenth century.²²⁵

CHAPTER FOUR

THE IMPORTANCE OF THE WINDOW IN CLASSICAL ARCHITECTURE

The importance of the window in Irish classical architecture can be determined by an analysis of how Irish fenestration fits into international architectural patterns, and an examination of the values that are embodied in surviving windows of the period 1560 - 1860.

The language of classical fenestration

The importance of fenestration in the architecture of the Renaissance, and its effect through the distillation of architectural texts on seventeenth- and eighteenth-century Irish architects, must be examined in some detail. The use of elements within this classical language – window proportion and dimension, arrangement and cadence – and the aesthetics on which they are based – geometry, and ideas of beauty and harmony – are elaborated upon in this chapter.

The search for light, both physical and metaphysical, occupied the enquiring minds of many philosopher-scientists of the seventeenth century, as the concept of light was of overriding interest in virtually every sphere of intellectual life at this time. This striving for scientific knowledge and philosophical truth became known as the Age of Reason or Enlightenment in the eighteenth century. Concurrent with the pursuit of knowledge was the almost implicit belief in rational, classical design and an increasing demand for sophisticated interior decoration and comfort. Important to all three ideals was the window opening, the development of which was guided by them. Sir Christopher Wren wrote that “nothing could add beauty to light” while Richard Neve in his *Dictionary* calls light “God’s eldest daughter” and “the principal beauty in building”.¹ Light came to symbolise progress, as light-filled classical buildings (and therefore their progressive inhabitants) contrasted favourably with the dark architecture (and closed minds) of preceding ages. A contemporary Dutch writer put it thus: “our estimation which loves light will never desire to live in the dark, or on a clear day by candlelight, as one must do in many houses”.²

Lightsome rooms showed off the sumptuous interior fashions of the period. The English developed a preference for panelling and other timber ornament in which style the sash-window

architrave fitted integrally, in contrast with the textile hangings in favour in France and Holland. The era of the looking glass had arrived and enormous sums of money were expended on reflecting natural light. The search for light could also be interpreted as the search for display and decadence, as larger and clearer windows framed domestic or personal extravagance.³ As noted above, the management of light gradually changed during the eighteenth century from utilising the chiaroscuro of the architectonic angular opening to the more diffuse effect achieved by the splayed embrasure.

Proportion is of paramount importance in classical architecture: the proportions of the whole cubic mass and the facade(s) relate to geometric and harmonic rules which were closely followed and reproduced in rule books such as those by Alberti and Palladio and copied by a large number of followers. As set out by Palladio, the basic ideal is that all of the elements should accord to the tenets of concatenation, integration and gradation.⁴ Every detail is linked, integrated into the modulated whole and given a particular place in the overall hierarchy. The intention was that nothing could be added or taken away without deforming the whole. Reflecting near universal opinion, William Halfpenny wrote "true proportions are the fundamentals, the Beauty and the very Life of Architecture". Until the mid-eighteenth century, the Palladians had, according to Louw, an "implicit belief in the fundamental truth of proportional absolutes".⁵

Within such a system, which in its Northern European derivations placed a high degree of emphasis on the openings, the rules for arranging the fenestration were important, and style and ornament were made to follow defined patterns within the three ideals expressed above. Palladio wrote that "the void may be over the void and the solid upon the solid and all face one another".⁶ Although the considerations of classical design encompassed the whole three-dimensional object, and extended to providing adequate ventilation and illumination, proportion held power and prominence. As Louw notes, classicism "involved compliance with a set of strict proportional rules which imposed their own rationale on the facades irrespective of all other requirements". The consequence of this formality was that "the window apertures of buildings were marshalled and disciplined as they had never been before".⁷

The words of James Gibbs are pertinent to understanding the extent to which ratios were paramount. "It is not the bulk of a fabrick, the richness and quantity of the materials, the multiplicity of line, nor the gaudiness of the finishing that give the grace or beauty and grandeur to a building; but the proportion of the parts to one another and to the whole, whether entirely plain, or enriched with a few ornaments properly disposed".⁸ Clifton-Taylor put it succinctly: "in many Georgian elevations, particularly of the less pretentious kind, it is hardly too much to say that the whole design is constructed around the orderly tiers of windows".⁹

