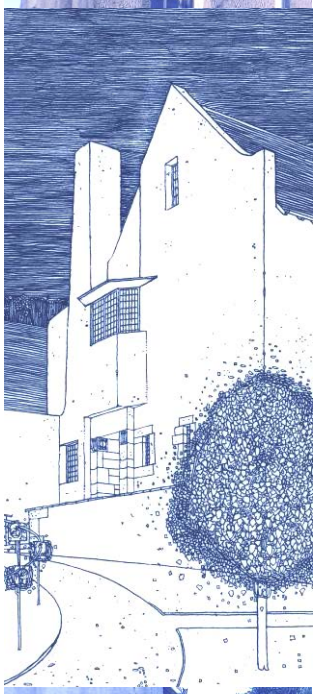


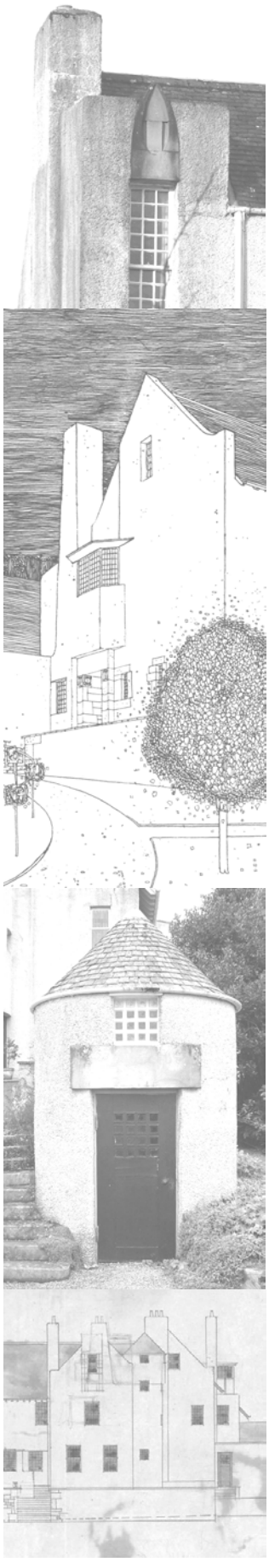
NATIONAL TRUST *for* SCOTLAND

The Hill House, Helensburgh

Evaluation of condition and significance

Andrew PK Wright

July 2012



The Hill House, Helensburgh

Evaluation of condition and significance

July 2012

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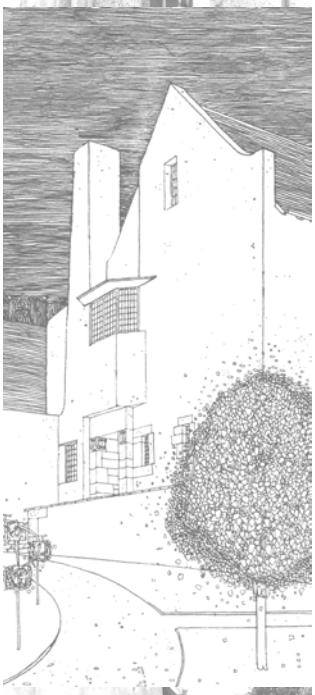
Contents



Preface to the four parts of the study

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The fabric of *The Hill House* has been plagued throughout much of its existence by problems of water penetration which have proved difficult, if not impossible, to overcome. There have been numerous attempts to remedy the problems posed by the design and the use of materials for the external walls and chimneyheads and, while some of them have met with temporary success the problems continue to return and, moreover, they bring with them the risk of further collateral damage to the structure and to the outstanding decorative finishes of the house. The present owner of the property, the National Trust for Scotland ('NTS'), has embarked upon major schemes of repair in the recent past. In doing so it followed the best advice available to it at the time, but it is now recognised that the levels of intervention in the spirit of retaining the maximum amount of historic fabric are, paradoxically, exacerbating the nature of the problems that have recurred and that they are making them significantly more difficult to resolve. This suite of documents has been commissioned by the NTS in order to arrive at a clear understanding of the historical background to the repairs and problems that have been encountered, of the significance of the house which is celebrated as one of the finest works of Charles Rennie Mackintosh when at the height of his powers, and of the philosophy governing possible repair strategies.

The documents are accompanied by a series of reports on the fabric of *The Hill House*, and should be read in conjunction with them. These reports are annexed to the Quinquennial report (July 2012) and are listed as follows:

- Quinquennial inspection report (Andrew PK Wright)
- Matrix for principles for the repair of the external walls (Andrew PK Wright)
- Hill House Environmental Report (Irons Foulner)
- The Hill House, Helensburgh: Initial Report on the Structural Condition of the Building (David Narro Associates)
- Observations from Infrared Thermographic Surveys (Construction Materials Consultants Ltd)

The above reports and the evaluation of the problems of the fabric of *The Hill House* have been founded upon various papers prepared by William A Revie of Construction Materials Consultants which involve non-invasive survey work by thermography, X-Ray Powder Diffraction and petrographic examination of roughcast samples and of the sandstones found in the construction of the building.

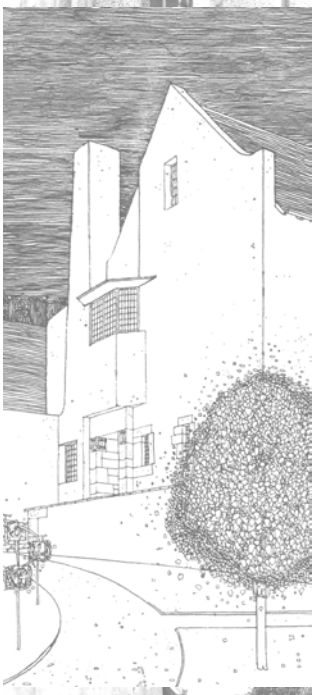
Andrew Wright, as lead consultant, has been supported by a team of experts in their respective fields, and he is grateful to them all for their support and advice throughout the course of the assignment. He is also grateful to all those within the NTS who have supplied information and helpful advice, especially William Napier, Bryan Dickson and Lorna Hepburn. Particular thanks are expressed to Professor Pamela Robertson, Joseph Sharples, Professor Sir James Dunbar-Nasmith, Kenneth Lawson, David Cairns, Dr Andrew Pover, Peter Trowles, Susannah Waters, Jackie Davenport, Ranald Macinnes, Evelyn Silber, Neil Baxter, Brian Park and Malcolm Mitchell.

This document is in four parts. **The first part** deals with the influences on Mackintosh as a designer of world renown, on the use of construction materials at a time of transition within the building industry, and with the design and construction of *The Hill House* and its significance for the Modern

Movement. In **the second part**, Dr James Macaulay's short paper addresses the legacy of the house, and provides a sound framework for considering how to preserve it without damaging what is important. **The third part** recounts the history of the problems with the building, how they had been addressed in the past, the philosophical debates surrounding the desirability of retaining the evidence of the original fabric on grounds of authenticity, and how this shaped the methodology for the repairs undertaken during the 1980s and the early 1990s. **The fourth part** is in the form of a discussion paper. It seeks an answer to the question as to whether the house can be considered a modern monument with reference to relevant international conservation charters. It addresses the philosophical issues surrounding the conservation and repair of modern architectural monuments, summarises a number of case studies looking at how modern monuments are conserved and the sorts of issues they tend to throw up, and considers whether there are any lessons to be learnt from them for the repair of *The Hill House*.

The document is not set out in the form of a conservation plan, and neither should it be considered to be a comprehensive history of the house and of the repairs that have been carried out to it in the past. With the exception of the second part of the document, the focus on the remaining parts is on the influences on Mackintosh as an architect rather than a decorative artist as one of the members of the 'Glasgow Four', and on his exploitation of early Portland cement as the medium through which his increasingly abstract designs could be realised during the first decade of the twentieth century, regarded by many as the period of his greatest creativity.

The findings of this study are broadly in line with analysis of the problems set out in the presentations made by the NTS to its internal Architecture Panel in 2009, and at the symposium in Glasgow early in 2012, convened by the Charles Rennie Mackintosh Society to address mounting concerns over the current state of many of the architect's best known buildings.



Part I Historical background

1.1 Part I: introduction and abstract

The result was a total work of art, and aesthetic enhancement of all the rituals of family life …… The echoes were local and traditional, the reverberations international, even universal, for Hill House was one of several Mackintosh designs to inspire new tendencies abroad. It was the sharp interplay of wall planes and openings, silhouettes and surfaces, as well as the direct celebration of functional elements like chimneys, which recommended this building to the Viennese avant-garde. In effect 'Mackintosh developed the somewhat thin and frosty air of the Scottish vernacular and transformed it into a living style of the early twentieth century….'
William JR Curtis (1982)[1]

Part I provides a context for the study, and begins by setting out the influences on Charles Rennie Mackintosh's early career. The extent to which he fell under the spell of Scotland's 'national architecture', and how that was shaped by the influence of David MacGibbon and Thomas Ross, is examined through the vehicle of his early public lectures. These provide also an insight into the work of his contemporaries in both England and Scotland and the extent to which he was, for a while, under the spell of WR Lethaby. The tendency towards abstract qualities in the freehand sketches of the places he visited, architectural perspectives, and finally in his buildings is compared, and it is demonstrated how this was given full rein in the design for his client for *The Hill House,* Walter Blackie. The stylistic excesses of Mackintosh and the 'Glasgow Four' (of which he and his wife were members) led to their ostracism, and a subsequent lack of awareness of their achievements in England, a difficulty made worse once the editor of the influential arts and design magazine *The Studio* died in 1898. However, the magazine secured an interest in his work in Europe where the work of the group was greatly admired. Importantly, it captured the interest and support of Hermann Muthesius, whose admiration for the architect was thinly disguised when *Das englische Haus* came to be published in Germany around the time that *The Hill House* was completed.

A brief history is given on the resurrection in the use of 'harling', (or 'roughcast' as the material was more often referred to around the turn of the twentieth century) by Scottish architects, and how this compares with contemporary English 'pebble-dashing' in the hands of the Arts and Crafts architects. The extent to which Mackintosh was likely to have been influenced by them, and by over-exaggerated claims made for the performance of early Portland cements as a barrier to dampness, are examined in detail, together with how this influenced the architectural form his buildings took in the first decade of the twentieth century. Comparisons are made with the first and second phases of work at the Glasgow School of Art, while the constructional experimentation at *Windyhill* is examined, and how this evolved in his mature domestic work at *The Hill House.* Disguised by the roughcast, the subservience of the materials he allowed to be used in the construction of the external walls had sown the seeds for later disaster. His adoption of a textured grey surface coating was rugged, and quite consciously different from the white coloured pebble-dashed roughcast used extensively by his contemporaries in England (and, indeed, different from his own contemporaries in Scotland). His continuing use of early Portland cement roughcast in the designs that followed *The Hill House* is noted briefly.

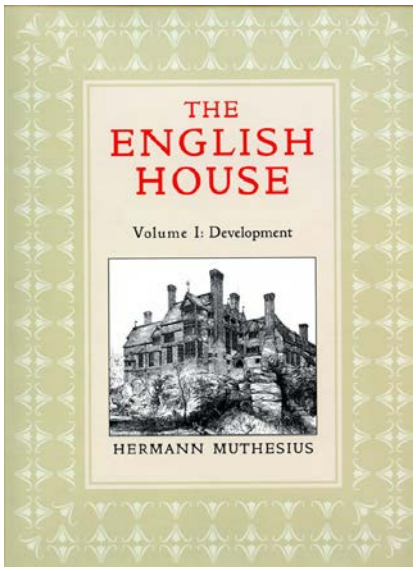
The extent to which Mackintosh was knowingly pushing boundaries in his mannerist treatment of windows and wall openings, his novel use of abstract form-making, and in the plastic treatment of applied surface

treatment to establish architectural unity in his designs, all mark him out as a pioneer of the Modern Movement, qualities which came to be appreciated fully some years after his death.

The word 'roughcast' and the Scots word 'harling' are, essentially, interchangeable; harling implies a 'wet-dash' finish, while 'pebble-dashing' can be a type of roughcast using small beach stones or river-bed aggregate. Contemporary specifications in Scotland during Mackintosh's day used the more universal 'roughcast', in use throughout the British Isles, which is the only description used by Muthesius. Accordingly this word has been used when referring to what is now commonly referred to as 'harling' in Scottish construction practice.

1.2 The architecture of Charles Rennie Mackintosh: antecedents and influences

So many volumes and articles in learned journals have been written about the career of Charles Rennie Mackintosh (1868-1928), and the early influences that he absorbed during his formative years, that it is challenging to be able to say anything fresh on the subject other than, perhaps, to summarise what these influences were and how they shaped the design of *The Hill House*. The challenge is all the more great considering the diverse array of influences which were constantly at play during the most creative years of his professional career. As James Macaulay has shown, from the very outset these influences were bound up in his immersion at the age of twenty in John Honeyman's practice in 1888, the year before John Keppie was made a partner[2], and they broadened rapidly to take in a whole series of interests on a significantly wider stage when he travelled to Italy as a consequence of having been awarded a scholarship in 1890. Wherever he went, his mind was sharpened by what he saw with his eyes, and drew in his sketchbooks, and these became a source of inspiration for many years to come. He was an avid reader of all the current magazines on architecture, art and design, and his public lectures from his formative years not only would have established his reputation as someone passionate about his craft, but they revealed the breadth of his knowledge of contemporary subjects which took in the work of the leading practitioners in England. He was ambitious, and alert to how these influences should be used, even to the extent that in public he was reticent about revealing his sources as to where these influences lay, more especially when they were closer to home. Like a kaleidoscope, these constantly changing impressions surfaced in a mind of astonishing creativity and originality, which Hermann Muthesius (1861-1927) came to admire and promote. He referred to Mackintosh as 'an architect to his fingertips', marking him 'as one of Britain's, if not the, most outstanding younger architects of the day'[3].



Top: Hermann Muthesius, a staunch promoter of Mackintosh and 'The Four' in Europe from the late 1890s, and through the publication of *Das englische Haus*
Above: book cover for the English translation of *Das englische Haus* (2007)

Having been trained as an architect, and sent as a cultural attaché to the German embassy in London for six years with a brief to study British architecture and design, Muthesius was particularly well informed to hold such a view. In his three-volume work *Das englische Haus*, published in 1904 and 1905, he articulated what he saw as being the primary cultural differences between England and Scotland. Despite the title of the book, he was, on the whole, fair in his treatment of the architectural scene in Scotland over which he was not dismissive. Whereas revivalism in England had taken root only after the mid-eighteenth century, in Scotland the old traditions had never really died out, and he noted that the country 'stuck tenaciously to its traditional architecture'. This was best illustrated by the remarkable mid-eighteenth century work at Inverary Castle by the Englishman, Roger Morris (1695-1749), perhaps all the more surprising as it was conceived around the time of the defeat of the Jacobites at the Battle of Culloden in 1746, after which characteristics in national dress, literature and music were considered seditious and were suppressed. It would find full expression in the string of castellated mansions by Robert Adam in the last quarter of the eighteenth century. Muthesius was inclined to consider the work of the Mackintosh circle at the turn of the twentieth century an outburst of Scottish Romanticism which 'sprang from the inner recesses of the nation's soul', which he was to contrast sharply with the 'insistent utilitarian and rational principles' of the Arts and Crafts architects and designers who were based in London[4]. It is a distinction of which Patrick Geddes and his artistic circle would have approved, immersed as they were

Top: the rural idyll celebrated by Scotland's painters: *The Mill-Pond, Dunnottar,* (1882) by WY Macgregor (1855-1923), Perth Museum & Art Gallery
Above: James Drummond's sketch of the courtyard of Hamilton House, Preston, probably in the late 1840s, at a time when it descended to being used as farm buildings and as cottages for farm labourers – the property is now in the care of the NTS © RCAHMS

The Scottish delight in sheer height of a block of building – quite absent in England – may well have predisposed the Scots towards their towering blocks of flats, and the Scottish delight in the fantastical suddenly emerged, utterly unexpectedly, about 1890 in the paintings of the group of Glasgow artists known as the Glasgow boys. Scottishness can be detected in the peculiar freshness of Raeburn which distinguishes his portraits from Reynolds's as from Romney's, Scottishness in the Ossianic work of the Runcimans and John Brown. And the great Scottish polarity appears emphatically in the contrast between the sobriety and solidity of mid- to late-nineteenth-century architecture in Scotland, always distrustful of the fulsomeness of the English High Victorian style, and the fantastical developments of the Scottish Baronial in the hands of that Scottish genius, Charles Rennie Mackintosh. As profitable to him as the castles and fortified houses were the unpredictable curves of Celtic illumination and metalcraft.
Nikolaus Pevsner, from the Reith Lectures, 1955[5]

in the Celtic Symbolism that characterised the *fin-de-siècle* in the Scottish capital. However, an association with the mercurial Geddes was curiously overlooked by Muthesius in his wide-ranging study, although he did record the work of one of the most active members of his group, Sydney Mitchell (1856-1930), who by then had branched out into mainstream practice which included several country house commissions.

The extent to which Scottish architects found inspiration in the country's national architecture during the course of the nineteenth century was fostered, initially, by the flowering of Sir Walter Scott's historical novels and their conscious evocation in his remodelling of Abbotsford, from 1816 onwards. It was also to be found, among other architects, in the early work of William Burn (1789-1870), a leading practitioner in Scotland who encouraged the English architectural illustrator, Robert William Billings (1813-74) to prepare the highly influential *The Baronial and Ecclesiastical Antiquities of Scotland,* published in four volumes between 1845 and 1852. Its success was immediate, leading directly to an antiquarian interest in what had survived of many of the country's finest buildings erected before the mid-seventeenth century. These antiquities would be shown in a state of decaying grandeur, and the publication led to a recognisable national architectural style which borrowed heavily, if often literally, upon the range of characteristic architectural features reproduced faithfully in Billings's beautifully illustrated bookplates.

The movement celebrating Scotland's national architecture was, to a certain extent, based on an unsubstantiated myth. The use of traditional Scots harling came to be regarded by the beginning of the nineteenth century as a finish associated with economy, or with vernacular buildings of a relatively lowly status (where the construction of the walls was never meant to be seen), rather than with the nation's most important monuments. The ruins of the castles and tower-houses are rendered in Billings's seductive images as ancient monuments, whose appearance had changed over time as a consequence of the agents of natural decay in which the surfaces of harling and limewash that had once protected and embellished them had weathered away gracefully, leaving the underlying rubble finish exposed. As notions of the sublime and the picturesque in literature and art took hold in the imagination, for many this was seen as an affirmation of the venerable antiquity of the monument. Mirroring this trend, from the late eighteenth century onwards all traces of the harled finishes would often be removed from the surfaces of Scotland's castles which remained in habitation, and the rubble walls left exposed. Later, as the nineteenth century progressed, it was not at all uncommon to find the rubble walls clad in carefully manicured 'architectural' ivy, as though a substitute for the original harled surfaces. Scotland's castles were treated no differently from other buildings in that were not exempt from the whims of fashionable taste[6].

Thus far there had been relatively little professional interest in the inspiration to be had from studying the rich tradition of the humble vernacular buildings which gave so much character to the rural landscape and the rich townscape of Scotland's historic burghs. Interest in them had been rekindled, initially, by the school of painters fostered by Francis ('Fra') Newbery of the Glasgow School of Art who became known as the 'Glasgow Boys'. Thatched or pantiled cottages and farm buildings would often form a backcloth to the subjects being portrayed. In the burghs many of these venerable structures were crumbling and were swept away, largely unrecorded, in the redevelopment of the high street frontages which gathered pace in the relative prosperity experienced by the growing towns of the late nineteenth century. The grand houses and warehouses of the

Top: one of a series of engravings of Maybole Castle by Robert William Billings (Volume IV), a subject captured in Charles Rennie Mackintosh's imagination and by his sketching ability (see page 12)
Above: slum conditions in the closes of Edinburgh's Old Town: Advocate's Close, from Robert Louis Stevenson's *Picturesque Notes* (1879)

merchant burgesses in Glasgow's High Street, Leith, Aberdeen, Dundee, and in the small ports lining the fringes of the Firth of Forth, had often descended into slum property, and as such were cursed by the respective Town Councils as an embarrassing public health risk. Fortunately, a few gifted artists, such as James Drummond working in Edinburgh and in the historic burghs around the Firth of Forth in the middle years of the nineteenth century, and the photographer Robert Annan in Glasgow, found these subjects to be of great social interest. They recorded this historic townscape for posterity, and with a degree of realism. Still later, the changing face of Scotland's towns would be recorded by a growing band of commercial photographers for selling as picture postcards. Interest in these buildings was often late in coming, and too late to save the majority of them. Once more, interest in this lively scene was fostered by occasional literary works, and among them must be mentioned Robert Louis Stevenson's cameo piece, *Picturesque Notes* on Edinburgh, published in 1879.

The desirability of preserving the decaying historic buildings of Edinburgh's Castlehill gained momentum when Patrick Geddes took his family to live among the slum dwellers of the dirt-ridden closes in the mid-1880s. He embarked upon his novel concept of 'conservative surgery', breathing life into the old closes, and in this work he was supported by the Edinburgh Social Union. The aims of the movement were strengthened by the unexpected success of the 'Old Edinburgh' section of the Edinburgh International Exhibition of 1886, in which a historic street scene at the Netherbow Port was recreated by Sydney Mitchell. It is no coincidence that another highly influential set of architectural volumes, published towards the end of the century, should include a record of the disappearing town houses of the historic burghs. This compendium of five volumes, published between 1887 and 1892 as *The Castellated and Domestic Architecture of Scotland*, changed forever the way in which these buildings were appreciated and recorded, leaving a lasting impression on Scotland's younger generation of architects, and upon Charles Rennie Mackintosh in particular when the first of these volumes burst onto the scene.

The authors, the architect antiquarians David MacGibbon and Thomas Ross, trawled the whole of the mainland of Scotland and the islands, recording all of the structures they could identify within the selected period of study. Their work amounted to a national survey of extraordinary value and importance. While many of the rural structures were recorded as standing ruins, some continued to be inhabited, and were often extended at various stages in their history especially throughout the course of the nineteenth century which the record, on the whole, tended to ignore. The last two volumes, published in 1892, marked a slight departure from having incorporated numerous studies of domestic architecture within the historic burghs, as though in recognition of the significance of this rapidly diminishing resource. The timing of this exercise proved opportune: here, for the first time were extolled the more humble vernacular structures which, although relatively plain in appearance, possessed some of the characteristic features of their castellated counterparts, not least in their appearance of innate strength from having a high wall to window ratio and in the disposition of the wall openings which revealed the depth of the walls. At the same time, a studied asymmetry could be detected in the principal elevations. Wall openings would tend to appear 'punched in' to the planes of the wall surfaces, and would often lack the defining stone margins or mouldings which characterised the architecture of the more elaborate, or 'polite' buildings. But for the enlargement and replacement of windows - in order to provide better light and ventilation for the crowded families that

The Study, and buildings around the Market Cross, Culross, now in the care of the NTS, from MacGibbon & Ross Vol V, p25

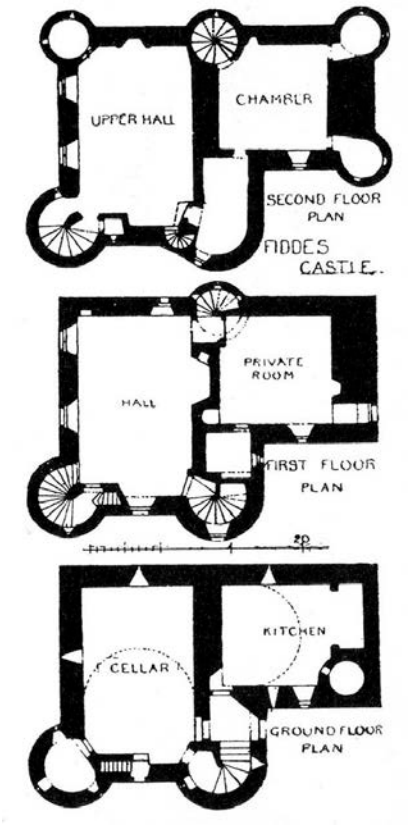
inhabited them within the narrow closes where they appeared - these structures tended to be passed down in a more complete state which was close to their original appearance, if only from not having benefited from investment in the repair of their fabric.

The English had no comparable survey upon which to draw, although the importance of simple vernacular buildings in the towns and countryside of the shires had been recognised by bodies such as the Society for the Protection of Ancient Buildings, founded by William Morris in 1877. Its members made the case for cherishing the authenticity of historic buildings, campaigning vigorously against their destruction or from the damage caused by over-zealous restoration. A return to studying the rich vernacular traditions of design, building detail, and local materials, became the hallmark of contemporary architects in the south practising in what was termed the liberating 'Free Style' school, among whom Norman Shaw (1831-1912) had been a leading influence. Mackintosh professed to admire their work, and elements lifted from their projects can be traced in his early projects, as has been shown convincingly by Robert Macleod[7], David Walker[8] and James Macaulay[9].

To what extent might Charles Rennie Mackintosh's outpourings, in the form of the public lectures he gave during the 1890s, provide an insight into his mature architectural work in the years ahead? Most probably, the lectures had been illustrated by sketches in his own hand, and the first of them, '*Scotch Baronial Architecture'*, was delivered enthusiastically to his audience at the Glasgow Architectural Association in February 1891 when he was aged 22, and still relatively inexperienced. It is clear that, despite the fact that he had not mentioned MacGibbon & Ross by name, his paper was based on a rational analysis of the first set of the three volumes to have been published by that date. From the manuscript that has survived it can be seen that he delivered it with unbridled enthusiasm for the subject, and that the language was couched in overtly nationalistic tones. Surprisingly perhaps, given his choice of subject neither did he make any reference at any stage to Robert Billings. The passion with which he addressed the subject is captured in the following which, as in the other extracts that are reproduced here, maintain the lecturer's shorthand style of note taking. In attempting to define the pleasures to be had of visiting and recording historic buildings in the locality, he maintained that:

…. this is a very different feeling from that deep and filial affection which many a youth untaught in art but gifted by nature with a perception for its beauties, has entertained from his tenderest / years towards the old castle of his neighbourhood or that irrisistable attraction which compels many members of this association to visit the various castles & palaces in this country, not only under the balmy influences of summer, but along muddy roads and snowy path, and with glowing heart but shivering hand to sketch the humble cottage the more pretentious mantion or the mutilated though venerable castle with feelings of the most indescribable delight.[10]

In listing five intrinsic claims of 'Scotch Baronial Architecture' as the national style of architecture to merit attention, the first he chose to elaborate upon was the concept of 'abstract beauty'. In the buildings he was illustrating he saw this characteristic being 'equally at home in the humble cottage as and in the mighty Castle.' He also drew the attention of his audience to the manner in which windows were treated, which he saw as 'an endless tresury of architecturel loviliness'[11]. The freedom and boldness of design which resulted from the grouping of architectural forms were perceived as a virtue and, he added:



Fiddes Castle, Kincardineshire, exemplifies the sort of structure identified by Mackintosh in his lecture 'Scotch Baronial Architecture' (1891), imbued with 'abstract beauty' and offering limitless solutions to complex design problems, from MacGibbon & Ross Vol II, pp142-4

Time would fail me to tell of the wonderful manner in which our style shapes itself to every accidental requirement: grapples with every difficulty and converts it into a source of beauty disdains, on the one hand, all artificially effected symmetry, nor, on the other fears to submit to the most rigid uniformity.[12]

He ended his lecture on a positive, if somewhat tantalising note because he provides us with no insight into whose work it was to which he was referring:

From some recent buildings which have been erected it is clearly evident that this style is coming to life again and I only hope that it will not be strangled in its infancy by indiscriminating / and unsympathetic people who copy the ancient examples without trying to make the style conform to modern requirements.[13]

Given that so little had been built by that time, it has been widely held that he was referring obliquely to the work of James Marjoribanks MacLaren (1853-90) and of his successors, Dunn and Findlay, for the works they had completed only recently in Perthshire. This association will be explored further in this study.

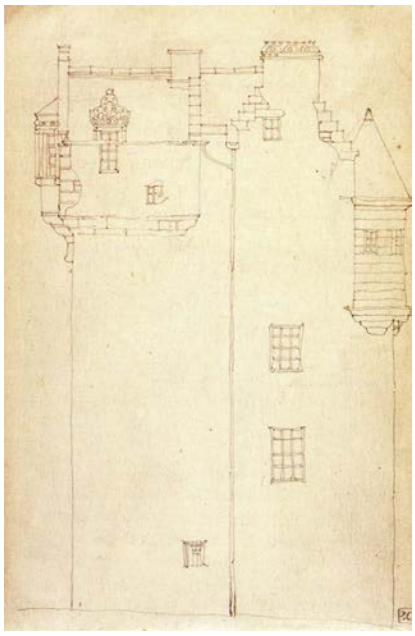
As David Walker has indicated, that Mackintosh was invited to give further lectures on architecture, most probably during 1892, and again in February 1893, provides a measure of the extent to which he was becoming highly regarded on the Glasgow architectural scene[14]. The first of these two lectures was given no title, but was on the general subject of architecture. The lecture notes provide an insight into the extent to which his thinking had been influenced by the writings of WR Lethaby (1857-1931) and, to a lesser extent, the recently deceased JD Sedding (1838-91). Not unlike the first of the lectures given in 1891, which in many respects paraphrased the work of MacGibbon & Ross, here it was Lethaby's first book *Architecture, Mysticism and Myth,* published in 1892, which was being reinterpreted[15]. The lectures were to a large extent a test bed for Mackintosh to work through sets of principles, as though he was promoting the latest current thinking in the pursuit of better standards of architecture[16]. His affiliation to Lethaby was to be of potential value a few years later – indeed, it was to Lethaby that Muthesius turned first when he embarked upon his purpose to explore current practice in British domestic architecture. Unlike the first lecture delivered in 1891, neither of these lectures was to provide a reliable insight into his own work, but in the second of the two lectures, which he gave the title of 'Architecture', he was to allude to a set of names which provide direct links to Philip Webb (1831-1915) and AWN Pugin (1812-52). By rattling them off so confidently he was able to demonstrate that he was abreast of current practice in England:

And I am glad to think that now there are men such as Norman Shaw – John Bentley Mr Bodley Leonard Stokes and the late John D Sedding – names most of you will never have heard of before but for all that quite as great if not greater artists than the best living painters men who more & more are freeing themselves from correct antiquarian detail and who go streight to nature.[17]

He was addressing Lethaby's plea for modernity, using the phrase 'we must clothe modern ideas with modern dress….'[18]. It is telling that all those included in his list had been once steeped in the Gothic Revival but had moved away from what David Walker once termed 'archaeologising effusions'[19] towards a freer form of composition, creating a renewed symbolism out of the reordering of the old forms while, at the same time, maintaining continuity with the past[20]. Exactly the same might of course be said of some of the neo-Scottish houses for Glasgow's successful businessmen that graced the leafy suburbs of Kilmacolm and Helensburgh at the end of the decade, where Mackintosh was later to make his mark.

The man with no convictions – no ideals in art, - no desire to do something personal something his own, no longing to do something that will leave the world richer his fellows happier is no artist The artist who sinks his personal convictions – who lives not up to his ideals is no man

The only true modern individual art in proportion in form and in colour, is produced by an emotion, produced by a frank and intelligent understanding of the absolute and true requirements of a building or an object - a scientific knowledge of the possibilities and beauties of material, - a fearless application of emotion and knowledge a cultured intelligence and a mind artistic yet not too indolent to / attempt the solution of these problems which have not before arisen – not too indolent to attempt the task of clothing in grace and beauty the new forms and conditions that modern developments of life – social – commercial and religious insist upon – *Charles Rennie Mackintosh: 'Seemliness'* (1902)[21]



Maybole Castle, Ayrshire (1895), drawn skilfully by Mackintosh as a true elevation, provides an indication of where the harled surfaces have decayed and weathered back to reveal the underlying masonry, with the detail of the decorative carved work recorded meticulously at the dormer and chimneyhead © The Hunterian Art Gallery and Museum, item ref GLAHA 53012/22

Mackintosh's last recorded public lecture is of interest for the fact that it was delivered in 1902, around the time that he would have been developing the designs for *The Hill House*. The subject on this occasion was 'Seemliness' but the precise date, and his audience, are unknown. From the lecture notes it appears to have been addressed to a gathering of people engaged in art and design education as it concerns the central position of the artist in society. This Mackintosh interpreted as being in the form of expressive individualism, through which the seeds of the demise of the Arts and Crafts Movement were sown in a society that was changing. Within the space of a few years, little place was to be found for his self-indulgences in the expression of his own art[22]. Mackintosh encourages his audience to pursue their ideals and 'shake off the props' that stifle inventiveness. There is a consistent theme running through the lecture which concerns the artist's technical mastery of the materials with which compositions are shaped, and their potential to create an order of beauty through inspired creativity. Of the artist's central role, he laid the claim that:

He must possess technical invention to create for himself suitable processes of expression – and above all he requires the aid of invention in order to transform the elements with which nature supplies him – and compose new images from them.

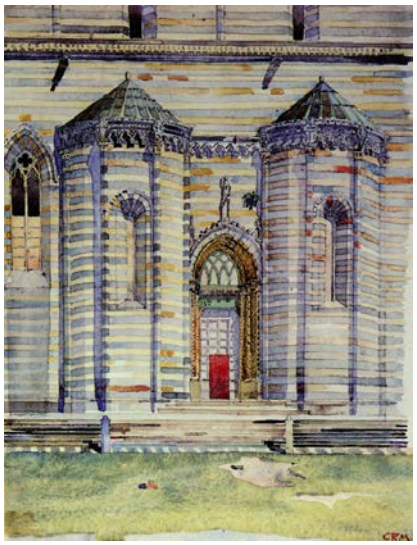
The closing words of the lecture pick up on the same theme:

…. and it is only then that artists will thoroughly understand and appreciate the possible application and beauty of each material he is called upon to handle. – that all the varied problems and materials the world has to offer will be understood – and thoroughly valued because of the artistic possibilities that is in them.[23]

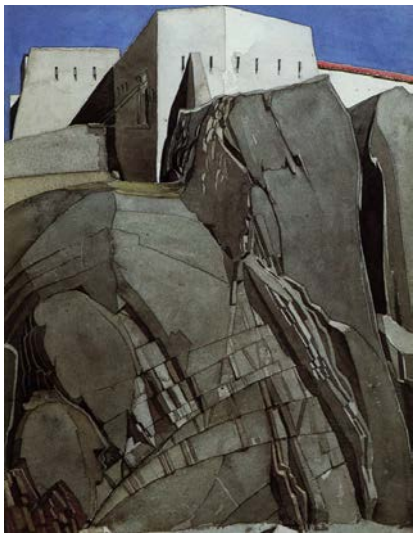
During his formative years, the other source providing an insight into Mackintosh's inner thoughts and predilections are his sketchbooks, to which he would return in later life as they were a constant source for inspiration in his work. The quality of his sketching had been recognised at an early date in his career and was rewarded by the Alexander (Greek) Thomson Travelling Scholarship to Italy in 1890, which he pursued after he had completed his articles with Honeyman's practice[24]. It would be quite wrong to imagine, however, that his avowed passion for Scotland's national architecture was such as to confine his travels to Scotland – like many young men of his generation his education was enhanced by regular forays into England, and not just to the northern counties. The charming vernacular buildings of the Cotswolds, where he went in the autumn of 1894, had been captured already in the pages of *The Builder*, and they caught his eye as a subject for his sketching prowess even more perhaps than the humble vernacular buildings of Scotland were to inspire him at this stage. He spent the next four summers in England, and was in Lyme Regis in the West Country in the following year, 1895.

In Scotland, the sketchbooks reveal a perpetual interest in recording the decorative details of the buildings of the 'old national style' – of their metalwork, gate piers, profiles of mouldings, corbelling, finials, chimneyheads, and other features and architectural embellishments. Sometimes these details would be regurgitated in his designs for buildings, but never quite literally, or in anything like the same form, for here was the fertile mind of a mannerist at work, producing ideas of unprecedented originality. Occasionally, as in the case of Maybole Castle in Ayrshire, a complete building appears as a study, and here the form of a tower-house bristling with the complexities of the decorative treatment at roof level is rendered skilfully as a true elevation with an architect's eye. Mackintosh visited the Fife burgh of Culross at some stage in the 1890s, and the historic townscape of this, which has been described as the finest surviving industrial

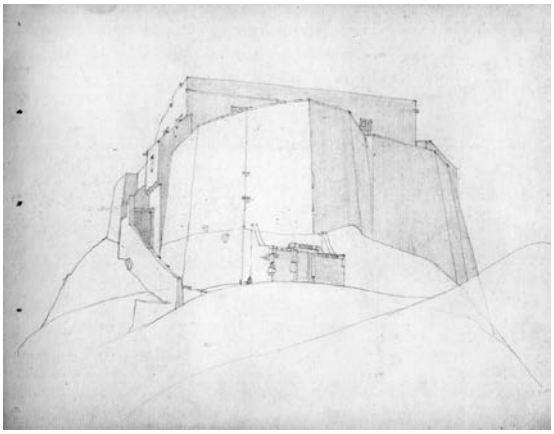
Right: an early photograph, probably of the 1860s, of the buildings at the Market Cross, Culross, where Mackintosh visited in the 1890s. The middle late sixteenth century building shows the traditional method of applying limewash to lime harling and to the stone dressings to give a flush, monolithic appearance to the face of the wall. Whisper harls consisting of a dashing coat of pure lime could be feathered against the window margins and over the face of crowsteps, a treatment no longer possible with the use of cement roughcast which had to be built up in successive coats, calling for raised margins to be detailed as an effective harling stop. © NTS



Above: Orvieto Cathedral, a watercolour of 1891 during the sketching tour of Italy
Below: watercolour of Le Fort Maillart painted while in the South of France in 1927 shows similarities to the abstraction of form conveyed in the pencil sketch of Lindisfarne Castle, right.

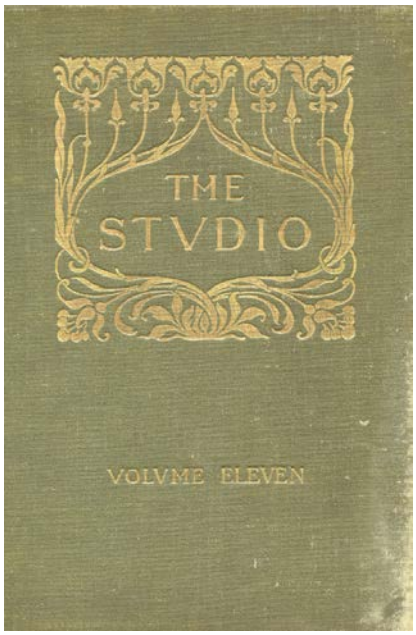


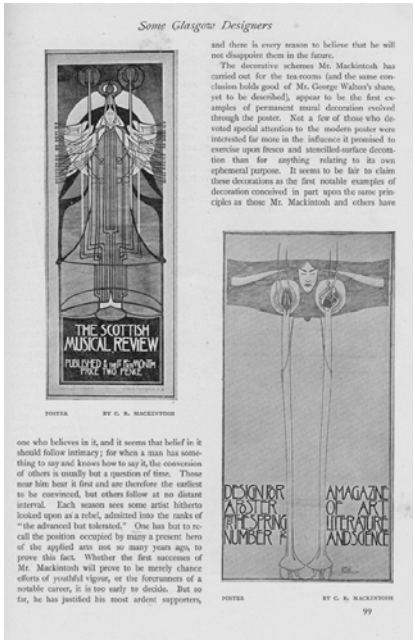
burgh in Europe[25], cannot have failed to inspire him. He might have noticed the manner in which limewashed harling coated the walls of the ancient houses, and was feathered off at crowsteps or window margins to give a seamless, flush appearance to the wall. With traditional lime harling this was achieved without reliance on the protection afforded by coping stones, or of raised sandstone margins at wall openings, crowsteps or quoins, features which were often exaggerated during the Scottish Baronial Revival. They would become the recognisable elements of a new 'national style' during the middle decades of the twentieth century when modern white-painted cementitious renders were adopted as the norm.



Left: the upper battery at Lindisfarne Castle, Holy Island is fused with the rock upon which it stands in an abstract composition in which expression of the materials has been suppressed © Hunterian Art Gallery and Museum, item ref GLAHA 41085

Mackintosh's sketchbooks are of particular interest not only for the subjects he had selected to draw, but also for the evolving style of his draughtsmanship. Many of the sketches prepared during the tour in Italy have a painterly quality, capturing a sense of realism in the subject. The pencil sketches became freer, and then more stylised, throughout the course of the 1890s. By the first years of the twentieth century, the bleak retreat of Holy Island off the Northumberland coastline became a favourite haunt of the Mackintosh circle after Charles and Margaret were married in 1900. By this time his sketches were reflecting the changes in the current architectural portfolio, with the designs having an increasing tendency towards abstraction of form and plasticity in which materials are no longer shown, other than for their textural qualities. In July 1901, Lindisfarne Castle on Holy Island stood a gaunt, uninhabited ruin before it was repaired and altered handsomely by Edwin Lutyens (1869-1944) for the publisher of *Country Life*, Edward Hudson, from 1903 onwards. In his sketch of the north





Volume Eleven (1897) of *The Studio* was crucial in promoting the work of the Glasgow designers to an international audience, placing Charles Rennie Mackintosh at their heart. There were three articles published on their work in this single volume, which also happened to include an evaluation of the projects undertaken by CFA Voysey to date.

elevation, Mackintosh suppressed the appearance and texture of the stonework, concentrating on the overall form and mass of the monument – in doing so he emphasised the building's abstract qualities, drawing it as though the walls had been harled over. It captivated him: he was to return to it again, and again, for inspiration.

The rediscovery by Scotland's younger generation of architects of the merits of buildings that belonged to the vernacular tradition, and of the associated benefits from the use of harling, happened to coincide with the development of the use of roughcast which became widespread for the new rural aesthetic of the English Arts and Crafts Movement. Indeed, it is possible that it had even been inspired by it. The lessons to be taken from studying MacGibbon & Ross's representation of Scotland's national architecture - in all its manifestations - chimed with a wider desire across Europe to seek simplification of form in design[26]. For architects such as CFA Voysey (1857-1941), whose works were published widely, this pursuit equated to a puritanical desire to achieve economy both in design and in the use of materials, a characteristic lauded in Volume Eleven of *The Studio*, captured in the following key words in an article on the architect's work to date (1897):

For there is a stateliness of a sort in absence of decoration …… that all mere ornament is to be viewed with suspicion, and that even Owen Jones' advice "decorate your construction, do not construct your decoration " still holds a greater truth – that, given the right artist, the construction may be in itself sufficiently beautiful to require no additional adornment. Seek first construction, and whether the rest be added unto it or not, the result will be not often unsatisfactory.[27]

Such advice would not have been lost on Mackintosh when shortly he was invited to undertake the domestic commissions of *Windyhill* and *The Hill House*.

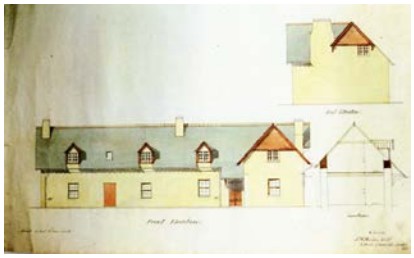
Mackintosh's knowledge of current practice in England was heightened by the growing number of publications and journals which covered the architecture and design scene in the 1890s. Some aspiring young architects courted the journals as an effective mouthpiece for their work and, while others were less interested in the accolades that came with publication, their work was published for its interest alone. Unquestionably this was to have a major influence on Mackintosh during his formative years. His own work, and that of his practice, had been well covered in successive editions of *Academy Architecture* during the 1890s[28]. The work of 'The Four' – Charles Rennie Mackintosh, Margaret Macdonald, Frances Macdonald and Herbert McNair – had also gained a following in the influential *The Studio* magazine, and in the same Volume Eleven as that in which the works of Voysey were charted, there were three separate articles on the Glasgow designers, focusing upon their work in the decorative arts field and in furniture design. After the editor of the magazine, Gleeson White, died in 1898, interest in their work in Britain ceased altogether. White was aware that he had a difficult path upon which to tread following the outright condemnation of the work of 'The Four' for its perceived excesses at the London Arts and Crafts Exhibition in the previous year, 1896, when the Glasgow designers were branded on the side of 'The Aesthetes'[29]. *The Studio* maintained its faith in Mackintosh's abilities, despite the harsh criticism that had been levied. Of the posters appearing at the exhibition, White wrote:

But there is so much decorative method in his perversion of humanity, that despite all the ridicule and abuse it has excited, after long intimacy it is possible to defend his treatment.

Acknowledging that his approach was intensely personal, and therefore not capable always of being adopted by others, he added:

… for when a man has something to say and knows how to say it, the conversion of others is usually but a question of time. Those near him hear it first and are therefore the earliest to be convinced, but others follow at no distant interval. Each season sees some artist hitherto looked upon as a rebel, admitted into the ranks of "the advanced but tolerated." ……. Whether the first successes of Mr. Mackintosh will prove to be merely chance efforts of youthful vigour, or the forerunners of a notable career, it is too early to decide. But so far, he has justified his most ardent supporters, and there is every reason to believe that he will not disappoint them in the future.[30]

Given the rejection they faced in England, it may seem, therefore, a curious paradox that their work was so warmly embraced in Europe at the end of the decade, and in particular in Vienna, where the Sezessionist movement was in full swing. After an article in *Dekorative Kunst* had been published in 1898, 'The Four', hungry for publicity, exhibited at the 1900 Vienna Sezession, and again in 1902 at the Turin International Exhibition. The Darmstadt competition to which Mackintosh was invited to submit an entry took place in 1901. Thereafter the name of the architect, and by association, the work of 'The Four', was revived by Hermann Muthesius, with whom Mackintosh had worked closely over the preparation of his seminal publication. It appears that they remained in constant touch with one another.



Top: an early project by James MacLaren for Sir Donald Currie at Fortingall: Policeman's Cottage block (1886), a design of simple vernacular forms and materials, with the walls shown harled (from Calder, Plate VIII)
Above: revised elevations prepared for Glenlyon Farmhouse (James MacLaren, 1889) (from Calder, Plate XVI)

It is largely through the publications of the 1890s that Mackintosh knew of the work of his contemporaries. While, perhaps in a bout of one-upmanship in the company of his Glasgow colleagues when he rattled off the list of eminent practitioners in England during his 1893 lecture, as noted above the unspecific reference to stirrings in the revival of Scotland's national architecture could only relate to the work of James MacLaren and of his successor practice, Dunn and Findlay. While it has not been established whether Mackintosh had actually seen the estate buildings designed by MacLaren for Sir Donald Currie at Fortingall in Perthshire, it would seem that he took an interest in the architect's work and at one stage he sketched MacLaren's High School in Stirling, a project completed in 1889. Even if he had never visited Perthshire he would have known of the architect's work through the pages of *The Architect* where the Fortingall projects had appeared in 1891 and 1892[31] .

An anchor for those architects leaving Scotland to practise in London had been Glasgow-born JJ Stevenson (1831-1908), for whom MacLaren had worked. Stevenson was openly critical of the wilder excesses of borrowing from Scottish Baronialism which, he considered, 'exaggerated the peculiarities of the old national style'[32]. In his book *House Architecture*, published in 1880, he was an early advocate of the vernacular revival style, and identified its suitability for new houses:

The old Scotch style, when such extravagances are avoided, is well fitted for modern houses. Its details and forms are classic, its use involves no necessity of changing the existing habits of the inmates, or the workmen's methods of building ….. in the Scotch style, mullions and narrow windows were not essential and sliding sash windows could still be used.[33]

MacLaren was elected a member of the Art Worker's Guild in 1886, following Voysey who was one of the Guild's first members when it was founded in 1884. Set up by Norman Shaw (1831-1912) it was an organisation with links that could be traced back to two key revivalists of English vernacular architecture, George Devey (1820-1886) and Philip Webb (1831-

Top: Penshurst Place, Kent, picturesque buildings from the 1850s by George Devey, influenced by his tutelage under the watercolourist John Sell Cotman (from Peter Davey, p22[34])
Above: cottages at Kirkton, Fortingall, photographed in 1891 (from Calder, p114)

1915). MacLaren's clients at Fortingall had employed Devey previously[35]. This architect's name appears prominently also in Voysey's early career as the young architect had served his apprenticeship in Devey's office when he decided to take up the profession. Philip Webb was a pioneer of whom Lethaby would state that he would begin the design process by studying the materials of the area, and by ensuring that the setting of the resulting building was in harmony with the surrounding landscape. Both architects embraced and promoted regionalism, and Devey's groundbreaking work at Penshurst was certainly known to MacLaren's office in Scotland[36].

MacLaren's work at Fortingall is inventive in the use of architectural detail, and in its form-making which shows an awareness of vernacular buildings. It is also innovative from the use of harling, as all of his buildings from the period from 1886 onwards are given limewashed harled surfaces to considerable effect, suggesting an awareness of the English Free Style in the way in which the elements of the composition are drawn together. While in some respects the larger of these structures - Glenlyon House and the hotel at Fortingall - are conventional in appearance, the farm cottages carry the hallmarks of an emerging progressive Arts and Crafts style in England, having broad battered chimneys, long horizontal windows with leaded casement windows and catslide dormers set among the (conspicuously English) reed-thatched roofs inspired by the revival of the craft traditions of the Art Worker's Guild. As Alan Calder, MacLaren's biographer, has observed, for the design of the Glenlyon Farmhouse the architect was adopting a more innovative approach, and a consciously more contemporary idiom resulted. The detailing of the architectural embellishments is adventurous, and is likely to have appealed to Mackintosh. Indeed, it may have influenced his own idiosyncratic form-making a decade or so later[37] and traces of it are to be found in the design for *Windyhill*.

Above: Pentland Cottage, one of a series of houses designed in the mid-1890s in the 'Colinton Manner' by Robert Lorimer (from Savage, p32)

MacLaren may not have been quite the first architect at work in Scotland reviving the tradition of harled surfaces in the closing decades of the nineteenth century, but his projects were certainly influential, and may have been yet more so had he not died so young. Robert Lorimer (1864-1929) had worked for MacLaren for a year or so in 1890 and was quick to adopt harling as an expressive material once he had set up in practice on his own account in 1891. Several of his projects were published by *The Builder* from 1895 onwards[38] to the critical acclaim of what the magazine editor was to refer to as 'the more artistic section of architects'[39]. Lorimer had also been the site architect for the extension to the Place of Tilliefour in Aberdeenshire executed in 1885-6 by the practice Wardrop, Anderson & Browne which, in the use of traditional harled surfaces, predates MacLaren's work at Fortingall[40].

Stewart Henbest Capper (1860-1924) was yet another young architect to emerge on the scene to embrace the use of the material, which he used to very good effect at Patrick Geddes's University Hall complex at Ramsay Garden (1892). He also used the material for another University Hall, the triple-gabled infill development at 453-61 Lawnmarket, completed in the same year. Both were prominent buildings within Edinburgh's historic townscape, with extensive areas of walling covered in roughcast. After Capper had left for Canada on grounds of poor health, the second and third phases of Ramsay Garden were undertaken by Sydney Mitchell, and he, too, was an early convert to the style, having built a harled villa in the Edinburgh suburbs, also in 1892[41]. Early photographs taken of the buildings at Ramsay Garden suggest that the harling could have been either a tan colour, or even self-coloured cement, perhaps not unlike one of Voysey's earliest houses (see page 17). Edinburgh's sooty grime soon discoloured the surfaces, and

Top: Phase I of Ramsay Garden (1892), erected as a University Hall for Patrick Geddes, showing the harled exterior in its original state before being decorated in a cream colour, photographed c1910. The apartment below the attic storey is in the care of the NTS
© RCAHMS
Above: one of CFA Voysey's earliest designs: *The Cottage* at Bishop's Itchington (1888), distinguished by self-coloured cement roughcast and minimal detailing to the chimney copes (from Hitchmough, p34)

this may have prompted the later decision to paint the harling in the contrasting bright finish which made the block considerably more visible on its elevated site next to the castle esplanade from where it overlooks the New Town. The opportunity for Charles Rennie Mackintosh to use harled surfaces in a simple composition of vernacular rusticity, and with honesty of expression, arrived with the small inn at Lennoxtown, near Glasgow, which was remodelled in 1895 (page 30). The building is no longer standing[42].

As fast as the young generation of Scottish architects were turning to a revival of vernacular building in the 1890s, a parallel exercise was already underway in England which may well have influenced the rapidity with which the new style was taken up in other parts of the United Kingdom. Central to this was the figure of Voysey, who had been experimenting with limewashed cementitious roughcast finishes for rural dwellings from the late 1880s. As mentioned above, Voysey had joined the office of George Devey as an apprentice, and it is quite possible that his attraction to the use of white roughcast and its attractive weathering qualities can be attributed directly to his mentor. Devey had used the finish for cottages at Penshurst in Kent in the 1850s, where they would often be photographed in later years as 'old buildings'[43] (page 16). Voysey's design for the *The Cottage* at Bishop's Itchington in Warwickshire was published in *The British Architect* at the end of 1888. The benefits of using cement-based roughcast on this dwelling house were twofold: firstly, to achieve economies in the construction of the external walls and, secondly, to promote the use and capabilities of Portland cement. The architect's client, Sir Michael Lakin, had been a cement manufacturer (his product became eventually part of Blue Circle Cement as a consequence of an amalgamation of twenty-four companies in 1900, Britain's largest manufacturer of bulk cement in the twentieth century). The style which evolved from this, and which Voysey used so successfully in his later commissions, was for the roughcast to be limewashed but at *The Cottage* it was left an unpainted natural grey colour[44], and seemingly without stone copes at the chimneyheads, anticipating what Mackintosh set out to do at *The Hill House* some years later. Unlike most of his later houses, chimney pots seem to have been designed out. A hint of Voysey's mature style emerged with the new house at Walnut Tree Farm which, while retaining half-timbered gables, exploited the use of limewashed roughcast external walls shaping deep recesses. *Perrycroft*, at Malvern in Worcestershire (1893), marked the beginning of his mature phase with well-defined horizontal lines from strips of windows, wide bracketed overhanging eaves, and broad tapered chimneys. In his external elevations and house plans Voysey fought against *Beaux Arts* symmetrical composition at almost every turn, and his designs were always informal. Henry-Russell Hitchcock saw him as a 'reformer', but not as an 'innovator'[45].

Voysey's work was widely admired, and not only in Britain. This was largely as a consequence of articles on his work appearing in *The Studio* magazine throughout the 1890s. Among his staunchest supporters was Hermann Muthesius who promoted his work in *Das englische Haus*. Mackintosh had been an admirer, a fact that was established by John Betjeman in discussion some many years later with his teacher at the Glasgow School of Art, Francis ('Fra') Newbery. However, the admiration was not reciprocated as Voysey professed to have an ingrained loathing of Mackintosh's style[46]. Muthesius, with considerable perception, was able to summarise the differences between the two distinct camps at work in Glasgow and London, while highlighting the similarities at the same time:

Yet the essence of the art of the Glasgow group in fact rests in an underlying emotional and poetical quality. It seeks a highly charged artistic atmosphere or more specifically an atmosphere of a mystical, symbolic kind. One cannot imagine a greater

A medley of Voysey house designs, mid-1890s (from Hitchmough p70)

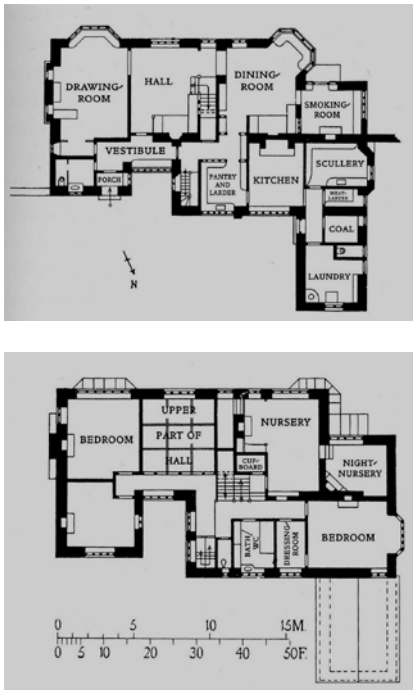
contrast in this respect that that between the London architects working in the new forms, the most sedulous of whom is Voysey, and the Scottish architects round Mackintosh. The former seek extreme plainness in which imagination is suppressed, the latter are virtually governed and led by the imagination. Common to both, however, is a strictly tectonic underlying factor that holds qualities of material and construction sacred and in this respect never descends to the unnatural and artificial.[47]

In this context, it is no accident that Muthesius should introduce the work of the Scottish architects through MH Baillie Scott (1865-1945) at a time when his work was at its most inspired. Muthiesius lauded him as being among 'the purely northern poets among British architects'[48]. While, on the one hand, Muthesius may have been referring to the fact that, until recently, Baillie Scott had been practising on the Isle of Man before returning to England (where he settled in Bedford), on the other hand he considered his sensibilities to be closely aligned with the Glasgow group led by Charles Rennie Mackintosh. Here was yet another architect deeply indebted to Voysey. Baillie Scott was also a highly effective publicist whose accomplishments were, like Voysey, rarely out of the pages of *The Studio.* By Volume Four of the magazine he had become one of a very few regular architectural contributors thus reaching a large audience at home and abroad[49], and his seductive illustrations and writing would have been familiar to Mackintosh and his group. Like 'The Four', Baillie Scott's work at this time was highly esteemed in Germany where from as early as 1897 the architect had been promoted by Hermann Muthesius. The planning of Baillie Scott's interiors was yet freer and more imaginative than Voysey's. He demonstrated always a finely honed understanding of craft traditions, characteristics that he expounded in his book, *Houses and Gardens,* published in 1906[50]. He and Mackintosh vied for the prizes for the 1901 Art-Lover's House competition (*Haus eines Kunstfruendes*) at Darmstadt, with Mackintosh having been disqualified on account of having submitted an incomplete entry. The committee stopped short of awarding Baillie Scott first prize, giving him the second prize instead as the principal elevation (unusually for this architect, a perfectly symmetrical composition) was not deemed quite 'to be in the modern spirit'[51].

The original double-height hall at *The White House* (from Muthesius, Vol III, p173)

The White House, Helensburgh, MH Baillie Scott (1899), shown in its original state (from Muthesius, Vol II, p129)

The White House in 2011, with repairs to the roughcast and replacement of stonework at windows underway: with the loss of the double height hall the fenestration has changed and the central chimneyhead has been removed. (Photo: author)



Ground and First Floor plans of *The White House* (from Muthesius, Vol II, p129

The influence of Baillie Scott on Mackintosh cannot be overstated and, indeed, James Macaulay has considered that his influence had been greater even than that of Voysey[52]. This possibility is all the more likely on account of him having been commissioned to design *The White House* in 1899, located on the same street in Helensburgh as *The Hill House,* and completed only a couple of years before Mackintosh commenced on the designs for Walter Blackie's house. With his finely attuned awareness of the current architectural scene Mackintosh could not have failed to be aware of it. The house as originally built incorporated a double-height hall, an inglenook fireplace to the drawing room, and exposed beams to the principal rooms of the ground floor, all trademarks of his house designs. With its calculated asymmetry, and through the device of the bands of horizontal windows of leaded lights set deep within stone surrounds which were set flush with the harled wall surfaces, it reveals an obvious indebtedness to Voysey. With an unusually large rounded aggregate, probably beach pebbles, the white painted cement roughcast follows the English tradition for pebble-dash rather than the Scottish practice, providing an attractive texture to the surfaces of the walls. Here, too, chimneyheads were given battered profiles for which the forerunners can be seen in the pioneering work of MacLaren and Voysey. Externally, the house seems to have been stripped of all historical references and the red tiled roof is a departure from the norm. While this may be seen to reflect English practice, perhaps curiously, it also reflected the view of the Glasgow London-based Scot, JJ Stevenson, who advocated red tiled roofs because of a concern about the dull colour of Scottish slate roofs. Stevenson may have influenced Sydney Mitchell in the choice of this material for the roofs of Well Court in Edinburgh (1884).

Baillie Scott and Voysey reached the zenith of their respective careers at around the same time, perhaps best demonstrated by two well publicised and highly influential houses overlooking the shores of Lake Windermere. They were completed for wealthy industrialists in the same year, 1898. Baillie Scott had designed the triple-gabled *Blackwell*, and Voysey the triple bow-fronted *Broadleys*. After the publication of his book in 1906, Baillie Scott's work arguably lost some of its originality, and the architect became increasingly conservative in outlook[53].