The elevational treatment demands that all of the windows in each storey should be the same size regardless of varying room sizes and all should relate to the proportions of the windows belonging to the principal floor, gradually diminishing in size in the upper storeys. Whatever the spatial arrangement, the fenestration has to read harmoniously from the exterior. To give unity to a facade by drawing the eye to the centre, ornament is usually concentrated on the central doorway and the window above it. Repetitive decoration of some sort is usually given to the architrave of every window, to properly frame it within the expanse of smooth wall. It could be argued that the use of ornamented architraves arose out of the subordination of the window to the overall aesthetic, as the blankness of the façade would otherwise be exposed by the smallness of the apertures. The addition of even such slight decoration as keystone or hood-mould gives apparent size and importance to each window and ameliorates both its angularity and the dark void within.¹⁰

In Italy the climate encouraged relatively small openings in which the material and style of the lights were unimportant, leading to a "negative emphasis" on the content of the openings.¹¹ Attention was paid in the main to the masonry mass so that ornaments such as cornices, pediments and the classical orders predominated. Such a tendency accentuated the solidity of the building as those which looked solid and stable were preferred to buildings (such as in the seventeenth-century northern European Tudor and baroque) which were punched full of decorative holes (as was Hardwick Hall, "more glass than wall"). In a reminder to his Irish audience, Aheron wrote in his *Treatise* that "Italians make their Walls very thick and their windows small and few, French make their houses too luminous. Our windows ought to be larger and more in number than those of the Italians to supply the deficiency of light."¹²

Initially Ireland took its classical influences from northern European countries, especially from England and France, where the baroque interpretation of classicism had evolved a more relaxed approach to window proportion than the Italian and dressings were not always used. Opening sizes were larger in France than Italy and a noticeable vertical emphasis began to become apparent during the seventeenth century, with the windows placed very near to one another. This was justified by the cooler, cloudier climate in which far more time was spent indoors out of direct light. English classicism displayed more adherence to Palladio (through the classicism of Inigo Jones) until the Restoration, when an undoubted French and Dutch influence appeared in the architecture of the re-established court. In the mid-eighteenth century Isaac Ware reviewed the baroque, "at one time, our houses were, in a manner, all windows; the piers between them were so slender, that one wondered how the fabrick supported itself."¹³

The north European input helped to foster an architectural climate where relative judgement on proportion came down in favour of better light conditions indoors and interest in environmental control as much as exterior aesthetic. Italian classicism had little need to take the internal environment into account, but in northern Europe this is acutely necessary (despite the best intentions of Palladio's followers). Rising standards of living and changing modes of interior fashions demanded better control over light, ventilation and privacy. Fenestration with large, all-timber windows glazed with clear Normandy or London crown glass provided so much improvement on these fronts that Renaissance proportions were compromised by the desire for light. It is interesting to note that Louw has found that sash-windows became known as big or large windows during the late seventeenth century.¹⁴ However, in Ireland many windows of the time – of whatever type – were neither large nor noticeably vertical in their orientation, as those at Waringstown illustrate.

The accent on the solid, though often diluted, permeated through most classical periods. In the early eighteenth century the spacing of windows was under Palladian control – exemplified in the designs of Pearce and Castle – but not all texts were insistent on Italian proportioning, and took weather conditions into account. For example, the breadth of the piers between the windows was recommended by Aheron to be as three to four in a temperate climate, in other words, the windows should be three quarters of the width of the pier.¹⁵

Reticence about the placement of openings was responsible for smaller basement or ground floor windows, as larger ones would tend to destroy the solidity of the appearance. These design conditions, based in structural common sense, are seen most clearly in the work of the Palladian school, but were not substantially reworked by neo-classical or Greek Revival architects. The Gothic castles of Francis Johnston and Richard Morrison broke the mould in the irregular punching of non-standard window openings in a Tudor fashion, but rarely did they allow the composition to be unbalanced by promoting the void over the solid.