Of his contemporaries in Scotland, it is clear that Mackintosh and his colleagues in Glasgow had great admiration for the work of Robert Lorimer. This admiration may have been based on an awareness of the fact that Lorimer had worked in the office of GF Bodley (1827-1907) - one of Mackintosh's professed heroes, whom he identified in his lecture back in 1893. Muthesius rounded up his account of the scene in Scotland by focusing on Lorimer's work, noting in particular his unpretentious use of the vernacular, believing that this held the key to the future:

Scotland will not achieve what England has already achieved - a completely national style of house-building based on the old vernacular architecture – until it follows the lead of Lorimer.[54]

Muthesius identified that Lorimer had been the first to recognise the 'honest plainness and simple, almost rugged massiveness' of the national style, qualities that he might have applied equally when describing Mackintosh's *Windyhill* or *The Hill House*, both projects being covered in his book. Neither did he give any recognition of MacLaren's pioneering work in Perthshire, of which Muthesius seemed blissfully unaware, although his book was focused primarily on the work of living designers with whom he had struck up a working relationship. In reaching such a conclusion about Lorimer he may have been aware of the fact that he was one of only two disciples in Scotland of the Arts and Crafts Movement, a connection to which he made reference when introducing the architect's work[55].

Design by Robert Lorimer for a harled house for Lord Trayner at North Berwick, 1893 (from Savage, p17

Tankerness House, Kirkwall, which inspired Mackintosh on a sketching tour of Orkney 1890s (from MacGibbon & Ross, Vol V, p94)

Lorimer had used harling as a finish for the external walls of his houses almost from the moment he returned to Scotland. Before he began designing in what Peter Savage has termed the 'Colinton Manner'[56], he had completed in 1893 'The Grange', a large house with white harled walls in North Berwick for Lord Trayner. It displayed some of the features of MacLaren's work (Lorimer had worked for MacLaren's office for around a year or so during 1890 when returning to Scotland[57]), with battered profiles to some of the chimneyheads and crowstepped gables. But it was the colony of unpretentious suburban houses designed by Lorimer at Colinton that marked out the extent to which the architect was reviving the old Scottish vernacular, both in the simplicity of the forms he adopted and in the use of materials. Most of the cottage designs made a virtue of changing wall planes in the elevations and, while this had been present in Voysey's contemporary houses in a more exaggerated form, here the source of inspiration was well founded in the vernacular tradition and was to reappear in Mackintosh's later domestic work. Mackintosh confirmed his admiration for Lorimer in a letter to Muthesius as *The Hill House* was edging towards its delayed completion. He wrote of him, in a relaxed manner:

We hope Mr Lorimer will come and see us some time, when he is in Glasgow. We consider him the best Domestic Architect in Scotland and admire his work very much.

Melsetter House, Hoy, WR Lethaby (1898)
(Photo: author)

Has he given you something for your book? You mentioned that you had not heard from him. I hope he has.[58]

One final matter perhaps needs to be raised on the question of influences on Mackintosh's domestic architecture – given the extent to which he had embraced Lethaby's writing in the early 1890s, could he have ventured north to Orkney to take in a visit to Melsetter House on remote Hoy? Built for a Birmingham industrialist, and largely completed by 1898, the house was given white harled walls and brown sandstone dressings, with an interior described by John Gifford as being 'expressive of the simple life based on high ideals and cushioned by financial security'[59], a description that might apply equally for the interiors of *The Hill House*. Had he managed to visit, the house would have had made a definite impression upon him even though that may not have shown immediately in the emerging house designs from 1899 onwards. It is known that Mackintosh had been sketching in Kirkwall in the late 1890s and also, while there, he sketched the elevation and studied the plan of the courtyard of Tankerness House[60].

1.3 Developments in building technology: a false dawn?

In the previous chapter the degree to which the craft of roughcasting, pebble-dashing and harling had been exploited by the architects of the Arts and Crafts Movement has been set out, and how the use of this material came to be associated - at least in domestic architecture - with a revival of vernacular building. Its use had become commonplace by the early 1890s in England and Scotland simultaneously. Given the context in which there had been a conscious return to traditional building techniques with the revival of craft skills, it may seem, at first sight, surprising that the specification for the materials making up the wall coatings should be so modern in outlook, involving the novel use of Portland cement instead of lime which had been used successfully for centuries. This trend may seem, at first sight, paradoxical. It had been observed by Muthesius, who wrote:

> There are also, more general fashions, and one of these is the current love of rendering walls in roughcast, or pebble-dash. This type of rendering is used almost exclusively by a whole series of architects, including Voysey, Baillie Scott and Walter Cave. Indeed, so widespread is its use that one might almost conclude that the pebble-dash wall of the present generation is in the process of supplanting the brick wall of its predecessor. As with all external rendering in England, cement is used, a trowel being used to throw small pebbles on to the render before it has dried. The wall is then painted white. This technique has the advantage that the wall can be repainted from time to time, allowing the house to retain a neat and tidy appearance. Herein lies its justification, although there is, of course, another aspect, namely, that a less costly or at least less prepossessing material can be used beneath the render.

Sample of walling from Baillie Scott's *The White House* shows successive layers of limewash and possibly other decorative coatings; where this has peeled off the original surface of the wetdash roughcast appears (Photo: author)

Muthesius was doing little other than recording what most architects in the field knew already – articles in *The Studio* describing Voysey's work had already identified how the use of roughcast influenced the architect's style in the design of domestic architecture[61]. It may be remembered that one of Voysey's first commissions had been for a cement manufacturer, and so it would have been expected that the house might exploit and promote the use of the material (page 17). However, the advantages of using it were not just in terms of performance – at a time when brick cavity walls were being introduced in the closing decades of the nineteenth century, Voysey would claim that an advantage of specifying a cementitious roughcast finish would be that the walls could remain solid and of 9" thickness, making a considerable saving in the economies of construction[62]. Despite the specification of Portland cement in the mix, wall surfaces were normally coated in limewash, a recipe followed by most architects at this time. Baillie Scott had used a similar specification at *The White House* at Helensburgh, where each of the coats of the roughcast is clearly cementitious, although applied directly to red sandstone rather than brick, one of the feuing conditions laid down by the superiors, the Colquhouns of Luss. Whereas Voysey was seen as a pioneer in the use of this material, in Scotland its popular revival may be attributed fairly to James MacLaren as has been noted in the previous section. Voysey provided the following specification for his house in the Lake District, *Broadleys* (1898), over which it would seem that he may have been given assistance in its preparation by the cement manufacturer, Graves, Bull & Lakin of Paddington (Lakin, it will be recalled, had been his client for the house he built at Bishop's Itchington in 1888). The roughcast was to be in two coats:

> … with well washed gravel or stone chips finished to a very rough surface with pebble or stone chips as approved; the last coat to be mixed pebbles or stone chips and cement mixed together and applied with a spoon while the second coat is soft. The first coat to be scored over to provide a key for the second coat.[63]

Unfortunately the ratio of the mix of cement and sand was not provided, but the care with which the architect specified the textured appearance of the roughcast becomes immediately apparent (page 110). Baillie Scott's specification for *The White House* could only have been similar to this.

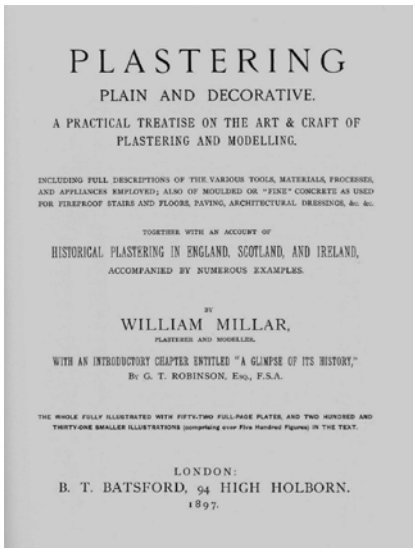
Baillie Scott's Falcon Cliff Terrace, Douglas, Isle of Man (1897-8) (from Haigh, p53)

MacLaren and, later, Robert Lorimer, were to use harling as a rough textured coating, contrasting with dressings of sandsto applied to the margins of crowsteps at gables, or rybats at window and door openings. At Colinton, Lorimer simplified the conventional detailing further, leaving out the sandstone dressings at the window openings and stopping the harling against simple tiled verges which gave the houses a truly modern appearance (page 16). Neither architect, however, exploited the material fully for what it might do, and a forerunner of the work of Charles Rennie Mackintosh, at least in this respect, can be found in Baillie Scott's work on the Isle of Man where he had moved to practise in 1889, and where he remained for a period of around four years. After he had moved away from the island a terrace of houses was erected to his design on Falcon Cliff Terrace in the island's capital, Douglas, in 1897-8, in which he dispensed with the use of stone cills to the majority of the windows. Window openings were formed with rounded profiles in the roughcast finish to both the cills and the jambs, while the front boundary wall with the plain gate piers has also a rounded cope, finished in roughcast. Chimneyheads, however, were left devoid of roughcast and were built of brick. It is not known for certain if Mackintosh had been aware of this level of innovation in the use of cement roughcast, or whether this terrace of houses had appeared in any of the journals of the 1890s with Baillie Scott's other projects, but this seems unlikely.

The discovery of Portland cement is attributed to a Leeds bricklayer, Joseph Aspdin, to whom a patent was granted in 1824. It was his son, William, who improved the production process and by the time he left for Germany in 1848 he was already manufacturing powdered cement with enhanced setting qualities. Aspdin's original purpose was to manufacture an improved artificial stone, and the name he gave to the material was conjured up from a mistaken belief that the material, when ground down into a powder, resembled the appearance of Portland stone. The setting qualities of Portland cement, and its great strength, out-performed the range of natural cements which had been developed since the end of the eighteenth century to the extent that, by the fourth quarter of the nineteenth century, it had infiltrated the construction industry. Prior to that, its principal use had been in large-scale civil engineering works, such as the building of piers and harbours. The material was particularly well suited to building in concrete[64].

Late nineteenth century Caithness ashlared render in early Portland cement, with the surface enlivened through the use of broken seashells (Photo: author)

From as early as the 1850s in the more remote parts of Scotland Portland cement was preferred over lime due to the difficulties of securing reliable building limes[65]. Sources of limestone were not always available in the locality, and lime could normally only be obtained in bulk by importing barrels of the material through the many harbours of the coastline, but even then it was considerably cheaper to use than cement. The prime reason for rejecting lime was because of the uncertainties surrounding the setting time for hydraulic mortars in exposed locations where the weather could be inclement for days, or even weeks, at a time. As Thomas Telford knew only too well during the first decades of the nineteenth century, in the far north and west the building season was relatively short. By the 1870s, Portland cement was used commonly in Stornoway for renders, and by the following decade this use of the material had extended throughout Caithness also. Ashlared renders (lined out to resemble stone) were applied to the indigenous masonry of gneiss and flagstone respectively to give an improved



PLASTERING

PLAIN AND DECORATIVE.

A PRACTICAL TREATISE ON THE ART & CRAFT OF PLASTERING AND MODELLING.

INCLUDING FULL DESCRIPTIONS OF THE VARIOUS TOOLS, MATERIALS, PROCESSES, AND APPLIANCES EMPLOYED; ALSO OF MOULDED OR "FINE" CONCRETE AS USED FOR FIREPROOF STAIRS AND FLOORS, PAVING, ARCHITECTURAL DRESSINGS, &c. &c.

TOGETHER WITH AN ACCOUNT OF

HISTORICAL PLASTERING IN ENGLAND, SCOTLAND, AND IRELAND, ACCOMPANIED BY NUMEROUS EXAMPLES.

BY

WILLIAM MILLAR,

PLASTERER AND MODELLER,

WITH AN INTRODUCTORY CHAPTER ENTITLED "A GLIMPSE OF ITS HISTORY," BY G. T. ROBINSON, ESQ., F.S.A.

THE WHOLE FULLY ILLUSTRATED WITH FIFTY-TWO FULL-PAGE PLATES, AND TWO HUNDRED AND THIRTY-ONE SMALLER ILLUSTRATIONS (comprising over Five Hundred Figures) IN THE TEXT.

LONDON:
B. T. BATSFORD, 94 HIGH HOLBORN.
1897.

Top: title page of William Millar's *Plastering Plain and Decorative* (1897)
Above: façade, run mouldings and castings in coloured early Portland cement in an Arts and Crafts house erected in Stornoway (1908) designed by John F Matthew, who later became a partner in Robert Lorimer's practice; the cement work has been carried out in accordance with the principles laid down in Millar's treatise (Photo: author)

decorative finish to the principal elevations of buildings. The skills required to work the material were developed into a fine art, and were covered at length by the celebrated Scottish plasterer William Millar in his seminal work *Plastering Plain and Decorative*, published in 1897. Millar noted the increase in manufacturing output from 1850 (when four factories were understood to be in production, manufacturing around 70,000 tons), to the end of the century when as many as forty factories in the United Kingdom were producing around 2,000,000 tons, the largest output at that time anywhere in the world[66]. Of the superior performance of this material in almost every respect Millar was in no absolutely no doubt:

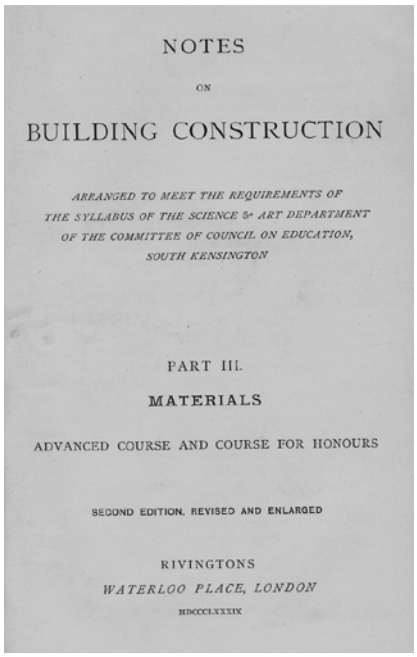
> Although stone and red brick fronts are now the fashion, the utility of Portland cement must again be recognised by the architect, both for new fronts and encasing old stone and brick work. It is certainly more damp-resisting than either stone or brick, and it can be coloured to any desired tint, or enriched by carved cement work as well as cast, thus avoiding repetition.

He added:

> Portland cement has no rival positively as a structural material for most building purposes. It is unrivalled for external plastering. Its strength, tenacity, and adhesive power give support to a wall, instead of a dead weight having to be carried. It is absolutely the best material for resisting vermin, damp, and fire. In fact, of all mortars or cements that have been used for plastering the exterior surfaces of buildings, Portland cement is unquestionably the best plaster material produced in this century or any other. No other material, whether used monolithically or as a casing for stone and brick work, will resist the action of our variable climate like Portland cement.[67]

This unqualified endorsement was prepared in relation to advice on Portland cement facades. On the question of the suitability of cement for traditional Scots harling and, given the extent to which the material was being used extensively already by architects for roughcast, it may seem surprising that Millar's specification advice is confined to traditional lime harling. It is a misnomer to consider that the word 'harling' was in common usage at this time – even in Scotland architects were referring to this, one of the most traditional of all external wall finishes as 'rough cast', following the English lead. Millar advocates the need for the final coat of cement roughcast being brushed with liquid cement to give a uniform tint, and concludes the brief note by saying 'For exposed positions, Portland cement may be substituted for the coarse-stuff'[68], defining 'coarse-stuff' as slaked lime and sand mixed occasionally with hair[69]. Elsewhere, Millar provides the specification for a 'Cement Wash', composed of cement and water to which a small quantity of putty lime might be added to give a lighter tone and uniformity in the visual appearance of the wall[70]. Without surface treatment of any kind, a Portland cement finish was nothing other than an unattractive dull grey.

Millar was not alone in advocating the advantages of using cement so strongly. However, he cautioned the unwary against acquiring the neat material other than from reputable suppliers. From this it might be implied that there were unscrupulous manufacturers in the market who failed to grind the cement adequately on grounds of cost, resulting in an inferior product. Several of the sources of specifications, including Millar's, went to some length in describing to architects, civil engineers and contractors the tests that required to be embarked upon in order to guarantee the strength of the material. The potential for variable results in performance was clearly an issue, as one of the earliest of the British Standards to be published (1904) addressed this point directly[71]. The quality of the cement improved dramatically after the introduction of rotary kilns, the first of which appeared towards the end of the first decade of the twentieth century,


NOTES

ON

BUILDING CONSTRUCTION

ARRANGED TO MEET THE REQUIREMENTS OF THE SYLLABUS OF THE SCIENCE & ART DEPARTMENT OF THE COMMITTEE OF COUNCIL ON EDUCATION, SOUTH KENSINGTON

PART III.

MATERIALS

ADVANCED COURSE AND COURSE FOR HONOURS

SECOND EDITION, REVISED AND ENLARGED

RIVINGTONS

WATERLOO PLACE, LONDON

MDCCCLXXXIX

Title page of Part III of Rivingtons *Building Construction* (1889)

and this process imparted a further increase in the strength of the material.

Specification sources for architects practising at the end of the nineteenth century are critical to an understanding of how materials might be expected to perform. There were numerous publications addressing the growing use of Portland cement, and at first the advice would be offered as an adjunct to the current lime technology. Thomas Potter's pioneering book *Concrete: Its Uses in Building from Foundations to Finish* was first published in 1877 and was updated and reprinted in 1891, and again in 1908. Much of the advice contained within its pages related to the uncertain performance of Portland cements and the need for constant testing of the material. Rivingtons *Notes on Building Construction* was a popular source of information for architects, and was published in three volumes. By the late 1880s the suitability of the material for external renders was recognised by this source as 'The material best adapted for rendering the external surfaces of walls is Portland cement', while noting that cost, weight, and the relatively slow setting time for the material could be considered disadvantageous, accepting that the ultimate strength surpassed all other comparable materials[72].

In the year that *The Hill House* was completed, Frank Macey's ground-breaking book on specification clauses for building construction had just been published (1904). Macey devised a set of standardised specification clauses for use by architects, and his book was a forerunner of modern specification practice. While the standard clauses on the specification of Portland cement are brief, and arguably more appropriate for construction practice in England, a clause was added which advocated the use of cement render for walls, cills and the reveals of outbuildings[73] in the manner shown in some of Charles Rennie Mackintosh's working drawings. The specification for cement render for exposed parapets at wallheads is given as 1 part of cement to an equal part of sand, applied in a single coat of ¾" thickness[74], which is at odds with most other contemporary specifications for the material which normally call for two-coat work with a significantly weaker mix in which the sand may be between two and three parts. Macey's hesitancy may provide an indication of the extent to which there was, as yet, little agreement within the industry on specifications for relatively untried building materials. It would be many years yet before the Building Research Station would be established at Garston in 1925[75].

When the sixth edition of Mitchell's *Building Construction* was published in 1909, the strength of the rendering coat was recommended to have a proportion of 1 part of cement to 3 or 4 parts of sand, possibly a response to the fact that the material available by that date had inherently greater strength from improved methods of manufacture from the rotary kiln process. The finishing coat was specified as being stronger, at 1 to 2 parts, which is contrary to modern practice in which each coat is specified to be no stronger than the preceding one to limit the risk of the material pulling away from the surface of the core of the wall. Mitchell acknowledged the benefit of cills of brick buildings being faced in Portland cement, for which it was claimed that the performance (provided the work was carried out properly) would be more durable and weather resistant than limestone. If failure were to occur it would be because 'wet has by some means got *behind* it rather than *through* it'. Lest this be considered an invitation to embark upon the detailing attempted by Mackintosh for *Windyhill* and *The Hill House*, Mitchell added a warning that, while the cills should be well weathered, the items should be throated to 'prevent the water running down the wall'[76]. Despite the warning, the unbridled optimism expressed over the performance of Portland cement in external wall coatings remains much the same as that

Experimental use of early Portland cement roughcast at the Glasgow School of Art, used over extensive areas of walling to the South Elevation:

Top: shows evidence of a cement slurry having been applied to the face of the wall prior to applying the roughcast, which appears to have a thin straightening coat of greater density than the second coat and wetdash finish.
Middle: a very thin single coat and wetdash (which appears to have a soiled finish) overlaid with a further equally thin single coat and wetdash without any obvious preparation of the surface
Bottom: the face of the roughcast, with the cement of the final wetdash coat having been washed away over time revealing the granite aggregate which gives the roughcast wall is current colour
(All photos: author)

expressed by Millar. Mitchell noted, further, that cement renders were used extensively around the coast where the material had proved successful in resisting the actions of the weather[77].

While the specifications for *The Hill House* do not appear to have survived, we do have the benefit of the specifications for the two distinct phases of work at the Glasgow School of Art, from 1897 and 1907 respectively, having been retained within the archives of the institution. The first of these is comprehensive, and prepared as a hand-written manuscript by the 'measurer' (a forerunner of the modern quantity surveyor), Robert Scott of Glasgow. The work was to be undertaken as separate trades contracts, imposing a duty of coordination on the architect. In the observations that follow the focus is on the roughcast south-facing elevations to the rear of the property. Careful attention is given to the quality of the backing material which, if brick, must be from good clay, well burnt and not deformed in shape, while all stonework must be laid on its natural bed. Neither of these requirements, as a matter of fact, was met at *The Hill House*, much to the detriment of the fabric in the years to come. One of the specifications called for a mortar of 'neat Portland cement to two measures sand', with the further requirement that the brick walls should be grouted at each course with liquid mortar, and of this there was evidence seen on site during the recent repair contract underway in late 2011. Scott took the precaution of specifying that the Portland cement should not only be of the best quality, but should be capable of standing a test strain of 350 lbs per sq inch after being set for seven days.

The roughcasting of the walls was to be undertaken by the slater in accordance with the following:

Picking out joints 1" deep, brushing down and washing with clean water the entire surface of the brick back walls, with ingoings etc and coating them with mortar composed of one part pure Portland cement to three parts clean washed pit sand and then rough casting within 12 hours thereafter with mixture composed of one part pure Portland Cement to two parts Arran sand put through a ½" riddle tinted to approved colour if required, all carefully and evenly put on, including scaffolding.[78]

The granite sand from Arran is readily identifiable in the final coat, but there is no mention in the specification of the roughcast being applied in two coats of roughly equal thickness prior to applying the final third roughcast coat, which is how the work here, and at *The Hill House* appears to have been done. The source of the slates is given as West Highland, but with no distinction having been made between Ballachulish and Easdale as the preferred quarries for the supply of this material.

By 1907, in most respects the specifications (by this time the document had been typewritten) had changed relatively little. As is well known costs needed to be kept under close control, and there is a suggestion that more expensive alternatives were being considered, for instance hewn stone instead of brickwork at copes at the wallheads and cills. The specification on this occasion was more precise about the source of the Portland cement, naming White of London or, alternatively, the firm of Hilton & Anderson. It seems unlikely that any civic building of this importance, and of such prominence within the cityscape, had been specified with a self-finished roughcast by either of the dates when the specifications were prepared. For external walls, other than for the principal street elevations, the orthodox solution remained for walls to be of coursed rubble masonry, especially where sandstone was readily available. Moreover, it throws into question the claim that has been postulated, on more than one occasion before now,

that *The Hill House* represented 'the first time Portland cement rather than harling was used'[79]. But what is worthy of further examination is how Mackintosh's confidence grew in the use of Portland cement, and how this evolved and found expression in the designs for *Windyhill, The Hill House,* and in the second phase of building the School of Art.

1.4 The design and construction of *The Hill House*

Charles Rennie Mackintosh, clutching plans of the Glasgow School of Art in his hand, painted by Fra Newbery in 1914 in the year when the architect left Glasgow for good (© National Galleries Scotland)

Mackintosh could never have been the easiest of colleagues with whom to work – either within his architectural practice, which honoured him with a partnership in 1901 with the impending retiral of John Honeyman, or as the client's appointed architect and principal point of contact on site. It is clear that beyond the completion of the second phase of the School of Art relationships with Keppie were strained, and the constant round of changes and embellishments made on site as the construction progressed aggravated his clients[80]. An abiding image which has been passed down is the one popularised by John Cairney's late twentieth century theatrical production, a one-man soliloquy about the architect in his final phase of self-wracked creative output. Mackintosh's reputation as an 'unyielding, obsessive personality', was fuelled by the accounts of bouts of drinking during the all-night drawing sessions in the office, and by disillusionment over what he saw as a total lack of recognition following the completion of his most celebrated works[81].

At around the time that Mackintosh was involved in the construction of *The Hill House* for Walter W Blackie (1860-1953), knowledge of the architect's predisposition towards drink seems to have been recognised from as far away even as Vienna. In a letter to one of Mackintosh's greatest admirers, Josef Hoffmann (1870-1956), a collaborator who had been tasked with collecting material for an exhibition, wrote:

> The evil rumour about Mackintosh is corroborated for me in that he, like most Englishmen, is said to drink a lot but nevertheless could not be called a drunkard, and at present he is supposed to be entirely normal.[82]

Tellingly it was his client, Walter Blackie, who had been called upon, in desperation, by Margaret Mackintosh to visit her husband in an attempt to lift his spirits. The year could only have been 1914[83] (Blackie had remembered the year as 1915 in his memoirs). He found the architect slumped over his desk and in a depressed frame of mind following the dissolution of the partnership with Keppie, even though that in itself had not bothered the architect particularly. At their meeting Blackie was informed that the architect was on the threshold of leaving Glasgow. Letters passed between the two men sporadically following this final meeting[84].

Whatever had been the difficulties encountered over realising the designs for *The Hill House*, Blackie was unwavering in his support of Mackintosh and his work. If there had been problems encountered over how the fabric of the house had performed for the period of time that he had lived there – just one year short of a half-century – then he certainly never allowed that to cloud his admiration of the architect, nor indeed his towering achievement about which he wrote admiringly. In the same memoirs of the building of the house (written in around 1943, but not published until 1968) he recounted that it was Talwin Morris (1865-1911) who had effected the introduction between the two men. Morris had moved to Scotland in 1893 to take up the role of Art Manager with the family publishing company Blackie & Son Limited, and later he was to sell his house to the Macdonalds, into whose family Mackintosh was to marry. Morris remained on close terms with the Glasgow School of Art through his friendship with the Newberys[85]. Initially, it seems Blackie was nervous about the introduction, not necessarily because Mackintosh had a reputation of being difficult to work with, but more from a concern that his growing international reputation might be such as to deter him from taking the commission. The young architect

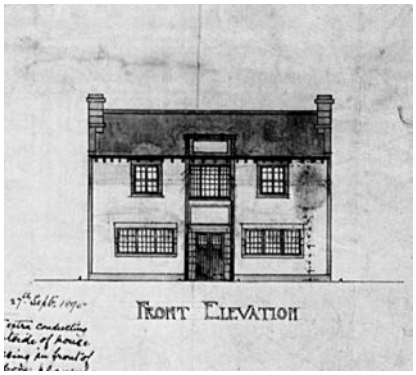
turned up at the Blackies' house in Dunblane on the very next day, and after taking Walter Blackie to see the new house he had designed at *Windyhill* at Kilmacolm, the commission was confirmed. Curiously perhaps, it was Blackie who claims to have influenced the architect as to how the house might appear in its final form, characteristics that were already well defined in the external appearance of *Windyhill.* It was almost as though Blackie was wishing to distance himself from the aesthetic of Baillie Scott's *The White House* which, with its red-tiled roof and whitewashed walls, would have been starkly visible from the exposed site he had just acquired on a south-facing slope overlooking the Firth of Clyde in Helensburgh:

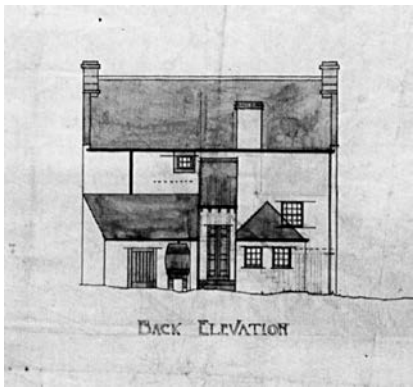
> I told him I disliked red-tiled roofs in the West of Scotland with its frequently murky sky; did not want to have a construction of brick and plaster and wooden beams; that, on the whole I rather fancied grey rough cast for the walls, and slate for the roof; and that any architectural effect should be secured by the massing of the parts rather than by adventitious ornamentation.[86]

These aspirations were almost certainly his architect's rather than his own, but it is interesting to note the extent to which Walter Blackie had embraced them over time. Blackie is reassuring as to the architect's character and his professional abilities, and he dispels the widely held belief that he was never to be trusted with the client's purse. Of his character and competence, he attested:

> Withal he was a man of much practical competence, satisfactory to deal with in every way, and of a most likeable nature.[87]

No doubt in the full knowledge of Mackintosh's damaged reputation for being profligate from having changed the design details as the second phase of the School of Art was building, Blackie went to great pains to praise his power of estimating costs accurately, noting that the increase in the cost of the final account was purely as a consequence of him putting back items that had been left out in order to achieve cost savings at the outset. A clear indication of the tolerant attitude adopted by the client towards the architect resulted from the consequence of a prolonged strike at the Ballachulish slate quarries, with Mackintosh holding out for the roof finish as originally specified, rather than seeking an alternative slate which may not have had the same texture and colour he was seeking to complement the appearance of the textured roughcast walls. In the late nineteenth century, traditional West Highland slates laid in diminishing courses, with their craggy appearance and blue colour, had been largely abandoned for cheaper machine-dressed slates brought in on the railways. With their mechanical appearance, of regular face sizes, coursing and colour, they fell contrary to the principles espoused by the architects of the Arts and Crafts Movement - even to Voysey who, constantly striving for economy in construction, would often prefer Westmorland green slate with a traditional appearance in whatever part of the country he was building in. It has sometimes been said that the roof of the Hill House is of Luss slates[88], but Blackie's account of the delay in the construction of the house having resulted from a shortage of Ballachulish slates is borne out by two protracted strikes at the quarry, the first commencing in July 1902 (which lasted for eighteen months[89]), happening to coincide with the construction period of the house. Although work had commenced in 1902, the house was not finally completed until 1904, much to Muthesius's disappointment as he had wished to include the exterior in the last of the volumes to be published but was unable to do so. In a letter written to Muthesius at the beginning of 1903, however, when Mackintosh was informing him that the house was not yet ready for photographing to meet the deadline for publication, the factor which was holding up progress was the application of the roughcast, and *not*





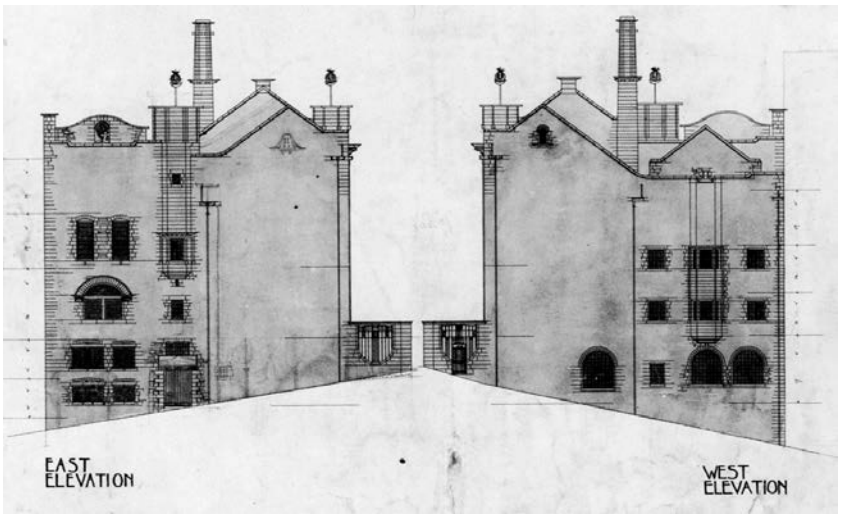
Above: an early foray into designing with roughcast walls: front and rear elevations of the remodelling of the inn at Lennoxtown (1895) © Hunterian Art Gallery and Museum item ref GLAHA 41850

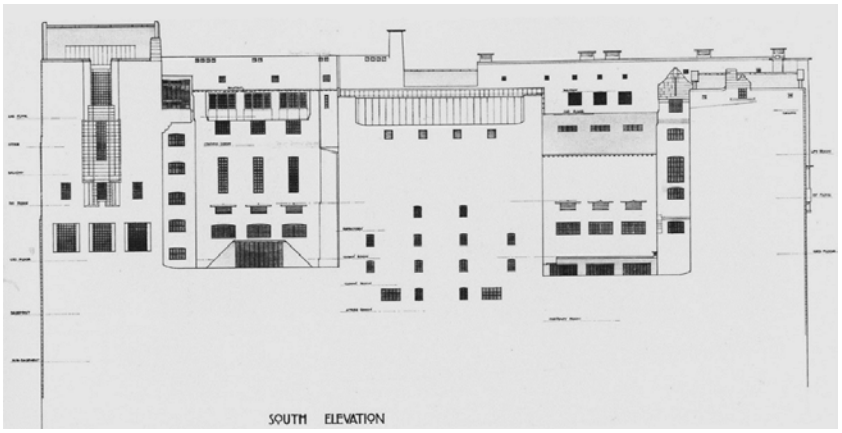
Photograph of *The Hill House* under construction (Summer 1903) with the roughcasting underway and the roofs already slated with the exception of the conical roof to the garden store © NTS

the roof which was already complete by then. The delay in completing the roughcast was to avoid the risk of frost, and so this element of work was not due to commence until the month of May – an interesting slant on the fact that the architect was adopting a responsible approach despite what could only have been pressure applied by his client to move into the house, and that this finish should only be applied in accordance with good practice[90]. Contemporary photographs of the house under construction appear to confirm his assertion and show that the only roof not slated at that stage had been the garden store. But was Blackie right in his recollection of the impact from the delay caused by the strike at the slate quarry?

In the first section of this study, in looking at the diverse array of influences on Mackintosh's architectural career, the focus was upon the aesthetic that evolved in his mature work from 1897 onwards when his work was at its most assured, and inventive. The remodelling of the inn at Lennoxtown (1895) may have provided only a brief glimpse into what was to follow shortly and, while the design came from a growing appreciation of vernacular buildings the harled surfaces were limited in area and did not extend to cover the chimneyheads. It was not at all unlike MacLaren's work at Fortingall where the chimneyheads on the principal elevations of the cottages were predominantly of stone. The design of the principal elevation at Lennoxtown, however, eschewed vernacular influences from being unbendingly symmetrical.

The evolution of such a novel architectural aesthetic in Mackintosh’s work is perhaps best displayed in a comparison between the drawings of the elevations of the Glasgow School of Art, dated 1897, and those that followed the second phase of building which began in 1907, of which the set of drawings prepared in 1910 showing the complex 'as built' offer the greatest

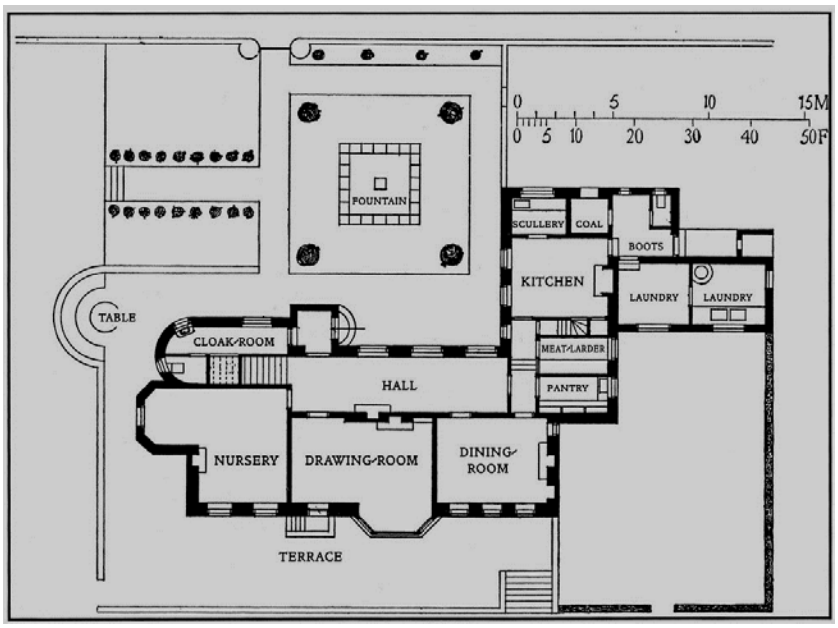




Right upper: east and west elevations produced for the first phase of the Glasgow School of Art (1897); aside from the attenuated decorative treatment of the architectural elements making up the composition, the walls are shown capped with orthodox stone copes
Right lower: drawing of the completed south elevation after the second phase (1910) in which Mackintosh shows less of an interest in the architectural detailing around the wall openings, with windows punched into the wall surfaces as a more abstract composition. The walls are shown devoid of stone copes with the roughcast carried up seamlessly over the wallheads, mirroring the treatment at *The Hill House* (both images from Macaulay, *Glasgow School of Art*)

interest. The earlier set of drawings bears out the nature of the specifications prepared by the 'measurer', Robert Scott, reproduced in the previous section, in which there was a heavy reliance on the use of roughcast to cover the surfaces of brick walls. On the one hand, while this might be seen as having been driven by the cost savings to which the project had been subjected, there appears to be no real evidence from studying the drawings to suggest that savings were being achieved from reducing the overall thickness of the walls, one of the advantages offered by brick construction. If anything, it might be said in this respect that Mackintosh seemed unaware of developments in cavity brick wall construction, which Muthesius advocated in *Das englische Haus*[91]. Robert Lorimer was using brick cavity wall construction already in Edinburgh from as early as 1901, if not before[92]. Fearful of detailing wallheads without them, all of the walls were shown on Mackintosh's 1897 drawings with stone copes to provide a stop for the roughcast. By 1907, however, the architect had dispensed with protective stone copes in their entirety, and followed the specification tried out first at the wallheads at *Windyhill*, which he then developed further at *The Hill House*. In the rear wall facing the city, rising up starkly through several storeys, architectural pretensions such as dressed stone margins around window deep set window openings were also jettisoned for architectural effect, and not just for cost alone.

In a number of respects the house at Kilmacolm was transitional in both design and in its construction. The commission was awarded in 1899 to Mackintosh by the Glasgow businessman and provisions merchant William Davidson, seemingly in a personal capacity rather than through his practice[93]. To some eyes, the assembly of the elements surrounding the



Right: Ground floor plan of *Windyhill* (from the English translation of Muthesius, Vol I, p185)

entrance courtyard and the detailing of the front door is unresolved[94], while the elevation to the south overlooking the wooded valley is unremittingly severe. It led to Davidson being taunted mercilessly over having built for himself a 'prison'[95] (the shutters which adorned the house in an attempt to soften its appearance, appearing in most photographs of the house were a later addition, but have now been removed leaving hinge pins intact). Here, around wall openings, dressed stone margins are used sparingly, and they appear only to mark the location of the front door to the property. In mixing pitched and flat roofs together, when seen from within the northeast corner of the garden the house appears to recall James MacLaren's Glenlyon Farmhouse of 1890, but it is completely stripped of the overtly historical references of that composition as the angled corbelling and the crenellations at the parapet walls have not been replicated, or even hinted at.

The courtyard entrance at *Windyhill* (Photo: author)

Attempts to soften the appearance of the garden elevation of *Windyhill* by the addition of window shutters at first floor, and plants trained onto the surface of the wall (from Reiach and Hurd, 1944)

From studying the construction of the house, it becomes apparent that the architectural programme devised by Mackintosh for the rear wall of the School of Art - of large, unbroken wall planes of solid masses punctuated by voids - had been developed one stage further. At first sight, this brutal

aesthetic might seem wholly unsuited to a dwelling house, especially without having the softening features of the stone dressings at wall openings and the limewashed walls favoured by the leading architects of the Arts and Crafts scene in England and Scotland at this time. Baillie Scott's *The White House* at Helensburgh was designed and erected at around the same time as *Windyhill.* Robert Macleod has claimed that *Windyhill* was constructed of whinstone (presumably, from a local quarry) and, because of the difficulties of working such a material to a true face, the window and door openings were formed in brick to receive the roughcast finish[96]. While he may have had good evidence to be suggesting this, the evidence from within the roofspace of the house suggests that while brick was used extensively in the construction of the house, the walls were probably of sandstone rubble construction. The detail of flush cement cills, without projecting stonework, was adopted here after the reliance upon this detail to keep out water from the core of the walls at the School of Art, a trial which must have met with initial success. His reliance on the technology of cement roughcast was not yet such to dispense with stone copes in their entirety, and they were retained for the most exposed parts of the construction at the chimneyheads, the most prominent of which faced the courtyard to the north and was visible from the roadway, and was given a battered profile. Although all of the chimney cans have been modified with cowls and ventilators (they were introduced at a very early date, appearing even in the Muthesius publication of 1904-5) the original cans were relatively tall, with tapered sides and a beaded rim, not unlike the later type preferred by Voysey. At the contemporary *The White House*, Baillie Scott had refined the palette of his detailing to the extent that the stone copes were considerably less heavy even than those at *Windyhill*, and while the cans (of red clay to match the tiled roof) were tapered they were also lower in height, giving a greater sense of modernity which Mackintosh cannot fail to have noticed when he came to design *The Hill House.*

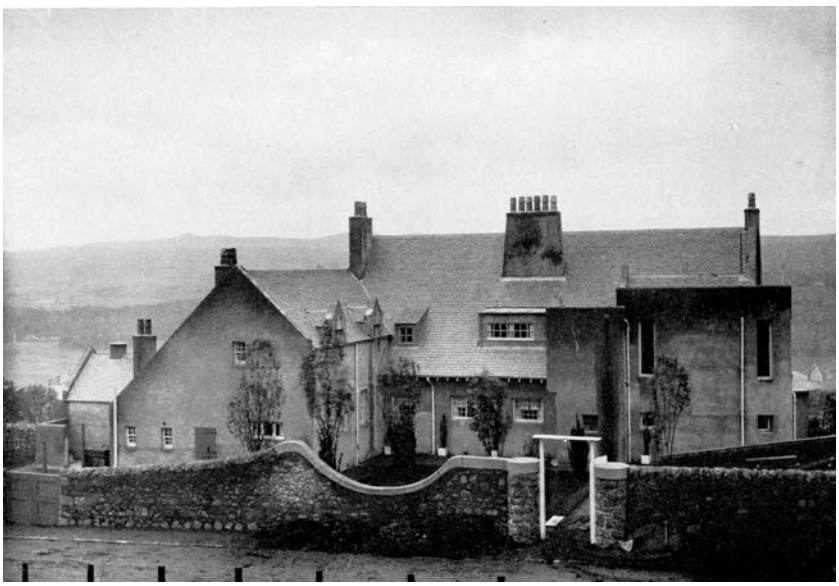
Right: the courtyard elevations of *Windyhill*, with the roughcast finish to the house exhibiting problems associated with moisture being retained in the underlying fabric, suggesting differential wetting and drying rates (from Muthesius, Vol 1, p185)

While orthodox stone copings were retained for the chimneyheads, such was Mackintosh's belief in the performance characteristics of cement roughcast as a waterproof skin that he dispensed with traditional detailing in its entirety from the wallhead skews at each of the gables, to the dormer gables and at the parapet to the stair tower. Although it is not possible to say for certain, it seems that the horizontal surfaces had been given a

Plain gable detailing in modified cement to overcome water penetration in the past at *Windyhill* (Photo: author)

smooth floated rendered finish, not unlike the window cills at the School of Art. Muthesius responded by illustrating the interior spaces and the exterior in *Das englische Haus*, but his photographer must have arrived after a prolonged spell of wet weather as in all of the early photographs of the house it is apparent that there were weathering problems from the cement copes causing water run-off, staining on the face of the walls and gables very badly. It also seems to be the case that there must have been problems from the outset with the appearance of the roughcast. Even when dry, patches of the material appear darker in colour, detracting from the overall unifying architectural effect that the architect had been seeking from the use of this material. In this respect it is clear that the fabric of *Windyhill* has fared little better than that of *The Hill House* – levels of intervention have been found necessary which are mildly intrusive and affect the integrity of the design. These extend to dressing sheets of lead over the exposed lengths of the parapets, and to introducing a modern synthetic smooth rendered surface at each of the skews. Areas of roughcast have been renewed, most noticeably at the gables, and the roughcast has been painted in a modern paint of a blue-grey colour to retrieve the sense of uniformity in the overall appearance sought by the architect. Despite this level of intervention it appears to be the case that significantly less of the original roughcast finish has been removed here when compared with *The Hill House.*

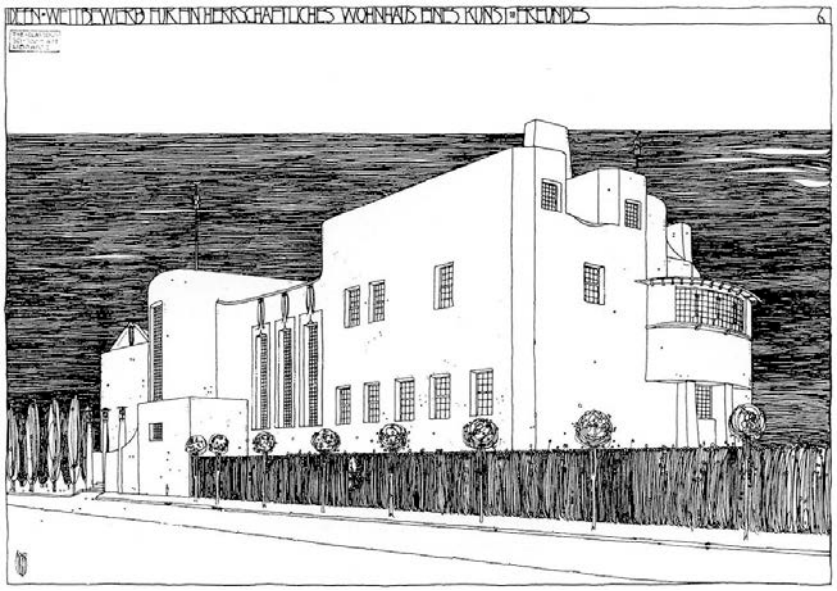
Decorated roughcast wall at *Windyhill* (Photo: author)

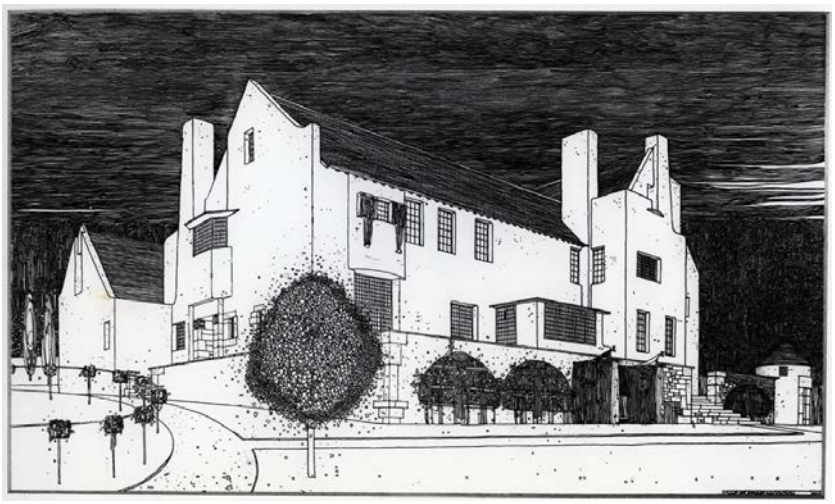


Windyhill, seen on a dull day from above the public road to the east of the site: within a few years after completion there are problems with the overflow from the secret gutter at the entrance tower, and the chimneyheads are harbouring dampness despite the inclusion of orthodox stone copes (from Howarth, Plate 34A)

What becomes apparent from studying *Windyhill* is that many of the architectural elements that Mackintosh had used so successfully at *The Hill House* were tried out here beforehand. The low service wing to the north of the house with the louvred ventilator on the roof ridge is similar, as are the canted bay windows with overhanging lead covered roofs with projecting overhangs of the most slender appearance. The overhanging eaves detailed to have exposed rafter feet had appeared in his work already at the inn at Lennoxtown (page 30), a detail favoured by the English Arts and Crafts architects during the 1890s and used effectively by Baillie Scott at *The White House*. The novelty in his work at *Windyhill* was the extent to which the roofs swept down to a single storey, a feature repeated at the rear courtyard of *The Hill House,* although again this is found in the work of his contemporaries. There are echoes to be found of this in James MacLaren's work at Fortingall, and occasionally it is found also in Lorimer's work. When

designing in the 'Colinton Manner' of the 1890s, Lorimer's preference had been for the clipped eaves of the Scottish vernacular tradition (page 16).





Top right: Mackintosh's perspective for the *Haus Eines Kunstfreundes* (House for an Art Lover) 1901 (from Macleod, p88)
Middle: east and west elevations of the House for an Art Lover (1901) which Mackintosh appears to have drawn somewhat hurriedly. He experimented with towers for the south gable in the initial designs for *The Hill House* which were discarded in favour of the solution shown on the previous page (from Macleod, p88)
Bottom right: Perspective for *The Hill House* is very close in appearance to the house as built, with the exception that it shows the proposed Billiard Room extension at the west gable and the blocking pieces to window festooned with carved decoration which, neither of which was executed © NTS

The architectural journey that Mackintosh had embarked upon found a parallel form of expression in his sketchbooks, in which the subjects began to take on a marked abstraction (page 16). A similar abstraction of line and form is found in his more accomplished perspectives, and especially those

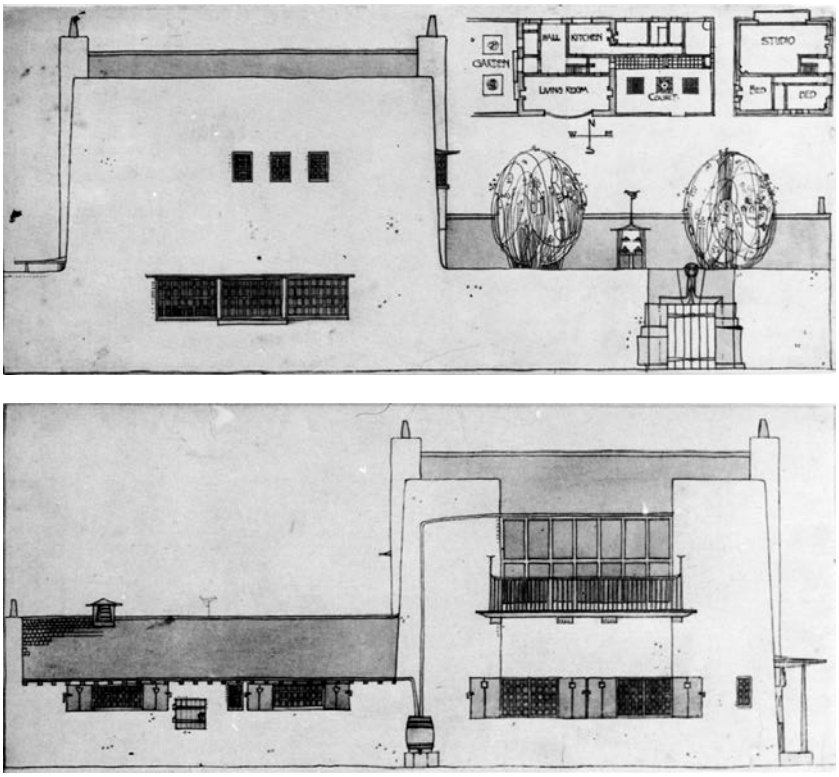
prepared for his competition entries for buildings of a more domestic scale, and in his illustrations of unbuilt projects. In the last mentioned of these the drawings and sketches represent something other than purely fanciful ideas, giving full rein to his imagination at a time when this was grounded in a developing knowledge of the adaptation of building technology for his artistic purposes. From around the turn of the twentieth century the growing recognition of his talent and influence in Vienna and in Germany became the spur to getting his work published abroad, which happened at a time when the journals at home seem to have lost all interest in the work of the Glasgow Four. Until the death of Gleeson White in 1898, *The Studio* had continued with its support of the group's work, and the article of 1897 would have created an awareness abroad which led to the openings to exhibit pieces of furniture and, ultimately, the Darmstadt competition entry of 1901 for the *Haus Eines Kunstfreundes* in which some of the elements for the forthcoming designs for *The Hill House* are being played out. In the drawings prepared for the competition it is perfectly clear that Mackintosh was setting out to achieve the abstraction of the forms from the use of a unifying roughcast finish. In this respect the drawing, as with all of Mackintosh's perspective drawings from around this time (including those prepared for *The Hill House*), perhaps not unlike an Aubrey Beardsley drawing, are in stark black and white which conveys an impression which can be fundamentally misleading. Mackintosh's drawings for the Glasgow School of Art, prepared after the completion of the second phase of work around 1910, in which the finish of the roughcast had been left undecorated and the chosen aggregate gave texture and colour to the severity of the wall planes, was given exactly the same treatment (page 31).

Right: one of a set of familiar images of the rear of *The Hill House* seen from the northwest upon completion in 1904 by Bedford Lemere: the negative seems to have been bleached out to give the impression that the house has been 'white harled'. © NTS

This conscious aesthetic approach extended even to how the celebrated images taken of *The Hill House* by Bedford Lemere in the summer of 1904 after the Blackies had moved in. The contrast in the images is such that the published prints can only have been bleached of half-tones, or the plates over-exposed, in order to eliminate the greyness of the external walls. Indeed, so thorough has been the falsification of the appearance of the house that some accounts of *The Hill House* have referred to it, in its original state, as 'white-harled'[97]. The sole surviving piece of the original harling to have survived without any change having been made to it is above the ceiling of the single storey east wing, where it was preserved after the pitched roof had been added in 1912. It is unquestionably a dull grey in colour, and both in the number and thickness of the coats, it matches similar samples observed at the School of Art rear elevation which are also likely to be original. A recent sample of roughcast which has been examined, taken

Above: area of roughcast at the Glasgow School of Art, thought to be in its original state where protected by an overhanging storey height, the soffit of which is visible at the head of the photograph (Photo: author)

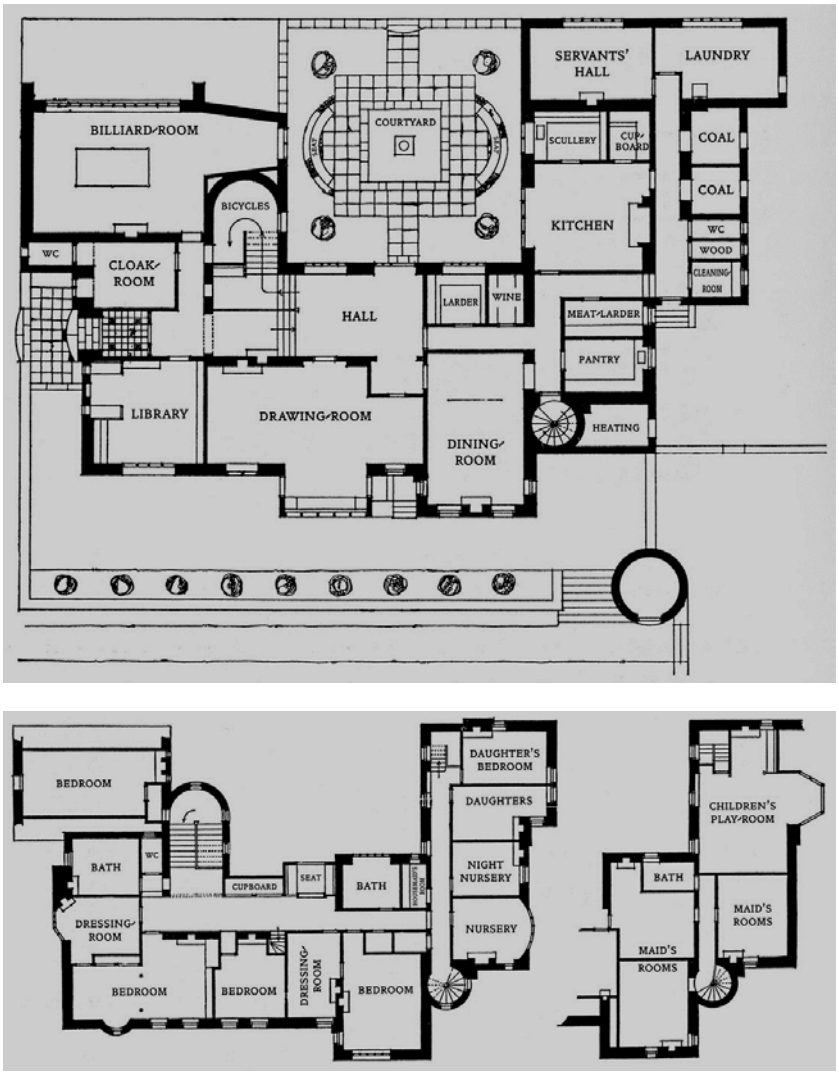
from the same area of the house, throws up the interesting possibility that there could have been a measure of experimentation with the finish of the walls shortly *after* the house had been completed, perhaps in attempt to overcome the failure in the appearance of *Windyhill* by applying an overall wash to the surface of the walls. A further, thin, white layer appears in the sample over the surface of the original cement wetdash, over which has been applied a further cement wash. If a coat of limewash had been applied to improve the surface appearance and provide a unified appearance, it seems unlikely that it could have survived for any length of time without being washed off due to the level of exposure of the site and the density and relative impermeability of the underlying cement roughcast.



Right: two sketches by Mackintosh for *A Country Cottage for an Artist* (c1900-01) which give full rein to the plastic effects he was seeking in his architectural designs, liberated by the use of cement roughcast (from Macleod, pp86-87)

That the architectural effect Mackintosh was seeking for the Darmstadt competition was to be achieved by the use of roughcast is confirmed by the manner in which the wall surfaces on the drawing are shown with occasional speckles, a convention used by architects in line drawings to imply a wall surface with a roughened texture. Exactly the same treatment applies to the thematic projects illustrated by Mackintosh, believed to have been prepared around 1900-1901, for *A Country Cottage for an Artist* and *A Town House for an Artist*. In the former, the north elevation grows organically out of the boundary wall, and there is the strongest of hints that the wallheads and parapets were to be rounded in appearance with the roughcast taken seamlessly over the tops of the walls (in the manner of Baillie Scott's Isle of Man terraced houses, page 23). The main walls taper gently and, once more the architect explores his quest for the appearance of weightlessness in the projecting bay windows and in the large area of studio glazing which anticipates the single storey bay projecting from the south elevation of *The Hill House.* Here, too, is the projecting bay window abutting the projecting chimney stack, found also in the town house, and the motif of windows being introduced at changes in direction in the wall planes for which there are no surrounding margins, an architectural device developed further in the designs for Walter Blackie's house. There is no historical precedent to be found in Scottish architecture for this detail, which illustrates well just how inventive Mackintosh had become. It explains also why his work came to be

reappraised, and imitated even, by architects in the late twentieth century. Roughcast was the chosen material by which Mackintosh sought to aspire to the abstract qualities of his architectural perspectives and line drawings, creating an acute sense of visual unity in his work.