The dislike of placing windows near to the ends of the facade – another by-product of the concern for solidity – was a detail followed in many seventeenth- to early eighteenth-century Irish buildings, some of which had few classical elements. Graney and Yeomanstown, both Co. Kildare, Piedmont Co. Louth and Tober, Co. Wicklow are mentioned in this respect by Craig in *Classic Irish Houses*.¹⁶ This hesitancy, given as a word of warning by Aheron: “don’t approach to near the Angles of the Walls”, was (as mentioned in Chapter One) copied from any of a number of earlier works, from Palladio to Sir Henry Wotton to Richard Neve. These authorities also shared caution as regards windows in general, all taking from Palladio the dictum that all openings are weakenings.¹⁷

Palladio specified exact proportions for windows in rooms of stated dimensions.¹⁸ As mentioned above, the French took considerations other than pure geometry into consideration, and in a similarly sized room would take account of its orientation and interior arrangement. Although Italian treatises did not give hints on maintaining a direct correlation between window and room heights French writers recommended a maximum of three feet between floor and sill and one foot between window head and ceiling, as the window architrave should not break into the cornice of the room.¹⁹ French architectural treatises of the sixteenth and seventeenth centuries were put to practical use by the English in the designing and placing of windows in the absence of English treatises; the impact of this influence was also seen in Ormond Castle, Co. Tipperary (see p.8). Loeber has found evidence that several seventeenth-century Irish patrons were sophisticated in their reading of Italian, French and English architectural volumes.²⁰

Seventeenth-century Irish classical buildings were usually rudimentary in style, using some elements of classical fenestration to express the façade – large windows with several

arched shapes, narrow, flat-arched windows and dormers – but not juxtaposing or modulating them in particularly innovative ways. The Royal Hospital is a case in point (plate 16 i-iv). The main elevations have rectangular windows, in equally proportioned bays, in an English or Italian manner, while the north front shows a more stylish aspect, with extremely large round-headed windows as found in England. Yet the placing of the windows of the main elevations flush to the face of the wall is quite Dutch, while the north front windows are recessed, which echoes the English baroque push for contrast in the elevation.

Within a system where the vertical orientation of the window was important, a contribution could be made by the arrangement of its internal members. However, use of the sash-window eliminated the potential for emphasis offered by the judicious placing of the transom(s) in the French casement window. Coupled with the complete disappearance of the bay and oriel styles, this meant that altering the shape of the window head by the use of arches was the only way to introduce different effects into the fenestration. Limitations were put on the variety of window shapes tolerated in the classical facade, as beauty was seen to arise from the repetitiveness and order of the (predominantly oblong) openings. Several decorative shapes such as the oculus or those incorporating semi-circles were used as visual relief and to give emphasis to the centre bay of a façade, as described in Chapter Three.

Rudolf Wittkower states that windows with arched heads (and the so-called Gibbs surround) were used by the eighteenth-century Palladians in a mannerist way to decorate the facade, which is contrary to Palladio's own ideals.²¹ If one agrees with this analysis, the fact that the tripartite window (in one or other of its guises) is the most widely employed elevational feature in Ireland could point to an overt mannerist element within Irish Palladianism. In practice, the proportions or prominence of the tripartite window determines how it assimilates into the composition or works against the concatenation of the elements sought by Palladio.²²

Louw has noted that the English approach to fenestration in the late seventeenth century echoed the Italian, by not favouring the use of extremely tall windows, and by treating the window more or less as a unit with no stress on either vertical or horizontal elements. This involved the addition of clerestory windows rather than elongating the proportions. The scant evidence available to the Irish researcher would appear to indicate a similar reluctance in this

country to open very tall windows (although the fact that no clerestory windows of this period survive may just indicate that there was little use of extravagantly tall rooms).

Within the window opening the arrangement of the fixed or opening light has a lesser, but still important role to play. The structural members – mullions and transoms – of seventeenth-century windows were arranged in a manner that both reflected concern with proportion and allowed maximum daylight indoors, as the lights were made to the largest sizes possible within technological constraints. After the Restoration the cross-window became standard, in a French-influenced move towards highlighting the vertical axis. (Many French architects employed two transoms, both set high up in the opening, to accentuate even more the vertical and lightsome effect sought by their baroque ideal; none have been noted in Ireland.) In these windows, as seen in Robinson's drawings for Dublin Castle (see plate 20) the transom was always placed across the upper half of the window, in a manner that must have recognised the subtle but overt power of the horizontal line in classical architecture. Lateral lines such as cornice, string course and possibly even door panels should support the impression of solidity but not weigh the building down inappropriately. A single transom placed at a low position would upset this balance by weighing a large void upon a small one in a similar way as would a string course at lintel and not sill level. No instance has been found where the transom of a cross-window is set lower than the mid-line; it is interesting to note that the Italian preference is for the transom to be set at the centre which is a neutral position, furthering the "negative emphasis" on the content of the opening.

In their argument McGrath and Frost argue that the vertical emphasis of the cross-window was the prime factor in the superiority of the French type over the sash, which was visually constrained by the obtrusive central meeting rail.²³ Each of Beaulieu, Mount Ievers, and the drawings of Burton Hall and Robinson's Dublin Castle have high French-style roofs and vertically-orientated windows in which the sashes of the former tend to sit more solidly than the cross-windows of the latter. Perhaps it is merely a question of determining the desired effect which in Ireland was very quickly to be for a solid, more earthbound design. In the mid-eighteenth century sashes of unequal size were introduced into the windows of the main storey(s) – a consideration borne primarily from the constrictions of overall proportioning –

which moved the meeting rail away from the centre line of the window. In Britain the small top sash allowed for a strong horizontal line above the mid-point (reflecting French design) but in Ireland the line dropped below the centre, inducing an even greater effect of weight.

In the timber windows of northern Europe the grid of the sash or casement corresponded to the geometry carefully worked out for the building as a whole. Timber was the perfect material to construct windows in which the grid could be made to any rectangular shape, from the square to the "golden section"; an advantage which it had over every other window type in use at the time. Although the early timber-grid windows of seventeenth-century France had panes of quite square proportions (as surmised from prints and surviving examples), the tendency when stretching the square was to accentuate the vertical rather than the horizontal, one which probably arose quite naturally from the French interpretation of classicism. The use of square or vertically-orientated panes carried on into English Restoration windows, and thence to Ireland.

McGrath and Frost propose that the sash was a compromise between the larger window opening demanded by the classical style and the heavy framework necessary to support the assemblage of relatively small panes. They do not allude to the innovative method of opening, but merely remark that "style demanded an upright aperture, the available glass a comparatively heavy frame and ventilation a method of opening which would not put an undue strain on the heavy frame and which would also permit of modification according to the weather." The result was the sash-window, in which – according to the authors – the awkward horizontal emphasis of the meeting rail was an aesthetic drawback.²⁴

The thickly gridded sash-window became an integral part of the design of the Palladian building. This is proved by the persistence of the wide glazing bar at a time when joiners were capable of making much slimmer members. According to Louw, "it is obvious that the Palladian designers meant the windows' internal framework to be read as part of the elevational composition" making it "all the more conspicuous because of the almost total absence of any other ornamentation."²⁵ The use of painted white or a light "stone" colour timber (apparently common both in the baroque and Palladian eras) was a conscious move, rendering the content of the openings very noticeable in the classical facade.²⁶ Surviving buildings such as Mount Ievers

demonstrate this high level of visibility. A diversity of pane sizes (as found at Hampton Court) was probably due as much to the relative importance of the rooms as the visual effect from the exterior, but the “heightened liveliness” due to this variety contributes to the overall effect, especially in combination with the heavy early bar and the brilliance of crown glass.²⁷