Above: original plans of *The Hill House* (from Muthesius Vol I, English translation, pp186-187)

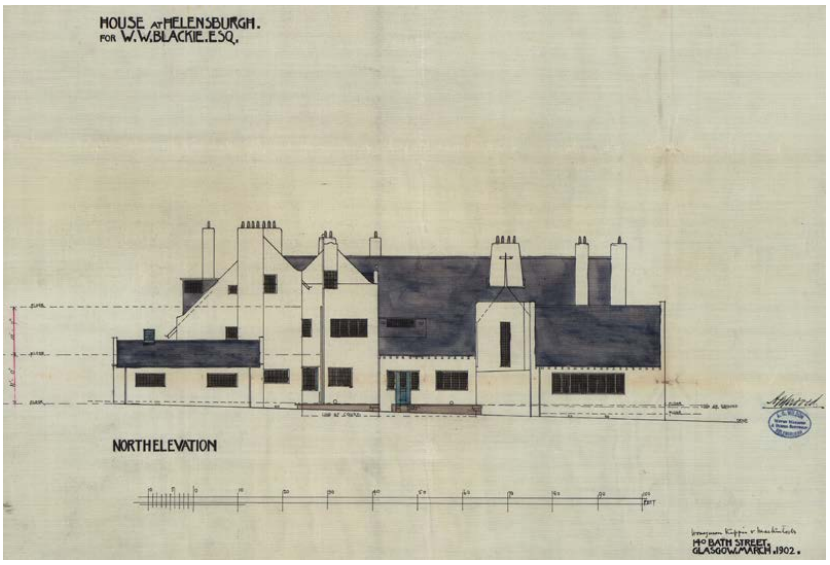
Most of the elements, therefore, in Mackintosh's style armoury had been tried out before Walter Blackie called upon him in 1902 to undertake the designs for his new house at Helensburgh. Sketches for the preliminary designs that have been handed down drew on some elements of the Darmstadt competition scheme which were later discarded (page 35), including twin chimneyheads framing a gable feature. They possessed some of the gawkiness displayed in the architectural programme tried out at *Windyhill,* and were less than convincing. Blackie, in his account of the building of the house, rather implies that the design was embarked upon at breakneck speed, such had been his architect's passion for the commission, and that the first of the designs submitted was rejected by him. The second, approved, design was sent 'in a very few days', as he recalled[98]. Blackie recounted how masterly his architect's analysis had been upon which the detailed design had proceeded, and although the principal rooms of the house display some of the best interiors created by him and the members of The Four, it is more the functional aspect of the design that he set out to praise. Blackie recalled Mackintosh's exact words which he uttered when the house was handed over to the family early in 1904, implying an absence of the historicist influences which characterise all the other houses built on the

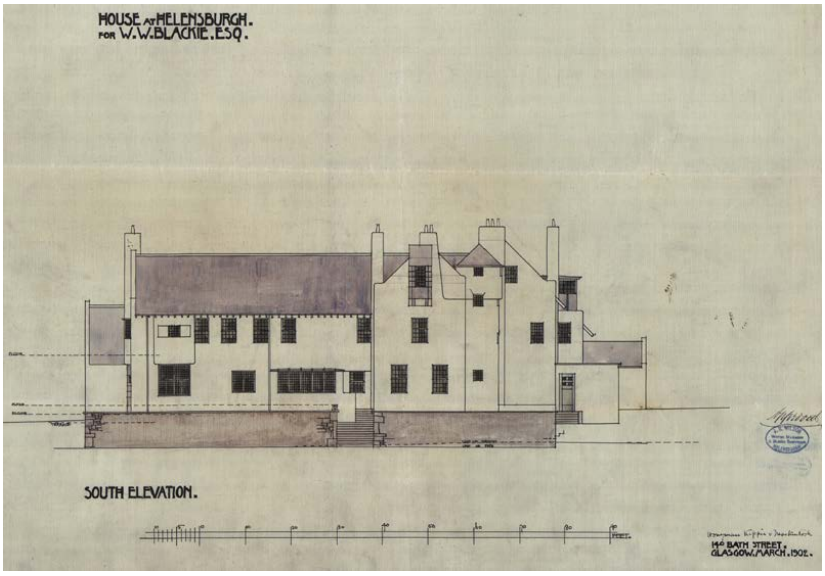
Elevations of *The Hill House,* part of a set of drawings submitted by Honeyman, Keppie & Mackintosh to the Dean of Guild Court in Helensburgh in May 1902, reproduced courtesy of Argyll & Bute Council

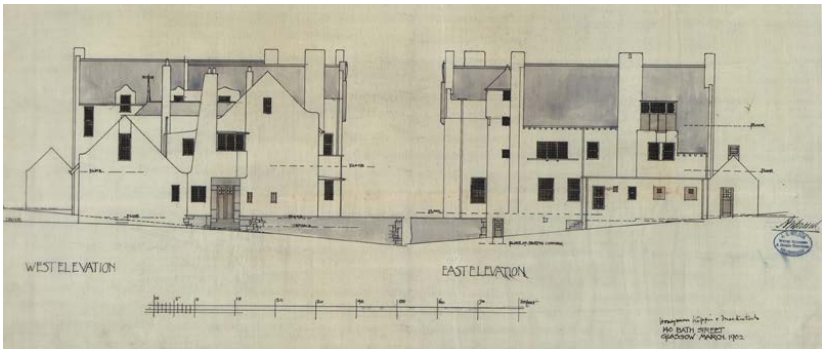
Upper right: North elevation, showing the Billiard Room

Middle right: South elevation; the south gable has still to go through design development before arriving at the final form while the stair tower shows a change of wall plane at the top landing.

Lower right: West and East elevations







slope of the hill above Helensburgh, even though the *spirit* of these influences can be traced in the final appearance of the house:

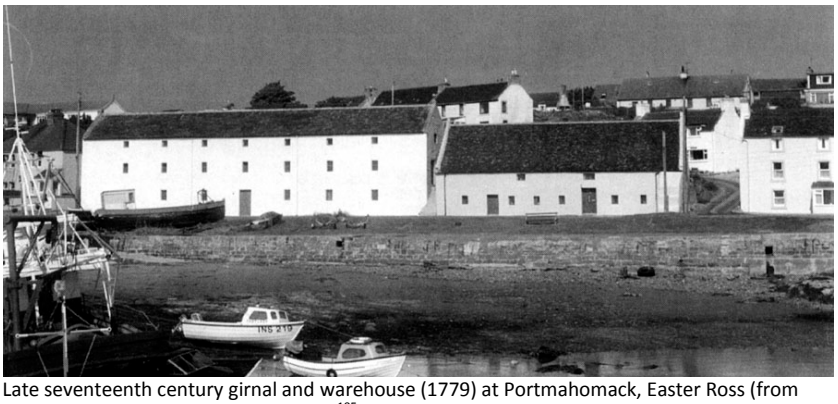
Here is the house. It is not an Italian Villa, an English Mansion House, a Swiss Châlet, or a Scotch Castle. It is a Dwelling-house.[99]

The baldness of this statement recalls his lecture notes when he used the words 'we must clothe modern ideas with modern dress'(page 11).

Even though Mackintosh may have seemed keen to distance himself from any particular stylistic influence, the inspiration to be found in the wealth of


The stair tower at the southeast corner
(Photo: author)

the illustrations of castles, lairds' and merchants' houses recorded in the pages of the five volumes of Macgibbon and Ross, which he had pored over and which had so fired his imagination in the early 1890s, surfaced in the final design for the house. It is the purest evocation of all of his mature work of the words he used in his very first public lecture, of 'abstract beauty'. While references might be made to the manner in which the gable of the capehouse at Liberton Tower was set back from the plane of the main wall, and how this had been a source of inspiration to him for the south gable of the house[100], the principal merit to be found in Scotland's national architecture was that it offered a kit of parts from which almost anything became possible, as indeed he suggested in his own lectures of the early 1890s[101]. Other connections have been made between the house and MacGibbon and Ross's sketch of Allardyce House in Forfarshire, in drawing attention to the interplay between the wall planes and round stair towers, and in the disposition of chimneyheads[102]. James Macaulay has likened the house to Crathes, a connection which harked back to his lectures and his sketchbooks[103]. Equally, he may have found inspiration from the manner in which corners could be turned by two broken gables, as at Newark Castle[104], for instance, a feature which appears at *Windyhill* which he reinterpreted at *The Hill House,* appearing more strongly in some of the earlier sketches. No matter the exact source references, he demonstrated that a reinterpretation of national architectural style of the Scottish Renaissance proved eminently adaptable to the liberating Free Style pursued vigorously by his contemporaries in England.


Late seventeenth century girnal and warehouse (1779) at Portmahomack, Easter Ross (from Elizabeth Beaton *Ross & Cromarty* p73[105])

Without the reliance upon the waterproof qualities and inherent strength in his use of roughcast, the design of the house would have had a totally different appearance: stringcourses and coping stones would have interrupted the changes in the wall planes. Moreover, they would have interfered with the sense of visual unity of the whole composition. The roughcast elevations of *Windyhill*, *The Hill House* and the second phase of the School of Art owe a subconscious debt perhaps more to the gaunt architecture of the seventeenth and early eighteenth century girnals and warehouses of Scotland's small harbours, in which the wall to window ratio is high and the windows set deep within the walls, than they do even to the tower-houses and castles within the pages of MacGibbon & Ross.

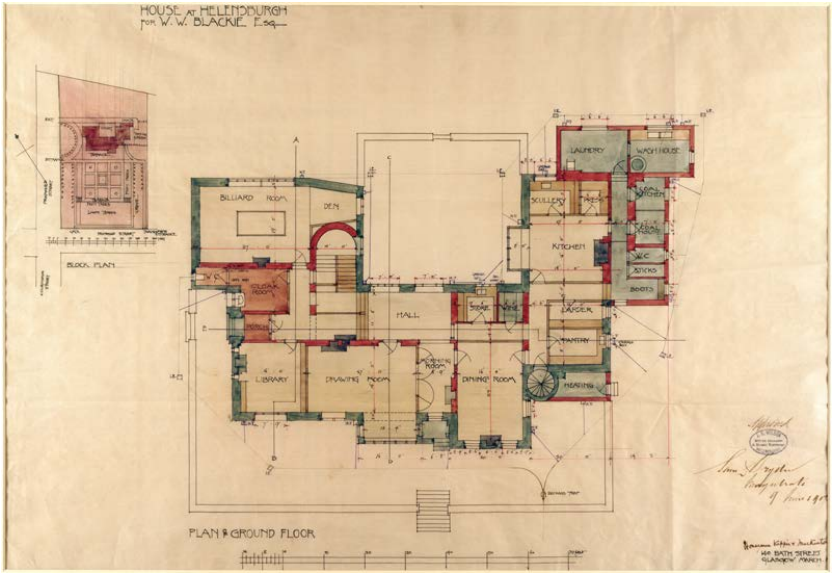
Somewhat paradoxically, it is only within the past couple of decades as the nuances of historic lime technology have been rediscovered, that it has been possible to regain an understanding of how these tower-houses would have appeared much more prominently than they do now within the Scottish landscape. Research has confirmed that these structures were, in the main, limewashed all over, including the window dressings, corbelling and quoins, which would have transformed their appearance to something approaching

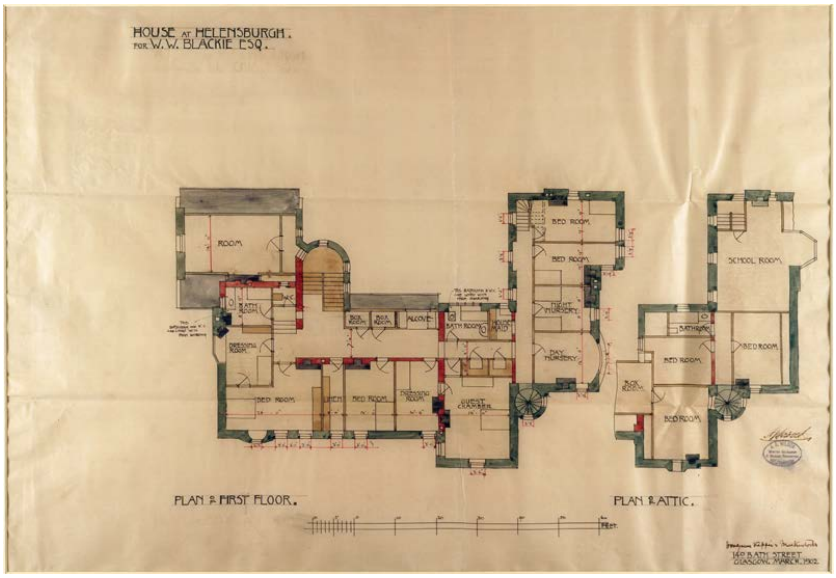
Plans and sections, part of the same set of drawings submitted to the Dean of Guild Court in May 1902, reproduced courtesy of Argyll & Bute Council

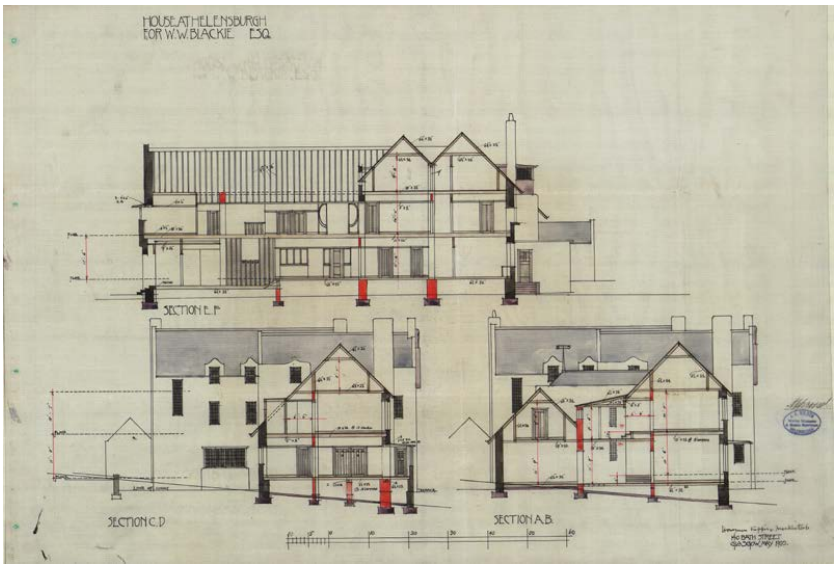
Upper right: Ground Floor Plan with the Billiard Room shown at the northwest corner of the house, and a plan for the garden is included at the top left of the drawing

Middle right: First and Second Floor Plans

Bottom right: Sections, showing elements of construction which correspond with the finished work

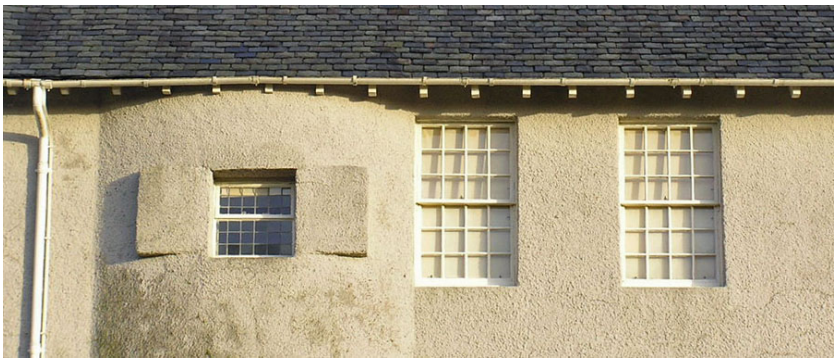






a monolithic appearance of the type that Mackintosh was seeking to create. Even if this information had been available to him at the time, his options for using lime would have constrained him severely. The material could never have called upon to perform on the most exposed horizontal surfaces as cement roughcast promised to do.

Right: The window set within the curved bay to the Master Bedroom, and sash and case windows of which the astragals are close to the patterns of early eighteenth century work (Photo: author)



As at *Windyhill*, the use of dressed sandstone in wall openings was confined to the front entrance door and to the pair of windows bordering the chimneybreast in the Library, an indication that they related to one of the more important rooms of the house and were different to the windows of the more humble entrance cloakroom and the adjacent WC to the left of the doorway. Unlike *Windyhill*, however, dressed sandstone blocks were introduced to key areas within each of the facades, appearing at the heads of gables, as apex stones to dormer windows, and as projecting plain blocks in textured roughcast giving considerable presence to the small window of the Master Bedroom. The same motif appearing as sandstone blocks are oversized for the scale of the structure at the detached garden store also. The architect resisted the temptation to over-embellish these features with obsessive decorative detail of the type appearing in the drawings for the Darmstadt competition, of which hints had been given in the early drawings of the house. Whether this is a consequence of the architect pursuing the cause of abstraction in his work, or simply a consequence of the need to make cost savings during construction, can only be a matter of speculation.

Right: one of a great number of window permutations: a window subframe of timber set flush with the face of the roughcast, with opening metal casements with clear leaded lights, with panels of different sizes (Photo: author)

Mackintosh's manifest ability for devising bespoke solutions to design problems was to reach new levels at *The Hill House*. While the built form of the house has great vitality and originality, the windows create a restless composition which borders on Mannerism. The patterns and types of

windows follow no obvious logic. Few of the windows are alike – indeed, Alan Crawford has made the observation that the house has 'fifty-eight windows to about forty different designs'[106]. The orthodox sash and case window is used here, but sparingly, and to varying patterns in the size of the sashes and the window glass; what is more, the lower sashes to the principal rooms appear to have a highly unusual horizontally pivoting casement within the sash frame. None of the windows have horns to the upper sashes, a detail which was in common use at this time among the Arts and Crafts architects, and which Mackintosh had allowed to be provided at *Windyhill*. Unnecessary decorative detail at *The Hill House* was being exorcised from the architectural programme. Other windows have clear leaded lights and, again, the patterns vary to a marked extent – the panes to the external door leading to the store below the main stair are very narrow and the proportions unusually vertical. Metal casement windows are in abundance but, disturbingly, and yet quite deliberately, the leaded lights of these windows do not match up with the pattern of the fixed lights. Some of the windows take the form of shallow convex bays, to a gently rounded profile on plan. Even the positions of the windows vary in relation to the depth of the window openings. A few of the windows are set very deep, to the rear of the aperture following seventeenth century examples, while in other cases the windows are set flush with the face of the roughcast, more in line with English practice: the architect's wilful perverseness in following this detail can pose considerable challenges when water penetration occurs at the core of the wall. Some of the window apertures are set vertically within the walls; others allow for horizontal strip windows to be introduced. The variations appear endless, and as perverse as they may seem, they are quite purposeful and are not the stuff of pure whimsy. They recall vividly Mackintosh's assertion in his lecture notes of 1891 that 'The treatment of windows supplies an endless tresury of architecturel loviliness'[107].

Right: Baillie Scott's detailing of strip windows with stone surrounds set in roughcast walls at *The White House*. Where casement windows occur there is a marginal increase in the size of the stone aperture so that the lead kames line through with the fixed lights. A similar detail was adopted by CFA Voysey (Photo: author)

The introduction of the horizontal strips of windows had not been derived from Scottish vernacular architecture, and was made possible only through modern technology. Mackintosh had used already long span cast iron beams for the large north-facing studio windows at the School of Art. The outer face of the beams was flush, and not disguised with stone facing: he accepted the material for the honesty of construction that it presented. By this time the use of cast iron beams was commonplace, but other than for spanning large openings (such as those offering access to pends for wheeled vehicles or for inserting shop frontages) the units were used only in a traditional manner, as a cheaper substitute for stone lintols over short spans. They would be found normally to the rear of buildings, where they would be less prominent. Mackintosh had used this form of construction for the windows of the single storey service range at *Windyhill,* and repeated the same detail at *The Hill House* for the openings at the north facing windows of the service range where the face of the beam is left exposed and is flush with the roughcast finish at the north service wing (where the tea shop is now). At other, more visible, windows facing the courtyard, rolled steel beams were used to create the long spans of the openings but they were infilled with brick and covered over with roughcast.

While it might be said that Mackintosh had been influenced by Voysey and Baillie Scott, both of whom used long rows of horizontal windows framed in stone with the margins flush with the whitewashed roughcast, it is significant that Mackintosh ignored the source of their inspiration which had come directly from the English vernacular tradition with which, of course, he was familiar from his travels. Similar windows were found in the types of cottages in the rural villages that Mackintosh had drawn in large numbers in his sketchbooks in his earlier days. Baillie Scott had used the feature of the horizontal strip window to very good effect at *The White House,* which shows remarkable sophistication in the detailing with the line of the lintols raised marginally where the metal opening casements occur, just so that the leaded lights lined through when viewed from the inside of the house. As noted above, Mackintosh appeared to rejoice in the fact that they should *not* line through. It is in matters such as this that Mackintosh's work can be seen as an enigma, and difficult to categorise precisely. Although he was embracing modernism in his work at this time through the use of technology, the decorative tradition from which his imagination sprang was seen by many to be founded in a line that went back to Pugin, informed by the writings of Lethaby[108].

Right: a date is given for 06 June 1903 for this photograph which shows the west gable under construction, and before the application of the roughcast finish. The underlying red sandstone core to the wall can be seen, together with areas of walling constructed of brick: apart from the chimneyheads there is no obvious logic for the change of material. © NTS

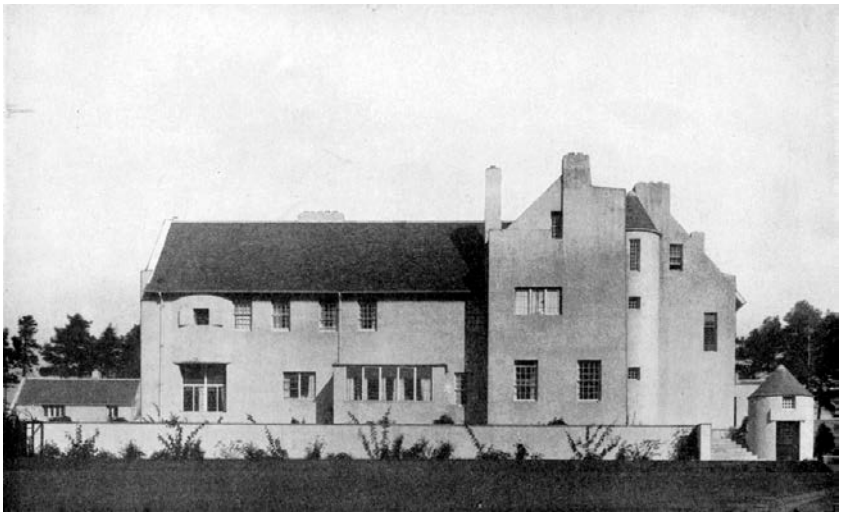
The specification of roughcast permitted Mackintosh to build the house of materials that were to be covered over in their entirety, which offered a measure of economy of which his client would no doubt have approved. The wash of a pure cement coat applied over the wetdash would have offered, at least in theory, a surface which should not need redecoration for its lifetime. It was one of the feuing conditions of the Luss Estate that the walls were to be constructed of red sandstone, but possibly only to first floor level[109] and, while this material has been used throughout the external walls of the house, it is by no means universal with a number of the gables and parapets having been built of a similar common brick to that witnessed in the construction of the School of Art and *Windyhill*. During a visit to Baillie Scott's *The White House* in the late autumn of 2011 it was possible to see

that, where the roughcast had failed, the same red sandstone had been used in the construction of the external walls. Brick offered a further advantage, as it permitted walls of reduced thickness to be used in areas of the house, for instance at the single storey extension to the Drawing Room which preserves a lightness of appearance and the calculated minimalism that the architect had been seeking in his drawings. A photograph taken during construction shows bullnosed bricks used in the construction of the parapet walls at the northeast corner of the house and around the main stair tower. Chimneyheads were built of the same material. As has been noted in the letter written to Muthesius (page 20), the client showed great patience in waiting for his house to be delivered, and his architect was not bowing to pressure to build it in a manner which would be likely to fail. However, it remains the case that, even though the sandstone which may have been specified by the Luss Estate had to be used and was demonstrably of poor quality, no effort at *The Hill House* seemed to have been made to ensure that the material was to be laid on its natural bed which the contractors at the Glasgow School of Art were obliged to do in following the project specifications. It may have been the case that the architect, and Traill, his appointed local contractor, believed that the promise of the enhanced performance of the cement roughcast was such that any dampness in the stone was unlikely ever to be a problem. The source of the stone has yet to be verified: a publication on Glasgow's building stones observes that a number of quarries around the city were producing red sandstone, some of which was poorly cemented and therefore unsuited to building purposes[110]. The leaflet lists a red sandstone quarry which had operated at Bonhill, near Alexandria, in Dunbartonshire[111], but this may not have been the source as the Blackies recalled many years later that the stone could have been quarried at Corrie on Arran[112]. Geoffrey Jarvis was later inclined to give Skelmorlie as another possible source[113].

Right: the image selected by Thomas Howarth from the Lemere photographs of the house suggest a different tonality which is closer to what is known to have been the original appearance of the house in 1904. The photograph should be compared with that on page 36 (from Howarth, Plate 38B)

It seems highly unlikely that Mackintosh considered he was taking any risk from his undue reliance on cement render to provide effective weathering for the property given the claims made for the performance of the material, and the manner in which it had been used successfully for the first phase of the Glasgow School of Art, and also for *Windyhill*. Had there been an early failure of the material at either of these sites, he would of course have been deterred from persisting with the use of the material and in relying upon it so heavily. Or, it might be expected that he would be persuaded by Keppie to moderate the excesses of his experimentation. But the promised capabilities of Portland cement continued to meet his requirements in a way that no other architect at this time was seeking to emulate. The photographs

taken of *The Hill House* by Lemere in 1904 reveal that, already after a very short period of time, the harling was stained by the run-off of water from the chimneyheads where the soot from the flues would have been concentrated. The effect becomes more evident when examining the same photographs used by Thomas Howarth, which seem much grainier than those to which we have become accustomed (they are illustrated here). Comparing Lemere's photographs with those taken at the time of the construction of the house, it suggests that a unifying cement wash must have been applied to the face of the roughcast to overcome the different colours in scaffold lifts during the application of the material. And neither was the discolouration of the walls confined to the chimneyheads: there is evidence of water running off the base of the skews, from the parapets and high level ledges where changes in the wall planes occurred.



Another Lemere image used by Howarth of the south elevation (1904) which again reveals a different tonality to the images normally published of the house; the staining of the cement roughcast and the appearance of patchy surfaces suggest some problems arising from the use of the material already at this early date (from Howarth, Plate 38A)

1.5 After the completion of The Hill House


The curious corner building designed by Mackintosh at Dunira Street, Comrie (1903-04) (from Haynes, p95)

Around the time that *The Hill House* was completed, Mackintosh had undertaken a small commission for a friend, the draper Peter Macpherson, whose shop premises at Dunira Street, Comrie, had been destroyed by fire[114]. It was a curious design, full of strange mannerisms, but once more the architect conceived the building to be clad in roughcast, the original state of which, and whether it had been unpainted, is unknown as the walls of the property are presently whitewashed. He seems to have taken a step back over his adventurous use of cement roughcast at *The Hill House* as the tapered chimneyhead is given a thin stone cope, harking back to the chimneyheads at *Windyhill.*

By February 1907 the second phase of work to the Glasgow School of Art had been awarded to Keppie & Mackintosh, albeit in spite of some serious reservations expressed by the school board over the practice's performance over minor alterations to internal fabric carried out towards the end of 1905, which had resulted in an overspend[115]. The western extension of the school incorporated the new Library, considered widely to have been Mackintosh's crowning masterpiece of the whole development on the site, and of his entire professional career. The work was completed by December 1909, and was marked by a fine set of drawings prepared by him in the following year (page 31). They revealed the boldness and stark grandeur of the long south elevation which, even today, still towers above the adjoining buildings of the street block. For this, the slight hesitancy of some constructional aspects of the earlier work was cast aside - Mackintosh embraced the full potential of cement roughcast, reproducing the detail at *The Hill House* in which the roughcast was carried over the top of the parapet walls without any change in texture, or obvious change in the specification of the strength of the cement which appears to be incredibly strong. It has such inherent strength and integrity that it has pulled off the face of the brick backing in some cases, or in others has exposed the cement slurry applied to the face of the brick prior to applying the coats of roughcast. Recent repairs to the fabric have confirmed that the backing is brick, and bullnosed bricks have been laid at the wallheads to replicate the detail used at *The Hill House.* In several areas of the wall the roughcast was found to have such strength that, having become detached from the brick backing, it was supporting its own weight but with little to suggest that large areas were at risk of immediate collapse. As at *The Hill House*, the combined thickness of the two coats and wetdash finish is considerably greater (often in excess of 30mm) than would be specified for modern Ordinary Portland Cement which is much stronger still than the material available to the industry at the beginning of the twentieth century. The surfaces at the School of Art have fared much better than those at *The Hill House*, and it would be pure speculation to state that this had been due to the increased exposure of the site overlooking Helensburgh and of the greater risk from wind driven rain, or whether this was due to difficulties with the backing material, especially with the soft red sandstone which loses all its inherent strength once it is in a saturated state.

The School of Art was not entirely without its problems, however, and the committee minutes record that consideration was being given to how to address them in 1946[116]. The report was prepared by Mackintosh's successor firm, Keppie & Henderson, and it is a matter of some irony that the reporting was being undertaken by A Graham Henderson, whose ambitions as the incoming partner had effectively banished Mackintosh from the partnership around the time when Blackie recalled meeting him in

The parapet to the south elevation of the School of Art, in the course of being repaired in November 2011

such a depressed frame of mind in 1914. Discussion on the issue of the repairs, and their extent and cost, rumbled on for a few years, with the consequence that major repairs to the roughcast were delayed until towards the end of 1950[117]. In an earlier report, Henderson had advocated applying a coat of cement slurry to the whole of the elevation to reduce the risk of the repairs disturbing the visual unity of the whole elevation. Just as at *The Hill House,* an area of roughcast has been identified which is in an original state and not interfered with since 1912, so at the School of Art a section of early render was identified below a projecting window bay in a sheltered corner of the building, which suggested that the original roughcast finish had been given a cement wash (page 37). The brownish colour of the roughcast as seen today has come from the Arran granite aggregate being exposed once the surface had washed off the face of the wall. The problems with the external wall finishes at the School of Art were contemporary with similar problems encountered at *The Hill House* which are addressed further in Part III.

In 1901, possibly as a consequence of the work having been completed for William Davidson at *Windyhill,* Mackintosh was engaged on behalf of his practice to undertake the design of a gate lodge at Auchenbothie House, near Kilmacolm, of which drawings have survived and are held at the Hunterian Museum. These seem to have been prepared during this transitional phase in Mackintosh's career, and a drawing of August 1901[118] shows tall cans to the chimneyheads which still have stone copes. The walls have buttresses in the manner of Voysey. The client, Hugh Brown Collins, returned to Mackintosh on several occasions over the years, awarding him the commission to build a new house of rubble stonework, *Mosside,* in 1906 for which the design and materials were relatively orthodox and quite uncharacteristic of Mackintosh's celebrated work in the *avant garde* mode. In the following year he approached Mackintosh for some further work to a stables and a cottage.

Drawings have survived of yet another project for the same client, a small extension to Auchenbothie Mains, prepared between 1911 and 1913. They are of some interest to the present study because they show the progression of ideas from earlier studies for the extension, incorporating a crowstepped gable, but without any stone margin appearing on the face, and were later changed to plain eaves which could only be of cement work as there was also no stone cope shown to the chimneyhead at the gable. The drawings are faint, but the walls of the extension are shown to be constructed of 9˝ brickwork, and at the windows the detail seems to consist of a curved cill of bullnosed bricks with the cement finish taken over the bricks to meet the window frame. It is clear from this that, in the absence of showing a damp proof course at the window cill, Mackintosh still placed his utmost faith in his reliance of cement roughcast as a waterproof finish, and any problems with the projects completed over the course of the previous decade could not yet have surfaced, or at least had not been reported to him.

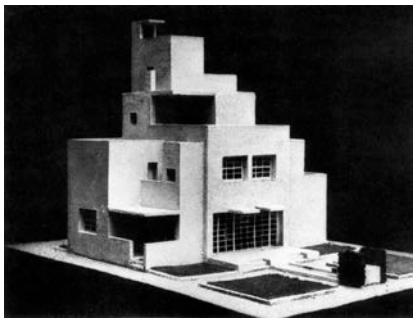
At the time when Mackintosh was beginning to find it difficult to accept the lack of recognition for his masterwork at the School of Art, Walter Blackie returned to him in 1912 for some alterations to the house which included the single storey east service wing of *The Hill House.* At around the same time the Drawing Room was redecorated as the original decorative scheme had been carried out in water-based paints. The original arrangement consisted of a slightly incongruous flat-roofed box attached to the east wing of the house, and it appears clearly in one of the Lemere photographs, taken

from the southeast corner of the front garden (page 59). Chronological notes prepared by the NTS suggest that the working kitchen was moved into the annex where the scullery and press had been originally, and the former kitchen became a staff room in the new arrangement. The flat roof was replaced with a pitched roof to match the other roofs in the house for which the gable had to be built up at the south end of the range. This rearrangement provides come certainty over identifying the area of roughcast which has survived within the roofspace as being original, and hence authentic.

With her husband at odds with his own practice and so deeply disillusioned, within the space of two years of him having completed the alterations at *The Hill House* Margaret Mackintosh sought to relieve him of the pressures of the city in the hope he would recuperate. They slipped away together quietly from Glasgow in July 1914 to take up temporary residence at Walberswick on the North Suffolk coast, a location which was first known to Mackintosh in 1897, to which he had probably been introduced by Fra Newbery[119]. Jessie Newbery found a studio for him there[120] and he became immersed in a series of watercolours of flowers, reverting to an earlier therapeutic interest[121]. For a brief while he was offered a lifeline by Patrick Geddes who he had met in London, to which the Mackintoshes had been forced to move from their rural retreat in 1915. Geddes was a professed admirer of the architect's work, for whom Mackintosh might have spent time in India working on the reconstruction of cities[122]. Above all, he would have understood the architect's predicament and his need for soul-searching, having only recently turned his back on his own ventures in Edinburgh for more rewarding pastures.

Top: Charles Holden's design for the Bristol Central Library (Adams, Holden & Pearson, 1902) (from Marriott, facing page 109
Above: Thomas Howarth, Mackintosh's first biographer, whose pioneering study of the architect was published in 1952

But the recognition he craved proved to be elusive as ever in his final years, despite the fact that there were stirrings in Britain while he was still alive. Mackintosh's idiosyncratic architectural style was not readily emulated, but there are clear references to the Glasgow School of Art in the rear façade of the Bristol Central Library designed by a youthful Charles Holden (1875-1960), won in competition in 1902[123]. From as early as 1924, Charles Marriott set out what he believed to have been the lasting influence of the Glasgow School of Art in *Modern English Architecture* (an extract from the book is included in the introduction to 4.2, page 88). Taking up this thread, Nikolaus Pevsner's *Pioneers of the Modern Movement* (1936) was instrumental in reviving interest in the importance of Mackintosh's best works. Among them Pevsner included *The Hill House,* even though he muddled it up unfortunately with the earlier *Windyhill*, a mistake which was not corrected when the book was partially rewritten in 1960 and given the revised title *Pioneers of Modern Design.* Thomas Howarth's research for his book on Mackintosh (first published in 1952, when Walter Blackie was still alive) marked an important milestone in re-establishing the architect's international reputation, and it became a key reference source for the volumes that followed. Henry-Russell Hitchcock in his pioneering work *Architecture, Nineteenth and Twentieth Centuries* (1958) patently had a well-developed sense of Mackintosh's importance and his contribution to the evolution of modern architecture[124] despite a claim to the contrary by Alan Crawford that he may have overlooked him[125]. However, it is probably true to say that a proper, and more balanced, appreciation of the architect's work in Britain had to await a thorough reassessment of Victorian architecture - which did not arrive until the 1960s - permitting Robert Macleod to write his perceptive account of the complex web of influences on Mackintosh's work and his architectural career, in a volume first published in 1968.



Top: drawing of a residential district from Tony Garnier's *Cité Industrielle* (1904), showing the impact of new forms of construction (from Le Corbusier, p53)
Above: Rob Mallet-Stevens *Project for a Villa,* 1924 (from Colquhoun, p145)

Robert Furneaux Jordan in his *Victorian Architecture* (1966) portrayed Mackintosh as an overlooked genius, gifted with the power to reconcile the essential conflict between the Arts and Crafts architects who clung rigidly to their ideals, and those in Europe, where Mackintosh's reputation was international, crossing a bridge in seeking new forms of architectural expression in the opening decades of the twentieth century. In claiming that Mackintosh's School of Art 'contains far more of Walter Gropius than it does of Aubrey Beardsley', he remarked that it was also 'the last great monument of the Victorian age'[126]. He drew attention to Mackintosh's influence on Rob Mallet-Stevens (1888-1945), one of a handful of *avant-garde* architects at work in France in the late twenties and early thirties who advanced the principles of the Cubist tradition and the emerging International Style. Mallet-Stevens placed over his door the words *'Si j'étais Dieu!'*, and when once questioned as to who he might be if he were God, he answered 'Then I should design like Mackintosh'[127]. Mallet-Stevens had a long standing connection with England and, like Mackintosh, appreciated the impact of new forms of construction sweeping away the old when he stated in 1925:

Abruptly, everything changed. Reinforced concrete appeared revolutionising the processes of construction …. science creates a new aesthetic, forms are profoundly modified.[128]

Reyner Banham in *Theory and Design in the First Machine Age* (1960) traced this train of thought back to the rationalism of Auguste Choisy (1841-1909), whose *Histoire* had a considerable influence on the principal exponents of reinforced concrete, Auguste Perret (1874-1954) and Tony Garnier (1869-1948). Whereas Perret's architecture expressed the structural frame (page 89), that of Le Corbusier, André Lurçat and Mallet-Stevens exploited the shape of the openings placed asymmetrically in plain white walls which were rendered to disguise the constructional elements of the frame and the infill walls[129]. David Walker once observed that 'the ideology of Mallet-Stevens can be detected in the elevations of *The Hill House*'[130].

Right: the Palais Stoclet, Brussels (1905-11), by Josef Hoffmann, the layout and interior of which was influenced by Mackintosh's *House for an Art Lover* (from Curtis, p68)

Mackintosh's influence on Adolf Loos (1870-1933), who had settled in Vienna in 1896 after a spell in the United States, is not so easy to categorise. Loos, one of the key figures in the development of modern architecture in Europe in the twentieth century, must have been familiar with his work and his influence on the Wiener Sezession - in particular Josef Hoffmann (1870-1956) who admired Mackintosh and his circle greatly, and was among those who ultimately was to lead the international reaction against the excesses of Art Nouveau. With Mackintosh he is credited with adopting a fully integrated approach to architecture and the decorative arts, which in his case found expression in the Palais Stoclet, Brussels, a mansion begun in

Adolf Loos: Steiner House, Vienna (1910); radical form-making (from Banham, p64)

1905 for a wealthy financier who had once lived in Vienna. Gustav Klimt decorated the interior of the house with fine mural paintings. As the exterior of the Palais Stoclet shows, Hoffmann was to move in an entirely different direction to Mackintosh, in which the external walls consisted of thin veneers of marble framed in such a way as to emphasise the precision of the wall planes[131]. Loos, as Mallet-Stevens, carried a deep admiration for English domestic architecture and furniture, and would have known Voysey's work well from the pages of *The Studio*[132]. He drew inspiration from an article *Ornament in Architecture* written by Louis Sullivan in 1892, in which a gauntlet had been laid down with the following challenge:

> It would be greatly for our esthetic good if we should refrain entirely from the use of ornament for a period of years, in order that our thought might concentrate acutely upon the production of buildings well formed and comely in the nude.[133]

The doctrinaire attitude adopted by Loos led to hostile criticism of those who had founded the Sezession in 1897, and his puritanical theories were put to the test when the influential essay *Ornament and Crime* was written in 1908. There were stirrings about the route that modernity might take in Britain even before then in a paper which appeared in July 1905 in *The Architectural Review.* Although the author was anonymous, it is generally held that the tone of the article suggested someone who was close to Lethaby, if not actually Lethaby himself. In praising the work of the great railway engineers who created the first truly modern express locomotives, he considered these qualities could not yet be found in the work of best architects of the time:

> If only we could build with the same fitness, the same science, the same *unchallenged acceptance of modern material and modern conditions,* and the same sincerity; if we could only think of our building as an entirely modern problem without precedent (and it is an entirely modern problem without precedent) just as the railway engine is, then, without doubt the same beauty, the same serene dignity would accompany our efforts, and the ruins of the past might crumble to dust but the architectural tradition would remain with us still……. In conclusion, let it be said that only the aboriginal force in any building can be called architecture, and to introduce any form which is not contemporary is to hinder progress and the true expression of modern architecture.[134]

In this passage are to be found a number of resonances with the principles and architectural ambitions set out in the lectures of the young Mackintosh, and with his achievement in the design and construction of *The Hill House*. It has resonances also with the words he uttered to Walter Blackie in the previous year, 1904, when the keys of the house were handed over to him (page 39).

Furneaux Jordan in the 1960s captured the mood of the time in recognising the contribution that Mackintosh had made to the passage of modern architecture; to a degree, it might be said that he was fulfilling the intentions of both Pevsner and Howarth in creating the case for Mackintosh to be seen as a modernist. Architects in Britain practising in the sixties and seventies were well attuned to reassessing Mackintosh's contribution, and in recognising the modernity of his work at *The Hill House.* The architectural devices he used were by then in common parlance, and were often emulated, either consciously, or in some instances, subconsciously. The adulation that followed was to lead ultimately to a literal revival of the Mackintosh decorative style in architecture and the decorative arts by the early 1980s, which ultimately devalued the original works.

Over time, what came to be recognised was that no other architect working in Britain at the turn of the twentieth century had quite jettisoned tradition

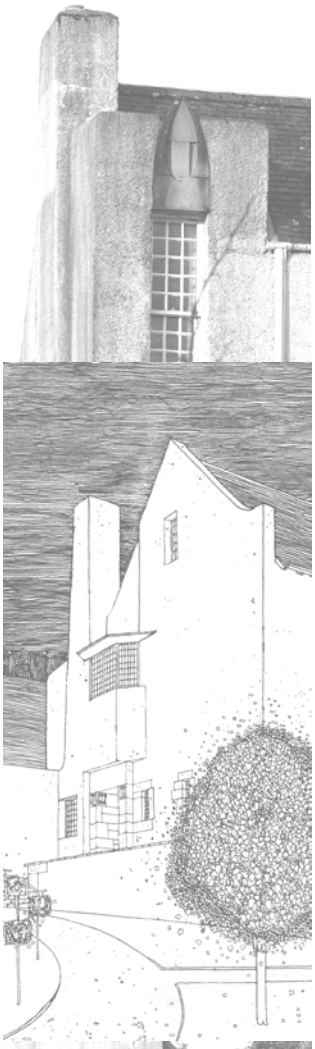
Richness in contrast and abstraction, anticipating the canons of the Modern Movement: daringly minimal, almost transparent structures superimposed against the solidity of roughcast walls, punctured by deep window openings. The absence of a window jamb at the junction between the windows and the chimney stack was a startling novelty, of the type of obsessive detail in Mackintosh's work which drew the admiration of the architectural profession in the late twentieth century which extended beyond mere stylistic imitation

in order to create architecture of such startling originality. If examples were needed of this - beyond the general abstraction of form-making made possible by the use of modern materials which had been embraced, and of the play of voids within solid wall planes - they are to be found in the almost complete absence of window and door margins, stone copes or string courses. Mackintosh took the exercise one stage further – where window openings abutted projecting walls at chimneys and gables, he dispensed altogether with the traditional arrangement of forming a solid jamb to the fourth side of the opening at the point of intersection of the walls, creating impressions of greater depth in the wall and of overlapping wall planes, ensuring greater architectural richness in what are, essentially, plain elevations.

Another feature which was recognised as being overtly modern, and well ahead of its time, was his use of modern construction methods to achieve the impression of extreme lightness in projecting bay windows, conceived in deliberate contrast to the solidity of the house walls. This is seen most clearly in the bay to the Drawing Room where the surfaces of the glass and the window frame, including the roughcast finish, are built flush, with no articulation other than in the proportions of the window bays. In this treatment Mackintosh was taking the elements of horizontality found in Voysey's designs several steps further, even to the extent that wall horizontal wall openings were balanced by vertical ones, as though to provide in the elevations of the building a functional response to identify where stairs occurred on plan. These features would become a hallmark of the architecture practised by the leading exponents of the International Style in the years leading up to the outbreak of the Second World War, and to associations being made with architects of the calibre of Mallet-Stevens. It is easy to overlook other design details which can be taken for granted, but they demonstrate the architect's clarity of intention and obsessive desire for detail over the type of house he was creating for Walter Blackie. Mention has been made already of the chimney cans at *Windyhill* – at *The Hill House*, Mackintosh knew instinctively to control the height of the pots to the extent that they are no longer prominent, so that they appear to be almost non-existent. In this, and in other details, he was demonstrably half-a-century or so ahead of his time.

These achievements were possible only from pushing the boundaries of knowledge of construction methods and materials which he married cohesively with extraordinary feats of imagination. It comes as little surprise, therefore, that the representative body of the profession in Scotland, the Royal Incorporation of Architects in Scotland, should have sought to secure the future of the building in the early 1970s by approaching the owner, rather than the other way around[135]. In this, led by James Dunbar-Nasmith, it succeeded, and the first steps had been taken towards ensuring that this property of a demonstrable Scottish pedigree, but of international architectural importance, could be enjoyed for the first time by a significantly wider audience.

The legacy of *The Hill House* is considered further by James Macaulay in Part II.



Part II James Macaulay on the legacy of The Hill House

2 The legacy of The Hill House

James Macaulay, who has written extensively about Charles Rennie Mackintosh and whose biography of the architect was published in 2010, begins his narrative by asking if the above words should end with a question mark:

Given what has been written about The Hill House, its inclusion in every text on modern architecture, and the acclaim attached to it and to its architect, one would have thought that there was no need to question the possibility of a legacy. Yet despite the renown it does seem as if The Hill House was a building which, however innovative it may appear, is without descendants. Why would that be so?

There are many reasons. The chief is that the house was by Mackintosh. With his obsessive nature the commission was never an office job as it would have been in firms other than Honeyman and Keppie. Also the firm did not produce assistants who went out into the profession and spread the word. It is interesting to reflect that Mackintosh joined the firm as a young draughtsman and never moved away. Also the firm was never large in terms of office staff. So, there was never a diaspora of Mackintosh enthusiasts.

Indeed quite the reverse. There seems to have been active dislike of Mackintosh and his close associates who were regarded as bohemian. The only close architectural associate seems to have been James Salmon. Mackintosh and he shared several common failings as individuals and as architects.

Mackintosh may have been regarded as an up and coming man when he was invited to give his early lectures. However, professional esteem was not there in later years. Not only were some commissions attacked in the press but the costly overruns must have been known. Also there must have been critical eyes cast over the construction. While one can accept that Mackintosh had a desire for planar effects uninterrupted by traditional details, such as cills or eaves, the use of Portland cement as at The Hill House did not obviate the necessity of taking account of the Scottish weather and its heavy driven rainfall. To ignore such conditions in the pursuit of an aesthetic ideal must have been looked on askance by other professionals. Then there were the spare outlines. Mackintosh may have looked to the architecture of Scotland's past for inspiration but where were the turrets, the water spouts and the other paraphernalia of the pedigree of the past? Also Mackintosh's insistence on the house as a total work of art, inside an outside, including decoration and furniture was not only costly but was unappealing.

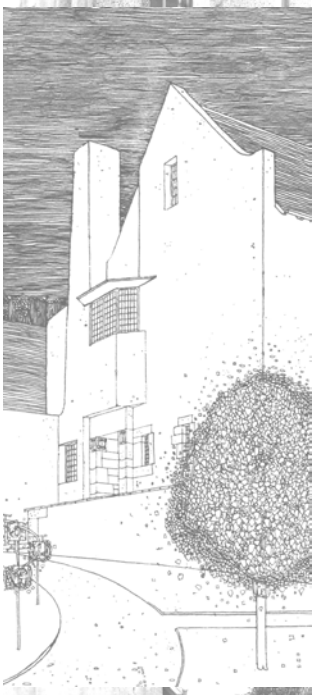
It would be true to say that Mackintosh did not have a base within the profession. He was not active in professional affairs; he was not employed as a teacher in the architectural department of the Glasgow School of Art and although he was a governor it was for a short period only just prior to his departure from the city. His partner Keppie was a governor at the School for many years. He was also active in the wider life of the city in the Art Club, the Trades house, his golf club. However, even with these connections Keppie would get into financial difficulties.

Glasgow's era of wealth and expansion was coming to an end and from the early 1900s there was a downturn in construction. The era of rich patrons

building large mansions was drawing to a close. And after the cessation of World War I there were different priorities.

Mackintosh was indeed written up in the press but it was the continental press and although there descriptions of Windyhill and The Hill House, the Art School was never written up in Mackintosh's lifetime. Mackintosh would have been aware of the movement towards 'whiteness' both in Scotland and in England. But when after World War I 'whiteness' became associated with the modern movement the origins were not those of past architectural styles but were derived from the products of the twentieth century.

It would be fair to say therefore that in more senses than one The Hill House is unique.



Part III A litany of repairs to The Hill House

3.1 Part III: introduction and abstract

As much as it is possible to identify them, this section summarises the history of the repairs undertaken to the external fabric of the house, and how it has performed from the days when it was first handed over to Walter Blackie. Even at such an early date there were already signs of streaking on the face of the roughcast from high level as a direct consequence of Mackintosh's somewhat adventurous detailing which dispensed with the conventional use of stone copes and projecting cills at window openings. It is difficult to be precise about dates, but the original roughcast appears to have performed without significant problems until the 1940s.

After Walter Blackie's death in 1953 the new owner of *The Hill House,* Campbell Lawson, called in the architect Margaret Brodie (who was well known in Glasgow circles) to advise on repairs to prevent water penetration. While her advice was restricted to the troublesome chimneyheads of the west elevation, within a short space of time numerous problems were encountered, requiring elements of construction at high level to be either removed, or modified. In 1972 the future of the house was saved by the RIAS, and under the auspices of the trust set up to look after the house further repairs, areas of rebuilding, and some reinstatement of the missing elements was carried out, but to little avail as the problems intensified.

The acquisition of the house in 1982 by the National Trust for Scotland marked a new phase in securing the future of the house. Dampness and outbreaks of dry rot had become commonplace by then. Attention was turned towards the problems of the north east gable of the house where the damp conditions were affecting the tenants of the flats which had been created by the RIAS, and at the flat at the top of the building owned by the Landmark Trust. The NTS's repair philosophy had to be shaped by a 50 year performance requirement for any repairs as a condition of the NHMF's endowment. The Boys Jarvis Partnership acted on behalf of the NTS, and after the failed roughcast was removed serious problems were encountered with the underlying masonry of soft red sandstone, with a significant amount of the material having failed from not being laid on its natural bed. It was proposed that the face of the wall should be substantially rebuilt to guarantee the bond with the roughcast. The NTS became locked in a lengthy and arduous battle over the preferred repair strategy. Because the work was grant-aided by the Historic Buildings Council for Scotland (HBCS), its architect considered that the proposed solution resulted in excessive loss of authentic material, in line with the philosophy set down in the Venice Charter (although this was not made explicit at the time). One of Britain's leading authorities on conservation practice was called in, and he advised the application of a silane consolidant at a time when the use of this material was still experimental. Evidence from trials suggested that the walls could be made waterproof and the strength of the stone would recover. The NTS had doubts, and expressed them; while the work was carried out (more or less successfully) to its architect's recommendations, in the full knowledge that grant aid had to be sought for the remaining work a moratorium would be held for five years before further remedial work would be embarked upon.

The period was cut short due to mounting problems with the fabric, which included renewed outbreaks of dry rot. In 1988 Page and Park were appointed by the NTS to review the situation and advise on taking the HBCS architect's specification forward. Substantial areas of bossed harling were confirmed, which could not be removed. The suggestion to grout the failed

areas of roughcast proved impractical, and a hybrid solution was embarked upon which involved the insertion of carbon rods to tie in the roughcast and flooding the wall surfaces with a silane consolidant. A proprietary silane paint finish was applied to the face of the roughcast, and for the first time since the house was erected its architectural appearance had been unified. While in many respects this phase of works proved successful at least in the short term, problems with the poor underlying masonry at high level continued to cause problems and areas had to be rebuilt. Dry rot outbreaks have not been eliminated, and during the severe storms of the winter of 2011-12 the more exposed parts of the house were saturated with high levels of water penetration which persisted over several days. Levels of intervention from repairs undertaken in the past have reduced options for future repairs, from being irreversible.

For the preparation of this section of the study the author has been reliant upon extensive archival research carried out into the archives of the NTS, for which grateful thanks are given to those who compiled the chronological lists and summarised the source information.

3.2 The house in the care of Walter Blackie

Photograph by Bedford Lemere from the southeast (1904). The flat roof on the east side of the house was replaced with a pitched roof in 1912 © NTS

Apart from the well-known photographs taken by Bedford Lemere in the summer of 1904, there are very few photographs that can be attributed with any certainty to the period between then and when the house was sold to Campbell Lawson in 1953. Those that might be identified from this period are taken from the garden and show only the south elevation of the house. Understanding how the fabric had performed becomes difficult to evaluate in the absence of a written record of known problems over a period extending to almost a half-century of use, and enjoyment, by the original family. It is telling that Walter Blackie's recollection of the building of the house and of his associations with the architect, written during the early 1940s, made no mention whatsoever of unpleasant living conditions resulting from dampness within the interior of the dwelling house from defects in the external fabric[136]. It is clear, however, from the testimony of one of Blackie's daughters later in life that the house was not immune from problems, and she recalled a number of repairs having been carried out before her father's death in 1953[137].

And yet, the cause of these future problems can be detected already in those early photographs taken in 1904. Despite the fact that these photographs appear to have been bleached out for artistic reasons - to give greater contrast between light and shadow in the glare of full sunshine - staining of the fabric at high level is visible already within the space of just a few months from when the house had been first occupied. In some publications where these images have been used (for instance, Thomas Howarth's book), the photographs appear to be rather less interfered with and the original tone of the roughcast walls comes across more strongly (pages 45 and 46). It can be seen that there was already serious discolouration of the surfaces at the head of the chimneyhead serving the Dining Room, which would have been in constant use. Likewise, the chimneyhead on the west return wall of the Dining Room gable was showing signs of problems below the head of the stack. All of the chimneyheads were showing signs of streaking where soot-laden dirt washes over the surfaces and down the face of the stacks. Staining was also visible at each of the skews at the gable wallheads and at the exposed parapet walls to the stair and at the other locations and, further, it was particularly noticeable at the change of direction from angled to horizontal in the surfaces at the raised skewputts. The flat areas of walling to either side of the angled Schoolroom

window at the east elevation were also shedding water over the face of the roughcast. There is a hint, perhaps nothing more, that there could have been a problem with the dressed stone lintol above the front entrance door where it supports the projecting bay window to the Dressing Room where a light streak in the surface of the stonework appears. However, it is pure conjecture to say that this had led to any problems in the early years when the family occupied the house, and a decade or so later Mackintosh was still designing in such a way as to be wholly reliant on the performance of a dense cement roughcast coat applied to all of the exposed surfaces to provide weathertightness (see 1.4). The evidence of the records held at the Glasgow School of Art appear to suggest that the material had continued to perform there without major breakdown, or causing water ingress, for a period of around thirty years.

In 1912 Blackie sought the advice of Mackintosh over changes he wished to have carried out at the east service range to increase the level of accommodation where the coal cellars had been located originally. A pitched roof was added to replace the original flat roof. For this, the same detail used elsewhere in the house was adopted of carrying the roughcast over the head of the new gable at the south end of the range. Walter Blackie was to instruct a further change in 1928 to the lodge which originally had been occupied by the gardener and his wife who had moved from Dunblane with the family in 1904. The dwelling had been small in area as the couple had no children and it was extended by a local Helensburgh architect, Robert Wemyss (1865-1955), no doubt to accommodate the family of the new gardener called Howe when he was appointed[138].

At some stage an incongruous lightweight structure was erected to the rear of the house which appears to have been of timber frame construction with light-coloured infill panels and with a low-pitched roof, which could have been erected as a small garage[139] even though the lodge had been extended to include one. There had been no motorised family transport until a Standard motor car was purchased from a dealer in Glasgow in 1926, and the vehicle would have required to be garaged on the site[140]. The same year also saw the gas lighting being replaced by electricity, the equipment for which was placed in the round garden house which had been a garden tool shed originally. In later photographs the structure appears to have been connected to a flat-roofed extension to the main house which nestled in behind the main stair tower, where the Billiard Room had been proposed originally. This is believed to have been an air-raid shelter with the door appearing on the main entrance elevation (originally there had been a baffle wall protecting the door[141]) giving it something of an unbalanced appearance. These structures were difficult to see clearly in the few photographs in which they appear, and were taken down either in the 1970s by the RIAS, or possibly in the early 1980s by the Trust as soon as the house came into its ownership (see photograph, page 68).

A photograph of the house taken by a commercial photographer on behalf of the Lawsons, in either 1953 (or more probably, 1955) suggests that there may be two photographs that have come to light in the NTS's photographic archives which can be dated with some confidence to the previous period when the house was owned by the Blackies. Clues are provided from studying features within the garden, and the foliage of the plants growing either on the house walls, or in close proximity to it. The earlier of the two photographs could date to the late 1930s, with the other photograph taken perhaps a decade or so later at the latest. In both images, climbing plants have been allowed to grow on the walls of the building, softening its

Photograph from the southeast, most probably taken in the late 1930s when the house was still in the possession of the Blackie family: no physical change, other than weathering of the roughcast finish to the walls, appears to have taken place from when the house was handed over by Mackintosh in 1904 © NTS

appearance, and in one of the photographs the projecting bay to the Drawing Room has almost completely disappeared under the extensive plant growth which has enveloped the lead flat roof. By this time, it is apparent that the surface of the roughcast has been soiled extensively by air pollution, and the cement wash applied over the final wetdash coat may have weathered slightly to reveal the face of the aggregate which would have changed the colour of the walls, as happened over time at the rear wall to the Glasgow School of Art. Maitland, a local plasterer and builder, was appointed latterly by Walter Blackie, and he took over the responsibility of maintaining the house from the original builder, Traill of Helensburgh. The only hint that there appear have been problems with the fabric of the house came from Maitland saying on one occasion to the family that 'Mr Mackintosh did some things for the sake of architecture which were not good building practice'[142].

A slightly indistinct photograph of *The Hill House*, probably taken during the Second World War, or soon thereafter © NTS

From studying these early photographs it becomes abundantly clear that there were mounting problems with the fabric, especially at high level. Chimneyheads were heavily soiled and were exhibiting the first signs of the surface of the roughcast becoming crazed from persistent damp conditions and frost damage during the winter months. The chimney stack partially disguised by the circular stair tower has also evidence of water having penetrated to halfway down the stack, and snowboards are shown fitted to the roof of the east elevation which were shortly to be removed, only to be reinstated later. What is believed to be the later of the two photographs could have been taken after a period of prolonged rainfall as it shows up defects in the construction and in the appearance of the roughcast, particularly at the Dining Room gable.

Geoffrey Jarvis, once appointed by the NTS in the 1980s, went to some length in seeking oral evidence from the surviving members of the Blackie family. The first of the two elderly daughters to whom he spoke could only recall trouble emerging with the northeast corner of the wash-house of the north service range, suggesting a defect with the single storey brick gable[143]. Agnes Blackie was somewhat more forthcoming: she had firm recollections

of a number of repairs having been carried out, and of an outbreak of dry rot having broken out in the maid's bathroom where the Landmark Flat is now. She was quite certain that the roughcast of the west gable had been renewed, most probably in 1949, and areas of roughcast had also been replaced around the courtyard. Before then the ceiling in the entrance lobby collapsed and, although she felt inclined to believe that the problem might have been caused by airborne noise from the anti-aircraft gun mounted on the moor above the house during the Second World War, she admitted that the laths supporting the plaster were found to be rotten from the damp. Damp problems in the area of the west gable seemed to be extensive, with repairs needed to the panelling surrounding the Library fireplace at ground floor, and problems reported with the wall behind the bed in the Master Bedroom[144]. She thought it possible that the roughcast to the south garden elevation may also have been renewed some time thereafter.

Walter Blackie died in 1953, the year after Thomas Howarth's book on Charles Rennie Mackintosh was first published. The house was advertised for sale by the family for the sum of £5,500 but, despite a growing awareness of its importance the asking price proved too ambitious at a time of austerity, and in November 1953 the house was sold to a Glasgow chartered accountant, T Campbell Lawson[145], for which it is believed he paid £4,000.