Le Corbusier has described the history of architecture as the history of the window, that is, the struggle for light against the reality of material considerations and limitations. An examination of the window in classical architecture, however, might confound this assertion. As seen above, there was a marked reluctance throughout the period under study to experiment with the capacity of load-bearing walls (as had happened with the evolution of non-load-bearing walls in the great medieval church-building epoch). McGrath and Frost argue that structural limitations on window sizes were accepted to such a degree that in classical architecture the *raison d'etre* of the window became its use as a unit within an ordered scheme, not as the means to admit light. “The whole history of polite architecture might be reasonably considered as a history of fenestration whereby Corbusier’s ‘struggle for the window’ has been almost completely sidetracked” and replaced with the provision of ornamented “units of fenestration”.²⁸

The effect of taxes on window design

The imposition of tax on glass and windows curtailed freedom and imagination in designing the windows of all types and classes of buildings. The practice of some of the basic tenets of classical architecture – the positioning, proportioning and size of windows – was threatened by this external factor.

The Window Tax, first levied in England in 1695 (and renewed every year until 1851), was increased many times, progressively restricting the number of openings made in new buildings and causing the blocking up of many in existing ones, usually at the expense of daylight and ventilation.²⁹ One result of the tax may have been to promote the use of the Venetian and bow window types in an effort to increase light indoors. However, an amendment of 1785 stipulated that any window with lights divided by more than twelve inches of masonry were counted as separate windows. At this time a limit was also put to the maximum size a single window could measure under the legislation, at twelve feet in height by four feet nine inches wide. Larger windows or those used to light more than one room or space were taxed at

double the rate.³⁰ These laws were passed by the Irish Parliament just before the legislative Union, in 1799.

The charge was not inconsiderable: Bryan Bolger, the Dublin measurer, paid nearly ten pounds in 1819 on the fourteen windows of his own house, while at the top end of the scale, Lord Shannon paid out twenty-nine pounds and ten shillings on tax for the one hundred and thirty two windows of Castlemartyr House, Co. Cork in 1800, and over seventeen pounds on seventy-five windows on his Dublin houses.³¹

Louw notes that the use by early eighteenth-century English architects of blind windows, which “must have been a very unsatisfactory aesthetic solution to any self-respecting Palladian” probably stemmed from a deference to the window tax.³² Also attributed to the tax was the gradual development of a mode of design in where there was a divergence between the appearance of the facade and the treatment of the plan. However, the blind window is seen in Ireland in several instances before the imposition of the tax and should be seen rather as the universal recourse of the classical designer for solving awkward spatial and elevational problems.³³ As early as Castlemartin, Co. Kildare (*c.* 1720) and Cuba Court, Co. Offaly (*c.* 1730) glazed blind windows were used to accommodate the plan. The importance of external symmetry can be seen at Townley Hall where four windows are blind to allow for a spectacular stairwell. The act was undoubtedly discouraging to the architects and patrons of early nineteenth-century Ireland, but its effect may be overestimated. Dexterity of design and a certain element of playfulness may account for houses such as Graigavern, Co. Laois (attributed to Morrison) in which over half of the windows are blind. At Ardress House, Co. Armagh, in (the younger) George Ensor’s work to enlarge and make more impressive his newly inherited house (after 1803³⁴) seven of the ten windows he used were blind (including two Wyatt windows and a proto-Venetian). It should be stated that most of the blind windows noted in Ireland were glazed – five of those at Ardress – and thereby incurred the glass tax (when it was applicable), though not the duty on the window.

The effect of taxes on glass had been felt in Ireland long before direct imposition in 1825, as much window-glass used in Ireland (especially before the 1750s) was imported from England, where tax was imposed in 1745.³⁵ The native glass industry was crippled by its

introduction on domestic production, which was levied in the glasshouse itself; materials were weighed before and after melting, and excise men were always on site. At its worst, the glass levy was 73s 6d per cwt of raw material.³⁶ Only bullion panes were exempt, which accounts for more use of them than might otherwise have been expected. Various countervailing measures were taken (notably a drawback on exported glass, which would not at this late date given any comfort to the very few Irish glassmakers still in business), and finally in 1845 the duty was repealed. Glass prices went into flux, as glass re-established itself in the free market. The decrease in cost as a result of the removal of tax and improved production methods was a prime factor in the sudden popularity around the mid-century for single-pane sashes and large-paned shopfronts which are shown in early photographs to have been as popular in the provinces as in Dublin. (The increases in glass prices and corresponding outcries during its duration are covered in Chapter Two and Appendix One.)