3.3 Addressing the problems: Campbell Lawson (from 1953)

Photograph of the south elevation of *The Hill House* commissioned by Campbell Lawson, possibly 1954 or 1955 (courtesy of Kenneth Lawson)

Cartoon of the leading members of the Empire Exhibition Team of architects led by Thomas Tait (encircled): Margaret Brodie is shown, top left (from McKean, p39)

Having acquired the house, and no doubt having consulted Maitland who knew it intimately from the repairs he had carried out previously for the Blackies, Campbell Lawson brought in the Glasgow-based architect, Margaret Brodie (1907-1997), to help resolve problems with the fabric. She was a well-known figure, highly regarded in Glasgow circles, and had been one of a group of young architects assembled by Thomas Tait for the Empire Exhibition of 1938 which included Basil Spence, Jack Coia, TW Marwick and Esme Gordon[146]. Campbell Lawson called her in at the beginning of the previous year to advise on alterations to be carried out to the property to suit the new family's domestic requirements[147]. She spoke at length to Maitland, and gave her report on immediate repairs that had been identified for the property in the form of a letter which was issued in August 1956, almost three years after the property had been acquired[148]. There is no suggestion from the letter that she was under any obligation to provide further information by way of specifications and drawings, or even to administer the remedial work she was recommending to be carried out. It is implied that her recommendations would be attended to immediately by Maitland with the possible exception of the largest of the tasks to be tackled – the large, defective, chimney stack which had resulted in persistent water penetration at the west gable which might have to be deferred. Although she acknowledged that there were numerous problems with the fabric of the house, those associated with the chimneyhead were by far and away the most challenging but, at this stage, she was not yet anticipating the need to take down the chimney and rebuild it. She observed that the head of the stack was badly cracked on the two sides *least* affected by the prevailing weather conditions, and advised that the problems should be resolved by repairing the cracks appearing in the roughcast and by sealing off the two flues which were ventilated at top and bottom from the inner face of the stack. The chimney cans were probably removed at this time, and the head of the chimney sealed off. The visual impact of pointing up the many cracks to the chimneyhead could be seen in photographs for years to come.

The other area of the fabric causing her concern had been the state of the roughcast at the wall above the kitchen window facing the courtyard, where

Above: the west elevation photographed in 1969, showing the extent of the pointing up of the cracks in the failed roughcast finishes; lead can be seen dressed over the skews between the two chimneyheads and at the parapet at the flat roof, left (courtesy of Kenneth Lawson)

large areas were ringing hollow, leading to water penetration at the ground floor window (the frame was fitted flush with the face of the harling). The other repairs she identified were relatively minor, and were entrusted to local tradesmen. Photographs taken before extensive alterations were carried out at roof level reveal that problems of soiling and cracking of the fabric had increased to a considerable degree, particularly at the more exposed parts of the fabric.

Margaret Brodie's report on the remedial work required makes interesting reading, but it could not have covered the full extent of the problems which were beginning to reveal themselves. Mrs Lawson kept a few notes in the months following the report from which it becomes clear that a catalogue of major defects with the fabric of the house was unfolding[149]. In addition to the problems from water penetration at the wallheads the lead flat roofs were beginning to fail, a potential problem which had been touched on by Margaret Brodie in her report. The persistent dampness of the external fabric had caused outbreaks of dry rot in the property which appear to have been begun first in the roof timbers. While there appears to be very little written down as to what was actually done, the full extent of the alterations to the exterior of the property becomes apparent from studying photographs taken shortly after the house had been acquired by the RIAS in 1972. Mrs Lawson, in discussion with Geoffrey Jarvis and Margaret Brodie in 1982, recalled that the date was 1957 when these works were carried out[150]. A photograph of the house taken from the southwest, through the entrance gate, by David Walker in 1959 confirms that the work had been completed by that date.

Right: photograph by David Walker (1959) shows the extent of crazing clearly in the area of the projecting window bay of the west elevation; where the beam to the curved bay on the south elevation has been replaced; and the reworking of the roof at the south gable to eliminate the chimneyhead and parapet in this area, where disturbed areas of roughcast can be discerned © Crown Copyright RCAHMS: licensor www.rcahms.gov.org

Without rebuilding substantial parts of the fabric the solutions were, of necessity, invasive in what must have been a desperate effort to keep out the water from the interior of the house. A freestanding redundant chimneyhead (shown with two flues in the Lemere photographs of 1904, and would have served the Billiard Room had it ever been built) was taken down at the north elevation and was not replaced. It is possible that this had been taken down during Walter Blackie's ownership of the house. Similarly, at the return wall to the Dining Room south gable, the parapet wall and chimneyhead were removed and the roof extended so that it covered the wallhead; as a consequence of this change (for which consent was sought for, and granted by the Dunbartonshire County Council) the profile of the stepped wall planes were altered once the parapet had been removed to accommodate the line of the roof. The slender chimneyhead at the middle north gable facing the courtyard was also removed together with

the skews at the middle gable of the north elevation. Skews were also removed at both ends of the single storey north range where the roof slating was extended over. At the west elevation, the skews to the gables were covered in sheets of lead, a solution which was applied also to the parapet wall surrounding the main staircase where steps were introduced to the line of the parapet. Lead was also introduced at the flat areas of the wallheads adjacent to the angled bay window at the former Schoolroom. All of these changes can be seen in the illustrations in the next section of the report. Although extensive in their scope, the work had been done sympathetically to the extent that at least the character of the house had been largely maintained. The authenticity of Mackintosh's design as originally executed could not be spared, however, for which the lost features and details were to be reinstated at a later date.

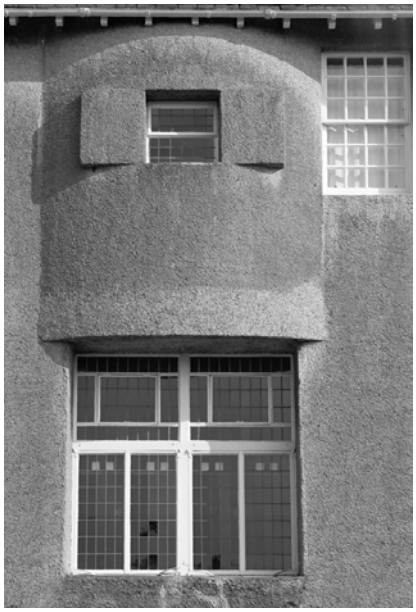
Right: photograph of the northeast gable taken before the house was handed over to the RIAS, but before the chimneyhead was removed at the middle gable (to the right of the picture), showing extensive problems with the roughcast of the gable © NTS

Campbell Lawson's son, the architect Kenneth Lawson, has confirmed that the problems were not simply confined to the high level features of the house. During the time that the family lived there problems were occurring already with water penetrating the core of the walls which, once it had entered, would be diverted to where solid elements, such as lintols, were encountered[151]. However, in those days of relatively cheap fossil fuels the house was always well heated and ventilated, and most of the rooms were then occupied. Discomfort arose as much from water driving in through the leaded lights or from cold draughts from the same source. In general, repairs to the roughcasting were confined to making good disturbed areas of walling where the parapets, skews and chimneyheads were removed, but some remedial work was required at the more vulnerable areas of the walling, especially at window cills. With the long standing problems of water penetration at the west elevation, the steel lintols had to be taken out and renewed at the window serving the WC at the cloakroom, and the curved beam at the Master Bedroom window bay was probably replaced as the roughcast was renewed in conjunction with this repair[152].

However, it would appear that the remedial works reduced to a significant extent the problems encountered after the house was acquired from the Blackies, and the roughcast to the external wall surfaces is considered to have remained in a relatively unaltered state from 1953 until 1972 when the house was acquired by the RIAS.

3.4 The future of the house secured by the RIAS

Right: 1973 photograph from the southwest. The rebuilding of the roof at the south gable can be seen clearly
Below: the curved projecting bay to the Master Bedroom, with evidence on the face of the roughcast of where the beam has been renewed. Repairs to window cills can also be detected.
Both photos © Crown Copyright RCAHMS: licensor www.rcahms.gov.org



Despite having been forced into altering the fabric of the house for his family to be able to live in it with some degree of comfort, Campbell Lawson had always appreciated its supreme importance. Although some of the furniture and fittings designed by Mackintosh had been dispersed before the time of the sale of the property to him, nevertheless he was determined to ensure that the house and its contents should be preserved together, and also that a sympathetic owner should be sought for the property when he wished to pass it on in the early 1970s. On more than one occasion an approach was made to the Secretary of State for Scotland over the possibility of the house being taken into State care: on each it was turned down dispassionately. Some had thought this lack of official interest a scandal, particularly at a time when an appreciation of Mackintosh's hitherto overlooked output was being re-evaluated and when his international reputation was, by now, secure. Anxious about the future of the house the Royal Incorporation of Architects in Scotland (RIAS) made overtures to Campbell Lawson which were received favourably. In the negotiations that followed, Lawson had been extremely generous in offering the property and its contents for sale to the professional institution for the sum of £25,000, because around this time a single furniture item, a desk designed by Mackintosh, was being sold for the sum of £35,000 in New York. It was a sure indication of the growing recognition of the architect's work[153]. Following a meeting of its Council, the RIAS took the unprecedented and brave step of setting up an appeal of its members and raising the necessary funding to acquire the building.

As though to recognise the fact that the State had not been as supportive as some believed it ought to have been over the acquisition of the house for the nation, the Historic Buildings Council for Scotland (HBCS) was prepared to offer generous grants for its repair. This commitment extended for the next two decades, and well beyond the period for which the RIAS had owned the property. For the costs of conversion and repair to stack up the RIAS had looked at the potential for selling off development sites, but in the end any associated risk to the setting of the house was averted[154].

Above: the garden store, showing few signs of roughcast repairs having been undertaken in 1973
Above right: the south elevation viewed from the southeast of the garden before alterations were undertaken to provide direct access to the flats from the base of the stair tower

The RIAS was determined to ensure that the whole of the house should not stagnate as a museum and that appropriate parts of it should continue to be lived in so as to create rental income to help with the financial burden of running the property. The Hill House Trust was set up, and the distinguished Glasgow practice of Gillespie Kidd & Coia was appointed to prepare plans and oversee the work for the conversion of the east wing of the property into three flats. A new entrance door was formed at the base of the spiral stair tower to provide segregated access, while means of escape, should they ever be needed, were to be through the floors of the mansion house. The top flat, where the old Schoolroom had been, was later to be taken over by the Landmark Trust in 1978 in an arrangement which was agreed with its founder, Sir John Smith, which saw the handsome sum of £50,000 being paid as an endowment to the Hill House Trust over a period of five years.

Priority in the programme was given to the creation of the lettable flat units and to opening the remainder of the house to the public. Work in repairing the external fabric followed on slightly later, after a condition survey had been undertaken of the property which led to a schedule of repairs being carried out, based largely on a report prepared by the architect advising the HBCS. It appears that this resulted in extensive work being carried out to replace areas of harling which were noted, by now, to be detached from the core of the wall, or 'boss'. Concerns were mounting over the potential failure of any replacement roughcast where carried over the wallheads and over the poor condition of the underlying friable masonry. In 1974, technical advice was sought of the Cement & Concrete Association (CCA) over the replacement of the roughcast at the wallheads, over which doubts were expressed over whether this could ever be successful without the insertion of a damp proof course. The CCA also recommended a 1:1:6 specification (Portland cement: lime: sand) for the replacement roughcast, which was at odds with the 1:3 specimen standard specification prescribed by the Ancient Monuments Division of the Department of the Environment, reissued in 1973. A chimneyhead was erected to reinstate the original chimneyhead taken down by Campbell Lawson adjacent to the south gable above the Dining Room, and the original parapet wall arrangement was reinstated (much against Mr Lawson's earnest pleading that it should never be reinstated for the further damage that would result to the interior!).

Not only did the problems continue with the fabric but they appeared to multiply. After the completion of the flats and the initial fabric repairs had been completed under the auspices of Gillespie Kidd & Coia, the ongoing care of the property was entrusted to the Management Committee of the

Right: view from the orchard to the north of the house in 1973 shows clearly the repairs carried out to the roughcast of the middle gable, and the loss of the chimneyhead. Also the lightweight structure inserted behind the stair tower is visible
Bottom right: several repairs and modifications to the fabric are apparent. The vents to the rear of the chimneyhead at the west gable are visible, as is lead dressed over the skew at the north gable and main stair tower. In addition, the raised skews at the single storey range have been removed and the chimneyhead at the north gable has been sealed off at the head and the roughcast renewed

Hill House Trust chaired latterly by the Glasgow architect, Robert Rogerson. The committee appointed a House Architect, Bill Davie of William T Davie & Associates of Glasgow. Within a few years he was to summarise the extensive scope of remedial work in which he had been involved around the time that the property came into the ownership of the NTS. Among the most significant repairs to be undertaken had been the taking down and rebuilding of the large chimneyhead at the west gable which had caused long standing problems, which was rebuilt in calcium silicate bricks. The roughcast failed to the chimneyhead which had already been rebuilt adjacent to the south gable only a few years earlier, and there were problems from storm damage in which high level areas of roughcasting throughout the property were damaged. Drainage problems across the site were also reported, and because of an allegedly blocked drain in the garden adjoining proprietors laid claims against the Hill House Trust over damage to their driveways from surface water collecting on the roadway. Worse still, the interior of the property was reported to be suffering from damp

Above: photograph taken in May 1982 around the time of the acquisition by the NTS shows the parapet and chimneyhead reinstated at the south gable, with the roughcast finish already having failed
Above right: east elevation before modifications to the fenestration at the single storey wing to accommodate visitor facilities
Bottom right: detail of crazed surfaces to the roughcast at the west elevation and lead still in position over the skews

conditions, with water ingress from the north gable noted in particular as being problematic. Outbreaks of dry rot had been identified, for which quotations for remedial work were sought.

Through the vehicle of the Hill House Trust the RIAS no longer felt able to care adequately for the fabric of the building, and so overtures were made to the NTS to take it over and secure its long term future with the promise of an endowment of £425,000 from by the National Heritage Memorial Fund (NHMF). The handover was achieved seamlessly in May 1982.

3.5 Acquisition by the NTS, and the ensuing debate with the HBCS over repair strategies

Above right: *The Hill House* as passed down to the NTS in 1982, from the southeast © NTS
Above: the sandstone dressings at the front entrance were substantially free of defect in 1973, but the pristine appearance of the stonework had deteriorated markedly less than ten years later © Crown Copyright RCAHMS: licensor www.rcahms.gov.org

The Trust's intention is to preserve and conserve that which is original: to restore or recreate sympathetically that which has deteriorated through use, abuse or change of function.[155]

Before the property was acquired by the NTS, the Trust's Building Surveyors, Philip Schreiber and Alexander Bennett, prepared a joint status report on the condition of the property at that time. Their inspection of the fabric was carried out during November 1981 and it seems they had spoken to the House Architect, Bill Davie, about his knowledge of the property for the six years or so for which he had been involved with it.

The report acknowledged the efforts made in the past to maintain the property in good condition, although it noted that it would be necessary to alter the wallhead and chimneyheads to improve weatherproofing while preserving, at the same time, the existing appearance from the ground. Capping the open flues of the chimneyheads had led to problems as the flues had been left unvented. Curiously perhaps, it was reported that the grey harling was considered not only to be generally in good condition, but also that the majority of it had been painted by that time with the only area showing defects being at the north elevation. Weathering problems were recorded at the ashlar masonry in the area of the front entrance to the property, which appeared to be subject to constant dampness due to the exposure to the prevailing wind. Record photographs taken by RCAHMS, less than ten years previously, seemed to indicate that there were no obvious blemishes in the stonework and so this appears to have emerged as a recent problem. The principal problems observed in relation to the external fabric were at roof level with several slating repairs needed while extensive problems were observed with the leadwork, assumed to have reached the end of its life and in need of being overhauled.

Problems with water penetration at the northeast corner of the house were affecting the finishes of the rooms of the flats, while at the ground floor flat there appeared to have been long standing problems with rising damp.

Top: bricks having failed where the chimneyhead was rebuilt at the south gable, before rebuilding and roughcasting.
Above: photograph taken shortly after the house opened to the public and extensive repairs having been carried out at high level to chimneyheads and skews; the roughcast to the garden store appears to have been largely replaced.
Above right: a contemporary photograph with the above shows the discolouration of wall areas where the roughcast has been renewed. The photograph also shows the west elevation affected by damp after rainfall, and the stonework at the entrance suffering from the deposition of salts flowing freely through the core of the wall.
All photos © NTS

Other than this, there was a catalogue of defects reported at the rooms behind the west elevation, with the internal walls damp from prolonged water penetration. The Dressing Room with the angled bay window and the cloakroom at ground floor were reported to be worst affected, with the defects little different from those experienced today. No improvement appeared to have resulted from the rebuilding of the chimneyhead on this elevation. Associated with the continuing problems of water penetration, the risk of dry rot infestation returning was identified as a potential hazard.

The report also identifies problems with ground drainage across the site – of ineffective cut-off drains at the north boundary, and of blocked up drains within the garden. The problem was fully investigated later by Philip Schreiber and detailed records were kept of the findings.

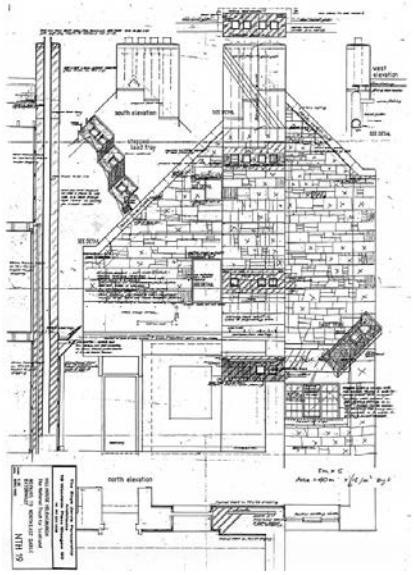
Geoffrey Jarvis of the Boys Jarvis Partnership was appointed by the NTS to prepare a further report on the condition of the property, for which his appointment and brief had been agreed beforehand with the NHMF. In underwriting the cost of his inspection and report, the NHMF had the expectation that the solutions would be of long term benefit and were to last for a period of at least fifty years. This requirement conditioned the NTS's thinking about repair strategies, and was enshrined in the brief to the consulting architect.

Jarvis's report and recommendations were shared in February 1983 at a large meeting attended by representatives of several organisations, including HBCS, RIAS, the local planning departments and the Charles Rennie Mackintosh Society (founded in 1973). Stewart Tod of David Carr Architects represented the Landmark Trust. Jarvis, in summarising the problems with the fabric, recognised that the problems with the harling posed considerable challenges, not least that the underlying stone was known to be porous. Its ability to support a dense cement render was in question. Relatively little of it was considered at the time to be boss from the repairs that had been carried out, but these had now disturbed the appearance of the roughcast for which further disturbance would be inevitable, for instance, where window cills had to accommodate the insertion of effective damp proof courses. The merits of stripping the existing roughcast finishes and reharling the walls (to recover the overall appearance as against painting the walls to gain the same effect) was posed as a question, as was the question of remaining true to the authenticity of Mackintosh's original construction. In the discussion that followed, there was some rehearsal of the sort of issues

The north single storey range and northeast gable prior to repairs being undertaken in the mid-1980s: the full extent of repairs to the roughcast to the skews and chimneyheads can be seen clearly © NTS

that were shortly to be debated with the architect advising the HBCS – of those present, some preferred retaining the authenticity of the original materials by adopting a conservative approach while others supported the question of greater intervention by replacing the stone, so that the performance of the harling could be better guaranteed. The defective replacement chimney at the west elevation had been taken down for a second time, and it was reported that a major outbreak of dry rot emanating from the Dining Room had affected the structure above the music alcove and other, more minor, outbreaks of dry rot infestation were reported in the north wing.

The northeast gable was considered therefore a priority, and its poor condition was affecting the tenants of the flats which were within this wing of the house. The NTS proceeded with the preparation of tender documents which involved a measure of intervention in taking down defective masonry, and refacing the walls where the masonry was deemed incapable of supporting the replacement of the harling. As a first step, the harling was removed so that the state of the underlying masonry could be examined. Boys Jarvis had recorded each of the stones exposed in the face of the north gable, and had marked carefully those laid 'on cant' (not on their natural bed). The friability of the masonry was such that when the harling was removed, slivers of the face of the masonry adhered to the dense cement harling, most noticeably where the stones had been laid on cant. At a pre-contract meeting on site in September 1983, the architect representing the HBCS, Ingval Maxwell, inspected the site for the first time. He expressed disagreement with the approach adopted by the NTS's appointed architects, considering it was unnecessary to have to replace so much of the material, arguing the case for minimal intervention, a view reiterated at a site meeting held in the following November. By this time the internal finishes had been stripped back, revealing the problem encountered elsewhere in the house of the stone disintegrating at the inner face so that stone dust, which became damp over time, bridged the gap with the rear of the lath for the plaster finish. Maxwell delivered a blunt message at the meeting, considering that 'If the re-building of chimneys was to be a policy throughout Hill House, he did not think H.B.C. would support it'[156]. He advocated the indenting of defective stones in preference to rebuilding the face of the wall in brickwork. As the HBCS's technical advisers were not in attendance at the



Top: survey record drawing of the masonry of the northeast gable with details of proposed repairs (Boys Jarvis Partnership)
Above: photograph of sandstone taken from the face of the wall during the repairs of the mid-1980s, showing the tendency towards delamination of the sedimentary layers
Both photos © NTS

meeting held earlier in the year, when others had represented the Department, the line now being taken alarmed the NTS and its advisers.

Battle lines were being drawn up. Jarvis continued to argue the case vehemently on behalf of the NTS, which he presented at a meeting of the HBCS later in the month, for which Maxwell produced a parallel briefing paper for the members of the Council. Jarvis articulated the concerns over the performance of the sandstone in terms of the excessive saturation to which it was subjected (an estimated 59% from samples taken), the consequential loss of strength, and the extent to which the stone shattered when drilled when in a dry state. He reiterated the proposal to clour back the face of the masonry at the gable and reface it in brick to provide a mechanical key for the harling, considering that this was preferable to proceeding with the application of a stainless steel mesh to secure the roughcast to the core of the wall. Maxwell acknowledged that the harling was cracked and crazed on all external faces, but he preferred to overcome the problems of the northeast gable by indenting the worst defective stones and, in the case of the chimneyhead, repairing any defective brickwork in like material. He advocated the use of stainless steel mesh to be supported away from the face of the wall from which it would be separated by a membrane, and introduced the possibility of the eroding stonework at the front entrance being treated with 'Brethane', a proprietary waterproofing system developed by the Building Research Station.

In an effort to break the deadlock, John Ashurst was called in from the Department of the Environment in England to advise Maxwell on possible repair strategies. Highly respected, Ashurst was arguably at that time the leading expert in the United Kingdom on technical conservation practice, and with his wife, Nicola, he was shortly to publish in 1988 the authoritative *Practical Building Conservation* in five volumes on behalf of English Heritage. A visit to the site was arranged for January 1984 at which Ashurst indicated that he would be keen to preserve the original materials used in the building of the house by using modern consolidation techniques. While he was not prepared to discount entirely the notion of refacing of the gable in brick, he advocated exploring the possibility of injecting the masonry with a polyester resin to recover its strength; if tests proved successful, the method promised the advantage of consolidating the core of the walls without the removal of the harling. After the meeting, recommendations were made for a specialist company, Colebrand Ltd, to visit the site and undertake tests on possible repair methods to gauge their suitability. These tests were undertaken in March 1984. The injection resin tests proved unsuccessful as the material either disappeared into the core of the wall, or emerged in the face of the harling where surface cracking occurred. Accordingly, Colebrand advised that the only test that had met with any success had been the spraying of the surfaces with uncatalysed silane, a variant of a form of consolidant which had been used in the past in the preservation of medieval carved stonework. The principal advantage of using the material in an uncatalysed state was that it could be applied over a longer period, but it would also take longer to cure when compared with the material in a catalysed state, of which the proprietary waterproofing material developed by the BRE, 'Brethane', was of this latter type.

With the gable wall protected and the harling removed, the masonry was showing signs of drying out, a hypothesis confirmed by Maxwell in April 1984 after he had sent samples to Ashurst for testing. The results had come back that the strength of the stone had increased six-fold after drying out. Jarvis remained unconvinced. He wrote to Maxwell at the end of the month, outlining his concerns about the performance of the silane, noting that, to

date, the material had been used only for the consolidation of brickwork and stone sculpture. In particular he queried the laboratory claim that the silane would protect gaps of up to 3mm in the face of the harling on a site where the exposure was so great, referring specifically to the effect of 60mph gales. There appears to have been no response to having raised these concerns. By the beginning of May, confidence was mounting in the HBCS camp over a more sympathetic approach being adopted which could be applied to the remaining areas of the harled surfaces without the need to remove them. If levels of intervention to the fabric could be addressed at high level through a measure of rebuilding and the introduction of damp proof courses, Maxwell was convinced of the benefits of adopting the universal spray application of silane for the following crucial reasons:

> To avoid future water penetration problems therefore it could be recommended that a spray treatment of silane, onto the original and repaired harl layers, would prevent the passage of water liquid into the wallcore. Furthermore silanes *(sic)* ability to breathe would also allow the passage of water vapour which, in turn, would allow the build to dry out.[157]

Maxwell was not so naïve, however, to imagine that the application of this treatment was not without its own risks. He recognised that the application of traditional conservation techniques of repair, either through patching failed material, or in the application of surface coatings such as paint finishes, would no longer be possible. That caveat needed to be acknowledged by all concerned with the project. Research papers had indicated the risk that deep silane treatment was completely irreversible. These recommendations were expanded to include the application of a coat of compatible limewash to the surface of the harling prior to applying the external silane treatment, and they were converted into the usual highly prescriptive architect's report which was issued at the end of May 1984.

The approach adopted by Maxwell heralded a new wave of thinking about conservation at the Department. Bound up in this thinking was a preference for conserving the fabric of historic buildings and ancient monuments 'as found': for instance, in the case of a masonry wall, whereas in the past, if the mortar had been defective and in need of repointing, the mortar to the whole of the wall would have been raked out and repointed. From adopting a conservative approach to repair the tendency had shifted in the mid-1980s to retaining historic mortar which was sound, and repointing only those areas which were defective, accepting the visual change in appearance as an honest repair. Further, it becomes apparent that the preference expressed by the Department's architects for the retention of authentic fabric at *The Hill House* was founded upon the knowledge of recently published international conservation charters setting down conservation philosophical issues, some years before awareness of their content became widely known in the United Kingdom. The concept of authenticity from preserving original materials used in construction may be found in the ground-breaking Venice Charter of 1964, and in subsequent documents. Of great relevance to this particular case was the Australian ICOMOS (International Council on Monuments and Sites) Burra Charter of 1979, in which the concepts of minimal intervention and conservative repair were set down:

> Conservation is based on a respect for the existing fabric and should involve the least possible physical intervention.[158]

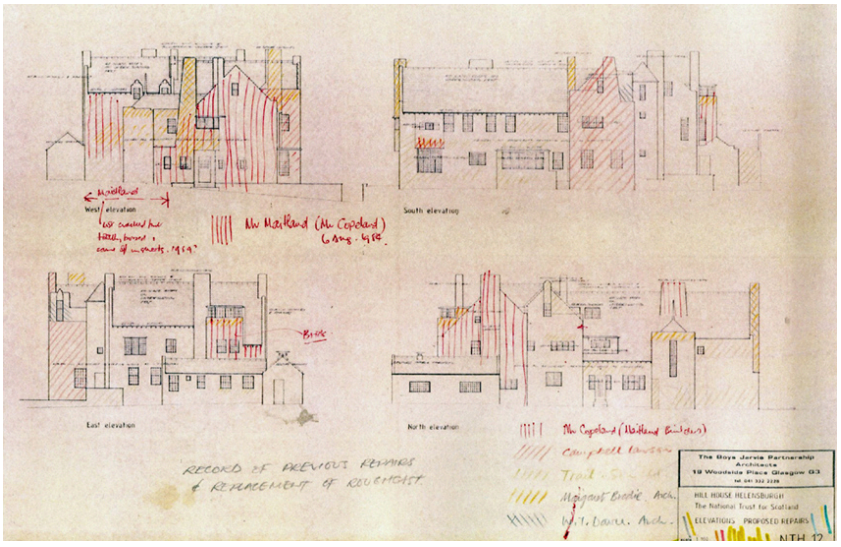
However, the principle of reversibility was also set out in the Burra Charter, and was further clarified by the lesser known Canadian ICOMOS Appleton

Charter of 1983 which followed, around the time that this debate was being played out. It stated:

> The use of reversible processes is always to be preferred to allow the widest options for future development or the correction of unforeseen problems, or where the integrity of the resource could be affected.[159]

In going against the recognised advice to work with traditional materials and practice, the justification for the departure may have been sought for those cases for which modern substitute materials or techniques provided a significant conservation advantage – for instance, in the preservation of the original harling[160]. These philosophical issues are considered further in Part IV.

Against this background, after a further meeting on site in June with Ashurst and Maxwell, Jarvis presented a paper to the Executive Committee of the NTS regarding the matter of compliance with the HBCS architect's latest report. In setting out the options available to the NTS he argued that, as he had received no guarantee that the strength of the stone would increase to the extent that it would be capable of supporting the dense cement render – especially where built on cant – he proposed that the gable be refaced in brick as had been proposed originally. He was prepared to advocate this on the grounds that it was a more economic and sound solution 'which does not rely on new and untried building technology'[161]. Jarvis also cast reasonable doubt on the Department's belief that the application of the silane would be successful in keeping the water out of the building and in permitting the walls to breathe, even to the extent that this would overcome the known defect at the internal walls where the sandstone was prone to decompose, with the damp stone dust bridging the gaps with the internal lathing and increasing the risk of dry rot colonising the internal fabric of the building. He recommended that the harling be removed during a dry period, and that the walls be re-rendered with a less dense mix than that used by the original builders once the core of the wall had dried out. The Executive Committee was minded to support the advice of its own architect in the dispute, aware of the fact that the grant for this element of the work might be in jeopardy, at risk of being held back by the HBCS.