The value of the window to Irish architecture

Architectural historians have generally paid scant attention to the details of windows as the overall external aesthetic is regarded as being of most importance, closely followed by plan and decoration. Necessary but commonplace elements like roof structures, rainwater goods and windows, for example, have not had obvious appeal, as there is not the same element of uniqueness or the same finesse visible in the handling of the materials. Just as the credit for the design of the building goes solely to the architect or patron and not the artisans or overseers, so the eye tends to catch the overall appearance and miss the contribution of the joiners and glassmakers who made possible the windows. Swift put this point with typical economy:

“As when a lofty pile is raised

We never hear the workmen praised

Who bring the lime

Or place the stones

But all admire Inigo Jones”.³⁷

The response of some Irish artists, architectural historians and writers who have noticed the visual attractiveness of old windows glazed with crown and cylinder glass should be related. Maurice Craig has written of the Library at Trinity College, that “only when on a winters day,

seen from the top of a tram in Dawson Street across the Fellows Garden, every pane of the old crown glass suddenly flashes with orange fire – only at such moments does this huge building seem to relax its customary expression of measured reticence.” The Anglo-Irish writer Elizabeth Bowen particularly loved the quality that her ancestral home in Co. Cork was given by the windows: “All this expanse of glass, with its different reflections, does much to give Bowenscourt character. When the sun is low, in the early mornings or evenings, the house seems, from the outside, to be riddled with light.”³⁸

The range of designs, materials and minor details that distinguishes the fenestration and windows of different periods (and areas) illustrates the attention that the Irish classical window deserves in historic buildings analysis, proving that the research into the minutiae of the window has been a valid undertaking. This study has demonstrated that not only are windows an important, integral element of any building type from an aesthetic viewpoint, but that in their design and construction they are the products of measured craftsmanship. In the late nineteenth century the *Irish Builder* praised Georgian window joinery: “the methods used in putting together work showed that the workmen were skilled, and that builders and workmen alike were interested in turning out well-finished and durable work.”³⁹

A very high level of skill and attention to detail was reached initially in stone carving and later in window joinery. Several early examples spring to mind: the carved transom at Barryscourt Castle (plate 131), the stone carvings to the entrance of no. 6, St. Augustine Street, Galway (plate 133) and the embellished egg-and-dart frame at Eyrecourt (plate 139). Of the eighteenth century, Castle’s egg-and-dart moulded glazing bar at Carton is a prime example (plate 161), as are his highly decorated window architraves in no. 85 St. Stephen’s Green (plate 141). Then there are the carved shutter mouldings seen in several houses in Henrietta Street, and the composition shutter decoration at Powerscourt House (plate 142 i-ii). In the nineteenth century Morrison’s carved shutters at Carton (plate 142 iii) and numerous examples of idiosyncratic fanlights spring to mind.

Knowledge of the material types and methods used to construct timber and iron-framed windows is vital to complement current information on the work of building technology and tradesmen, an area insufficiently researched in Ireland. The persistence of design details must

indicate those trusted and considered superior in design and craft terms. Joiners' bills, notably those of Trinity College and the accounts submitted to the House of Commons, show detailed overseeing on the part of the master craftsman or architect in accounting for every last detail, indicative of their knowledge of and tight control over the type of work done.

The domination of architecture in Ireland by English or Anglo-Irish patrons, architects and engineers and many contrivers and craftsmen made it inevitable that Irish buildings would inherit most if not all English styles and details. What is surprising is that this dominance did not prevent differences arising in the details of Irish windows, and in the fenestration of Irish buildings throughout the eighteenth and nineteenth centuries. The evidence bears out that Irish variations in window joinery detailing started to be seen in the mid-eighteenth century (as treated above) even when English pattern books in common circulation illustrated different methods of construction or detail. It is a matter for speculation whether or not some exclusively Irish window details continued archaic forms of joinery or were derived from a tendency to economise in the use of timber (as put forward by Brooking⁴⁰). In frame work, there is the peculiarly Irish method of jointing the corner of a window frame or architrave using as few mitred joints as feasible, seen as early as Eyrecourt (plate 139 i) and as late as Cratloe, Co. Clare, in the 1840s. The half-sill, lack of backing boards for the cased frames and few examples of slips within the case (to prevent the weights becoming entangled) are examples of an Irish tendency to save on timber. As ever, practical example through apprentice training taught the methods that persisted, whatever influence modern ideas might have had. However, other details cannot be related to financial constraints, and show that at some stage a conscious decision was made to try a new design variation. A good example would be the adoption of the nine pane sash over six arrangement instead of the English alternative (abandoned in Dublin in the late years of the eighteenth century possibly for aesthetic reasons, but retained elsewhere). The several differences in Munster windows, notably the persistence of the segmentally arched window, are not obviously related to contemporary English fashions.

The skill needed for the production of blown window glass is generally underestimated, as it is not immediately evident in the finished window. There is a modern assumption that all glass is the same, because of ignorance of the distinct appearances of broad, crown and sheet

glass that are a consequence of the different methods of glassmaking. Specifiers and clients of the seventeenth, eighteenth and nineteenth centuries were not vague however, about the type and quality of glass sought. The Earl of Cork's new dining room at Lismore Castle was glazed with (expensive) Normandy glass in 1637/8. The larger panes of the fashionable new sash-window were usually glazed with the expensive but far more transparent spun glass, as happened in 1699/1700 at the Provost's quarters in Trinity College, where the glazier was paid for four "French" sash squares at 16d each (the generic term for Normandy crown). At the Royal Hospital in 1711 the Governor's lodgings were also given "French" glass.⁴¹ Plans for the rebuilding of Burton Hall were discussed in a letter to Perceval of 1703, where the writer assumed that Perceval would have the garret windows glazed with "ordinary glass" (referring most likely to broad glass, which implies that there would be crown glass in the sashes). Barrack buildings were usually given white English glass, the cheapest type, while one of the clearest varieties, Bristol crown glass was used at St. Werburgh's in 1716 and in Pearce's Parliament house.⁴² Polished plate glass was apparently used at the Casino, as befitted one of the most highly finished buildings undertaken in the eighteenth century.⁴³

By definition of their inclusion in this study all of the surviving examples noted in the inventory are upwards of 130 years old – and most are far older – with the lights constructed of delicate materials, and placed in positions exposed to the weather. Their very survival, even in an altered state, endows them with a value as definite and worthy as the buildings in which they are found. The retention of these windows enhances the historic value of the whole, and complements the interior joinery, plaster detailing and other fittings. With regard to conservation, it is seen that the worth of the historic window renders it absolutely necessary for repair to be based on a sound philosophy.

In assessing the aesthetic integrity of a building it is vital to ascertain the age and authenticity of the windows. The appearance of the heavy small-paned sash-window, for example, is quite different to that of later periods; the considerable difference in detailing and overall effect has been comprehensively illustrated. Most historians regard buildings that have been altered or substantially renovated as less valuable as historical documents (a point that must be debated in every individual case). The argument put forward by this research is that the

presence or absence of original windows is as vital to the historic value of a building as are its other integral components. This is not to dismiss buildings of this period that have had later windows installed, rather to promote those fortunate enough to still possess the windows consciously designed to accord with the architecture.

It is not just the shape of the opening or the presence of divided windows mirroring the glazing arrangement of the original, but the actual original window, with its patina of age, that confers upon the building an additional historic value, and lifts its architectural importance out of the realm of the ordinary and into that of the very special. The rarity of surviving early windows enhances the historic value of those remaining, but in no way could it be said that were they common their worth would be in any way lessened. Given the fraught nature of life in Ireland over past centuries and the current pace of destruction, the existence of any original architectural fittings is remarkable, but especially those composed of the fragile elements of timber, metal and glass.