Right: analysis of repairs carried out to roughcast surfaces in the past, based on site observation and oral evidence, prepared by Philip Schreiber of the NTS © NTS

In mid-August a joint meeting, chaired by Professor Dunbar-Nasmith, for many years a member of the HBCS, was held at the offices of the Scottish Development Department to discuss a way forward to the impasse. Both sides rehearsed the arguments but little common ground was found, other

than the HBCS recognising that there was a need to indemnify the NTS should their architect's advice proved, in time, to be faulty for the nature of the experimental work to be put in hand. The Department fully expected the silane to be effective for a period of twenty years, during which time more research might be expected to be undertaken to in order to achieve a lasting solution to the problem. At a meeting in mid-September 1984 the NTS's Executive Committee endorsed the advice of its consultant architect over that of the HBCS. It elected to proceed with refacing the northeast gable in brick, while at the same time instructing further tests to be carried out on the strength of the stone. The Committee also agreed with the recommendation that, until such time as the results of the tests could be monitored, the remaining areas of harling should be left for a period of five years, other than for those repairs which had to be carried out which were consistent with maintaining public safety, or were required urgently to limit the risk of water penetration to the internal fabric. In confirming this decision to the HBCS, the NTS's Anthony Bryant raised the issue of the extent of the harling that had actually been replaced, over which there had been sharp differences of opinion. At the joint meeting in August, Maxwell maintained that, apart from work undertaken at the wallheads and chimneyheads, the harled surfaces were substantially in their original state, with perhaps 80% having survived. Boys Jarvis suggested that original harling surviving throughout the building was closer to 20%, with some areas having been re-harled on more than one occasion. A detailed analysis of this had already been carried out by Philip Schreiber, who marked up his findings on a set of drawings in February 1983 and whose assumptions were based substantially on the oral evidence provided to Geoffrey Jarvis by those most closely associated with the house in the past. His analysis went far beyond that of the visual evidence from photographs and other records, and included repairs which had not been hitherto recorded, carried out by both of the local contractors, Traill and Maitland. His conclusions appeared to uphold the NTS's view that the original harling had *not* in fact survived to this time to any great extent.

Below: the removal of the roughcast at the northeast gable reveals the underlying red sandstone and the bricks with a rounded profile laid as the cope to the skew
Below right: the face of the wall cloured back and partially rebuilt in common brickwork under the instructions of the Boys Jarvis Partnership
Both photos © NTS

Boys Jarvis instructed the work to be carried out to the gable in stages to maintain the stability of the wall, with the refacing work carried out in Class 5 commons bricks grouted to the core of the masonry wall; allowance was made for any sound stones projecting to the face of the wall to be retained when rebuilding. The stones at the skews were replaced in precast concrete units set over a damp proof course. Minutes of meetings noted the extent to which the new harling disturbed the visual unity in the appearance of the

Partial view of the east elevation shows where recent repairs have been undertaken to the roughcast; new fenestration has been introduced to the single storey wing and the speckled appearance of the roof reveals that this has been reslated with salvaged material with the slate having the lighter colour originating from a different quarry © NTS

house. During February 1985, some of the existing cracks in the existing roughcast were opened up for pointing up with a grey mastic sealant as a temporary measure, and the new harling and repaired cracks were painted over. The work was finally completed by June 1985. The NTS's Senior Buildings Adviser, Neal Sharp, was to indicate a few years later that he was dissatisfied with the finish of the harling. He considered it did not match the earlier work, and he was also concerned that the paint finish that had been applied would be likely to become a maintenance burden in the future.

The drawings which had been prepared prior to this stage appeared to suggest that, when refacing the wall, a cavity would be left between the rear face of the brick skin and the face of the stonework where it had been cloured back. This is shown more clearly in drawings prepared by the architects for resolving a problem which had emerged at a triangular area of walling below the dormer serving the bathroom to the Landmark Flat. The problem had caused considerable concern at the time, as water had run freely through the construction, causing damage to the clock designed by Mackintosh which took up a prominent position within the upper entrance hall. Boys Jarvis's solution had shown the defective stonework to be cloured off and a brick skin erected to form a cavity, drained at the base by a stepped lead flashing. It is uncertain whether the remedial work was carried out in the manner suggested on the drawing, but photographs of the work being carried out at the northeast gable confirm that the brickwork was built solid against the stone to accommodate a constantly changing profile. Otherwise, the chimneyheads known to have been in a state of advanced decay were taken down and rebuilt with bitumen coated lead trays in accordance with good modern building practice. The broad chimneyhead with the battered profile overlooking the courtyard on the north side of the house was rebuilt in this way, and the lead tray can be seen from with the attic room. Weepholes can be seen at the base of the harling above the line of the lead flashing over the roofing slates.

With the benefit of hindsight, it is indisputably the case that the Boys Jarvis approach has proved to be justified: from surveys carried out for the preparation of the current quinquennial inspection report, of all the areas of the house the northeast gable is one area where the problems associated with the external harled surfaces appears least affected. Moreover, Geoffrey Jarvis's circumspection concerning the risks associated with the unknown performance of the silane treatment appears to have been vindicated with the passage of time.

While the problems of the external fabric were being addressed, after having acquired the property the NTS moved ahead with essential repairs to the internal fabric. The work was undertaken between 1983 and 1986, and addressed problems with dry and wet rot infested timber, measures taken to restrict structural movement within the property, and extensive works to the roof which involved the entire stripping of the existing slating and reslating in salvaged or matching material over a new underlay. Areas of dry rot which were tackled included the ceiling above the music alcove, together with isolated outbreaks in the cloakroom area and at the Landmark Trust flat. Wet rot was discovered where the fabric had been subjected to prolonged water penetration, particularly at roof level where a number of repairs were carried out to rafter feet. Structural engineering work was administered by Gavin Walker and included the insertion of brick piers in the solum over the entire ground floor area of the house. Steel beams had to be introduced to bedrooms at the First Floor flat, and into the roof above the Landmark Flat. Areas which had not been tackled for structural movement (where movement had been identified) were throughout the east wing,

and at the head of the main staircase, on the grounds that the floor levels would have been disturbed adversely.

In the meantime, the NTS proceeded with tests to the surface of the remaining harling in several areas of the house to satisfy a desire, held by all parties, to gauge whether solutions could be found which promised to resolve the problems of water penetration while, at the same time, offering to retain the harled surfaces without excessive disturbance. In the brief prepared by Philip Schreiber for this work, he quoted from Annex 2 to BS6270 Part 1 : 1982 on the use of silane in conservation work. The advice given here was to express caution over the use of the consolidant as the material to which the silane was to be applied should be fundamentally dry; risks were identified also should rising damp occur (as was the case at *The Hill House*) due to the interference of salts. In addition, the document cautioned 'Users are warned that it is essential to use silanes with discretion, particularly where old masonry of considerable intrinsic value is involved'. The tests were undertaken on behalf of the NTS by 'macdata', a research unit set up by the Paisley College of Technology.

Consequences of a dry rot outbreak in the southwest corner of the Dining Room showing affected joist ends cut back and timber safe lintols replaced in precast concrete © NTS

While the test results were awaited, however, deterioration in the state of the external harling and the recurrence of outbreaks of dry rot were such that the NTS felt that it could not await the end of the self-imposed five-year moratorium on harling repairs, and so work began again in earnest over establishing suitable repair solutions within the parameters already set. Fresh surveys undertaken by Schreiber indicated that the integrity of the harling in the other areas of the building, which had yet to be tackled, was in question with several new cracks having formed; the external coating to the wall surfaces appeared to be almost on the threshold of disintegrating. In July 1987, Neal Sharp wrote to the HBCS advising its Secretary of a further outbreak of dry rot adjacent to the Landmark Flat and of other problems attributable to defects in the harled finish, a claim which was ignored at first, and was eventually rebutted, very firmly, by the HBCS architect.

3.6 Programme of major remedial works under the guidance of Page and Park and the aftermath

South (garden) elevation after the repair programme had been completed under Page & Park Architects © NTS

1987 marked the year when the partnership of John Boys and Geoffrey Jarvis was dissolved. While there is no reason to suggest that the NTS was disenchanted in any way with the work of the practice at *The Hill House*, given the ongoing difficulties in the relationships with the HBCS the NTS would have seen the advantages to be had of embarking on a fresh start and in reviewing the case history to date. For the next stage of work, the NTS turned to the up-and-coming Glasgow practice of David Page and Brian Park which had already a track record for conservation projects; the practice had been appointed as a consultant to the NTS for the West of Scotland area. At the outset their commission was to be a hybrid one, as Schreiber would be assuming an enhanced role for the site administration of the project. Even with the passage of time since the works at the northeast gable were completed, there was evidence that the Department was not prepared to shift from the stance that it had taken, and the architect's report prepared by Ingval Maxwell in May 1984 remained the basis upon which work would need to be specified and tendered if it were to be considered grant eligible. It placed the NTS in a considerable dilemma, given the ongoing concerns about the long term performance of the silane treatment, and the lack of firm evidence arising as yet from the monitoring exercise for the harling. At around the same time that Page & Park were approached in February 1988, Philip Schreiber re-opened communications with Colebrand over addressing the requirements of the HBCS architect's report. Once Colebrand had responded, after which a draft specification had been prepared as a sequence for tackling the remedial work, Neal Sharp could not help remarking to Schreiber that the specification was 'dauntingly elaborate', and that it would 'produce disadvantageous effects within the house'. He did not wish Brian Park to be made aware of this view, upon which he might be expected to form his own opinion in due course. A pragmatic view was adopted: the NTS had clearly taken the view that if the HBCS grant was not to be jeopardised, there would be a far better chance of securing funding for the extensive repairs which were now required from adopting Colebrand's recommendations. The 'dauntingly elaborate' specification consisted of patch repairs to failed areas of harling, following which the stonework would be allowed to dry out thoroughly before applying the silane consolidant. Thereafter, a proprietary base coat of epoxy resin would be applied to the

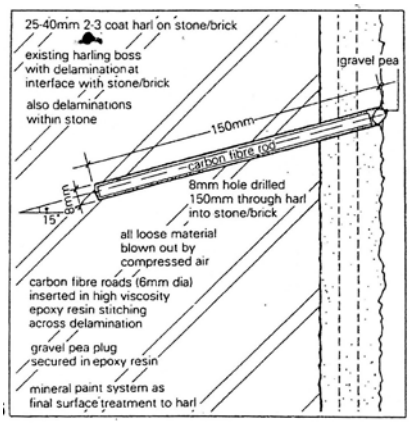
face of the masonry prior to re-harling the area in three coats. The whole of the building would have cracks exceeding 0.3mm sealed with an epoxy resin sealant (based on the claim made previously that the silane would prevent water from entering the core of the wall if the crack was less than 3mm, although this was not made explicit), after which the whole of the building would be painted. Silane would be applied to all surfaces of the harling which would be finished with an anti-carbonaceous paint.

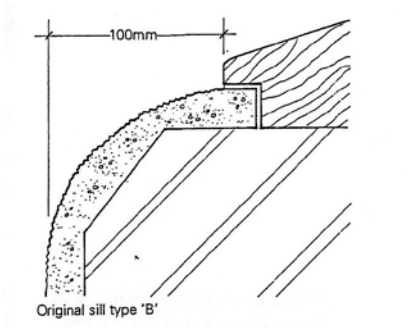
Brian Park began his evaluation of the problems of the harling by carrying out a survey of each of the elevations of the house. He observed that the defects varied from hairline surface crazing of the render to large areas which were boss where substantial cracking occurred, often associated with defects arising from Mackintosh's design (later, he was to assess this at around 35-40% of the total area[162]). He observed that in a small number of locations, in the area of the south gable, thin slate cills had been added at window openings (these remain presently). Ladder access prevented a full survey of the walls from being carried out, but drawings were marked up which confirmed substantial areas of walling where the harled surfaces were boss. Park added, prudently, '… we would express a degree of concern at the present time in connection with the specification being applied to limited areas'. At a meeting in March he wished it to be noted that his practice was having to accept a specification prepared by others, and requested that ample testing of the materials in relation to the known conditions of walling be carried out before proceeding, to which the NTS agreed readily. Sharp voiced a concern about the principle of applying a waterproofing sealant to large areas of the building, especially when the conditions of the backing material were variable, of porous sandstone and poorly fired shale brick respectively.

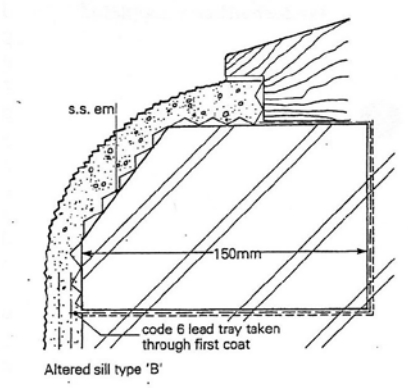
In late June 1988, Park and Sharp exchanged letters setting out their mutual concerns about what they were being expected to do following a meeting held on site with Maxwell, at which he maintained his firm belief that a substantial amount of the original harling had survived; even then, the amount of defective harling to be removed was considerable, over which Park expressed concern. Maxwell anticipated that in the Spring of the following year, the external surfaces of the building should be limewashed after which the treatment of the silane should be carried out. At best, and with the benefit of hindsight, this seemed a strange and challenging conservation approach given that the technology upon which Mackintosh was reliant was based on dense Portland cement, and not lime. Sharp responded to Park:

> I am as concerned as you about many aspects of this contract, and remain unconvinced that the treatment proposed by HB&M will produce satisfactory results.
>
> We have, however, haggled with them on this matter over four years, and a point was reached where Ingval had his views publicly supported by a senior member of HBCS during a meeting with us. I instructed you to act on this contract with many misgivings and in the knowledge that if we are to give some measure of protection to the Hill House it must be done to the specification recommended by HB&M. They indicated at the meeting referred to above that if things went wrong they would underwrite the costs – although I hope this never comes to pass.[163]

Testing of the walls by drilling 50mm core samples was undertaken in August, mainly at low level, without the need for a scaffold to be erected. At this time, at the height of summer, problems with high moisture level readings in the masonry seem to have dissipated, but a consistent problem that was encountered was that the dense cement render had pulled away from the face of the masonry, and in some areas this could be attributed to







Top: detail showing the principle of preserving the original roughcast finish by the insertion of carbon rods is shown in this drawing
Above: before and after details for one of a number of cill conditions
Both images from the article by Brian Park appearing in *The Architect's Journal*

problems with water penetration at vulnerable window cills. What is slightly surprising is that none of the samples taken appear to correspond with the extreme thickness of the original roughcast preserved above the east service wing. The pattern of detachment of the harling, and the range of thicknesses observed, match those encountered at the Glasgow School of Art in late 2011: at *The Hill House* some of the roughcast was as little as 10mm in thickness, in two coats. None of the samples were reported to be greater than 20mm in thickness, considerably less than the sample area in the roofspace of the east wing where the material is greater than 30mm. In earlier investigations carried out during the site visits when Boys Jarvis were in charge of the work, the thickness was noted to vary from 20mm to as much as 40mm. Although further investigation would be required, it was assumed that large areas of harling would have to be stripped back, but epoxy resin grouting might be possible and offer a suitable repair strategy over small areas. The notion that so much of the harling was to removed produced an instant retort from Historic Buildings and Monuments (HB&M, as the Department had been renamed by this time). Their architect held out for retaining what was claimed to be the original harling which should be preserved by applying interface grouting techniques. The tender documents should be amended accordingly.

By the summer of 1989, and in response to the official line that no harling was to be stripped from the building, to overcome concerns regarding the extended timescale likely to be encountered over the epoxy resin grouting techniques, alternative methods were investigated which promised to preserve the harling *in situ*. The introduction of cementitious grout to the cavity applied under gravity was attempted under controlled conditions using a specialist contractor, Mowlem Northern, but the viscosity of the grout was such that it did not percolate into the voids adequately. Pressure grouting introduced a new risk, that the face of the harling could be forced off the wall. The grouting methods used by Mowlem were, essentially, the same as those devised by John Ashurst for use in historic buildings and monuments. A breakthrough seems to have occurred at the end of August 1989 and, given the uncertainty over the trials with grouting techniques, the possibility of holding the harling in position where it had parted from the core of the wall was to be attempted by inserting carbon rods. Where it was still possible to grout the cavities this would be done. In proposing this solution, it was acknowledged that in some areas of the building there was delamination, not only of the harling from the face of the wall, but also delamination occurring within the sandstone itself where this had been laid on cant. It cannot be established from the file who, exactly, within the team had come up with this novel solution – whether Page & Park, Schreiber, or the specialist contractor, Mowlem Northern, or whether from the team within HB&M and its advisers, but there seemed to be general agreement that it should be attempted. The specification that was effectively used appeared in a letter to the NTS dated 30 August 1989, and was copied by Page & Park to the NTS within a day or so thereafter. Carbon rods of 6.35mm diameter were to be inserted at an angle of 15° to a depth into the stonework to be not less than 100mm. As though to acknowledge the difficulties faced by the NTS over establishing the most appropriate repair strategies, a 100% grant was offered, for which there was little precedent at the time.

It was accepted that a level of intervention was unavoidable where the harling had to be disturbed at weak points in the structure, such as the window cills. The original details devised by Mackintosh had contributed to the poor state of the harling in some parts of the house. The need for a wall finish that restored the uniform appearance of the original roughcast was

accepted in lieu of the silane treatment that had been proposed originally, for which a three-coat Keim mineral paint system was now proposed. The colour of the paint finish was devised especially for the property, having regard to extensive research having been carried out into the original colour of the harling. Any paint that had been applied to the harled areas in the past, where repairs had been carried out, was removed with light grit blasting, followed by the application of an algicide treatment. External cracks in the finish of the harling were filled in by brushing with a weak cementitious mix prior to the application of the paint finish.

The works were substantially complete by the Spring of the following year, and a useful summary of the processes through which the project had passed appeared in an article written by Brian Park for the *Architects Journal*, published in May 1992[164]. Some details were usefully included in the article: the method by which the carbon rods were inserted was illustrated, together with how the detailing was finally resolved at the various window cill conditions.

The Hill House from the southwest, following the major repair programme completed in 1990 © NTS

For the first time since the building was completed in 1904 the house recovered a sense of architectural unity in its external appearance which initially, at least, overcame the textural differences in the appearance of the harling arising from the phases of repairs and rebuilding carried out over several decades. Such an outcome could not have been achieved had the Keim paint finish not been adopted as a substitute for the proposed flooding of the wall surfaces with silane, upon which the architects acting on behalf of the HBCS been insistent since 1984. For some, the transformation was found too shocking – one architect who visited the property once it had been reopened for the public spoke of his concern about the colour of the harling, saying 'I am puzzled by the choice of beige'. He did not consider it a good match for the original dull blue-grey colour of the original harled finish sought by Blackie and his architect[165].

The ongoing problems from periodic dry rot outbreaks saw the NTS taking the prudent step of instructing Ridout Associates, one of Britain's leading advisers in the area of managing the problems of timber infestation, to install a sophisticated monitoring system which would feed data on the moisture content of timber within the building, which would normally be inaccessible, to a remote unit fitted with an alarm. Positions for the sensors were agreed covering the most vulnerable areas of the roof. It is not

Top: roughcast disintegrating at the west return of the south gable, in the area of the Dining Room
Above right: shale bricks exposed and crazing of the roughcast finish at the stair tower, with the extent of water penetration still visible immediately after winter gales at the beginning of 2012
Above: roughcast breaking up below the skews at the east gable of the single storey north range
(All photos: author)

known for how long the system was in operation, or whether the unit had been successful in forecasting where problems with the fabric were likely to lead to further outbreaks of rot in the future. It is conceivable that, other than where the wallheads or chimneyheads were rebuilt in the latest phase of work, the existing conditions were such that the fabric was never quite dry and so constant problems of moisture might have been recorded by the system which would have diminished its value as a recording tool.

Successful as this comprehensive repair programme had been in restricting the need for constant repairs having to be carried out to the fabric, its limitations soon became apparent. Perhaps not unlike Mackintosh's unfailing belief in the performance of Portland cement roughcast, the belief that the programme of repairing cracks and overcoming the problems of water penetration through micro-cracking in the surface of the harling by the use of Keim paint overlooked the fact that, in some areas, the underlying brickwork at the chimneyheads and other high level features was not always in the best of condition. Unless the shell surrounding the building could be maintained in a 100% dry state at all times, further deterioration and decay would always be likely due to the uncertain state of the original material from which the house had been constructed. Even where chimneyheads had been taken down and rebuilt in the 1970s, there had been examples of early failure either from poor detailing, or from the use of poor materials. Because of the desire to preserve the harling wherever possible, patch repairs resulted in some uncertainty over the long term performance of the harling and impacted upon the unity of its appearance. The NTS found it necessary to embark upon further patch repairs in 1997. A more serious breakdown occurred in 2006, when the apex block of the north gable to the middle range, and associated local problems at high level with the fabric, caused water to cascade through the thickness of the wall of the gable, and throughout its entire height. When the masonry was exposed the underlying poorly fired bricks were discovered to be in an advanced state of deterioration, requiring extensive rebuilding. The upstand to the adjoining skews was lifted up by 100mm to overcome problems with the detailing. The problem provided a timely reminder that the property is not vulnerable solely in those areas exposed to the prevailing winds from the southwest affecting the west (entrance) and south (garden) elevations of the property. As in the past with the northeast gable, if the wind were to swing round in other directions, under prolonged periods of driving rain, related problems

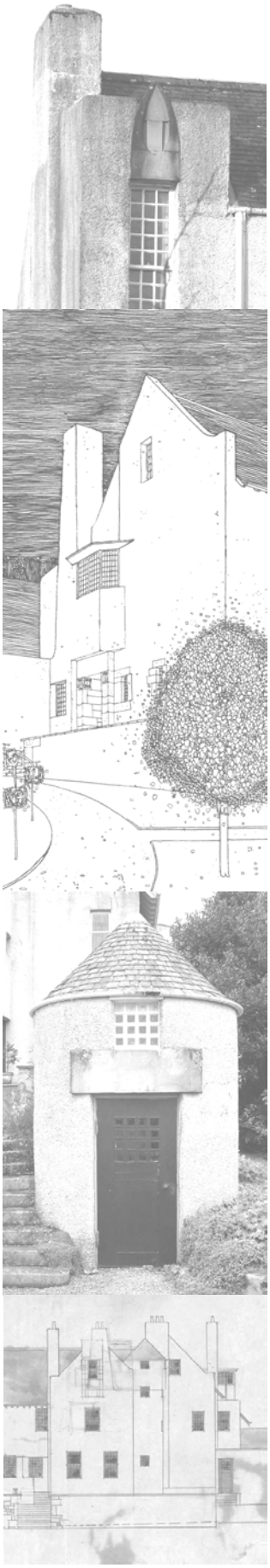
Accelerated decay to the sandstone at the front entrance porch from waterborne chemicals passing through the core of the wall at the west elevation – compare with the photograph taken in 1973 (page 70) (Photo: author)

are highly likely to show up in the internal fabric in ways that can be just as dramatic.

Since the major programmes of repair to the fabric were completed the NTS has been proceeding with carrying out repairs to the property in accordance with the recommendations set out in successive quinquennial reports. Roof repairs and dry rot treatment have continued, and a thorough review of the NTS's own archives had been instructed to arrive at an enhanced understanding of the repairs carried out in the past, from which the research undertaken for this study has undoubtedly benefited. The Conservation Statement prepared for the property has been updated to reflect a key finding that the unity of Mackintosh's design for the house is of great significance, and has to be reconciled with the need to conserve of the external finishes.

With the benefit of hindsight once more, it is impossible to say whether the decision to preserve the original harling might have had a better chance of succeeding in the longer term from, say, increasing the cycles of the maintenance programme. But this seems unlikely. While there has been no failure of the harling from the technological solution of filling in the cavities with epoxy resin and from holding the material in position with the carbon rods, there has been a marked deterioration in the surface of the harling which has now extended to other areas of the masonry where the physical break-up of the harling can be seen. Where repairs were not carried out at high level, the deterioration of the underlying masonry, whether of sandstone or brick, has continued. The property has been subject on a number of occasions to thermal image surveys, of which the last two, dated 2010 (Historic Scotland), and 2012 (Construction Materials Consultants) reveal the extent to which water is percolating through the core of the external walls, in some cases causing considerable damage to the interior surfaces.

As each fresh winter season commences there is now, quite understandably, a sense of trepidation among those NTS staff who care for the property. They do not know how it will react to the hostile conditions experienced frequently at the site under conditions of wind driven rain, the consequences of which seem not to have been understood fully in the past. The repercussions of the devastating 100mph gales accompanying the arrival of 2012, when water ran freely through the core of the walls and collected in the solum area below the elements of construction of the house exposed to the south-west, provided the starkest of reminders, should that be needed, that new solutions must be found to the problems of water penetration. These will be more challenging than before, even, in view of the passage of time and the experimental approach adopted to the repair of the property in the period from the 1980s and 1990s. Saturated with silanes and resins, just how the underlying masonry will perform in the future is incapable of being predicted and, ironically, this is exactly as the architects advising the HBCS had predicted back in 1984.



Part IV Conservation policy: a discussion paper

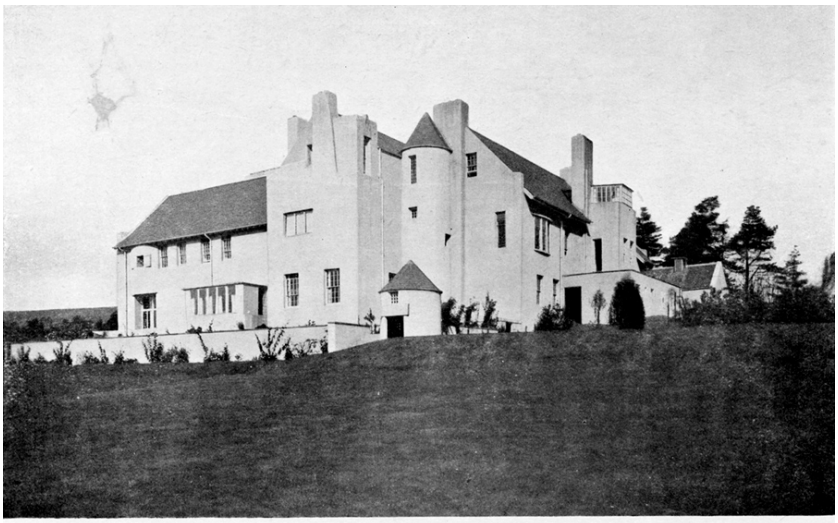
4.1 Part IV: introduction and abstract

Following on from the lead given in Section 1 as to whether *The Hill House* can be considered properly a modern building, the argument is developed for it to be considered as 'Proto-Modern'. It is demonstrated how it shares a number of aesthetic and technical similarities with the buildings of the Modern Movement. A brief account is given of how Mackintosh's original talent was appreciated, and fostered, in the years after his death and how his work was perceived by those promoting the virtues of modern architecture in the mid-twentieth century.

An evaluation is made of the philosophical issues facing the repair of Twentieth Century Architecture, and how these can be at odds with the emphasis given in the international conservation charters, looking back as far as the SPAB manifesto of 1877. The issue of 'authenticity' is examined by looking at the origins of how this came to be viewed as an important value to be take into account, and how in the past this had been distorted with the emphasis on the supremacy of preserving materials over design integrity, or aesthetic values which, hitherto, had been defined inadequately. How these competing values can be reconciled in recent policy guidelines is explored. Observations are made on the NTS's own *Conservation Principles*, with a suggestion made that they may need to be reviewed in the light of the conservation strategy to be followed in order to secure the future of *The Hill House.*

Issues thrown up by the repair of Modern Monuments are addressed by a brief examination of case studies, and how these may have lessons for the future repair of the external fabric of *The Hill House.* A short summary is given of what these issues are considered to be.

4.2 Charles Rennie Mackintosh's *The Hill House*: an icon of modern architecture?


THE HILL HOUSE, HELENSBURGH
C. R. MACKINTOSH
Facing page 225

Right: although Charles Marriott refers to the Glasgow School of Art as being influential in Mackintosh's output, he illustrates *The Hill House* as being representative of the Scottish architect's work. While, at first sight, it appears to be one of the set of images taken by Bedford Lemere in 1904, the photograph differs both in composition and detail from the image of the house from this direction which is normally published. (From Marriott, opposite p225)

Among recent buildings in the provinces of a public character, known to the author only from photographs, must be named …… …… and the Glasgow School of Art, by Mr. Charles Rennie Mackintosh. The last is important because of the great influence of Mr. Mackintosh's work on the Continent – in Germany, Holland and Sweden. It is hardly too much to say that the whole modernist movement in European architecture derives from him; and the Glasgow School of Art, as an early and successful attempt to get architecture out of building, making decorative features of structural forms, goes far to explain the reason why.
Charles Marriott (1924)[166]

There is, first, a new conception of architecture as volume rather than as a mass. Secondly, regularity rather than axial symmetry serves as the chief means of ordering design. These two principles with a third, proscribing arbitrary applied decoration, mark the production of the International Style.
Henry-Russell Hitchcock (1963)[167]

The austerity of the Scottish vernacular (as opposed to the softness of Voysey's or Baillie Scott's) suggests an emerging Modernist abstraction.
Alan Colquhoun, describing the House for an Art Lover (2002) [168]

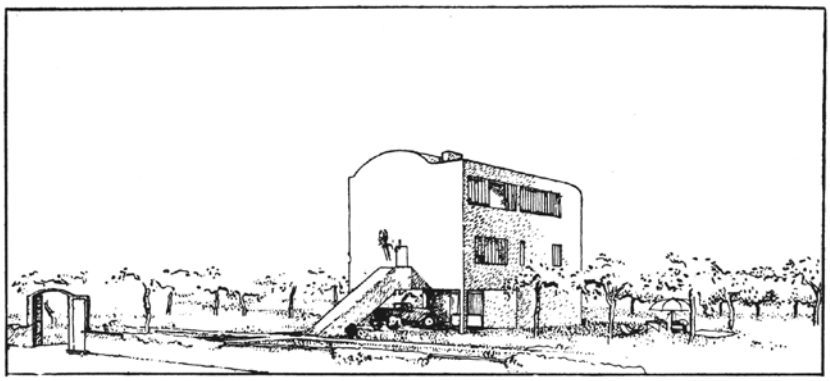
Before addressing the issue of conserving icons of modern architecture in this discussion paper, some consideration should be given first to how modern architecture might be defined in this context, and whether the work of Charles Rennie Mackintosh during his mature later period in Glasgow conforms to this definition. In section 1.5, having looked at the historical background to the design and construction of *The Hill House*, the case has been set out for Mackintosh's work being considered modern. The conclusion was reached that, although the architect was not seeking modernity for its own sake in a wholly conscious way (his outlook being conditioned by antecedents and by his training, which he shared with many of his contemporaries around the turn of the twentieth century), his work was full of anticipation for what was to follow shortly - and it came to be greatly admired for that reason alone.

Few commentators on the Modern Movement in architecture have considered the subject in isolation without charting the sources and influences that shaped it, and without evaluating the pioneering work of

Auguste Perret's exposed reinforced concrete framed façade at 25 bis Rue Franklin, Paris (1903) (Photo: author)

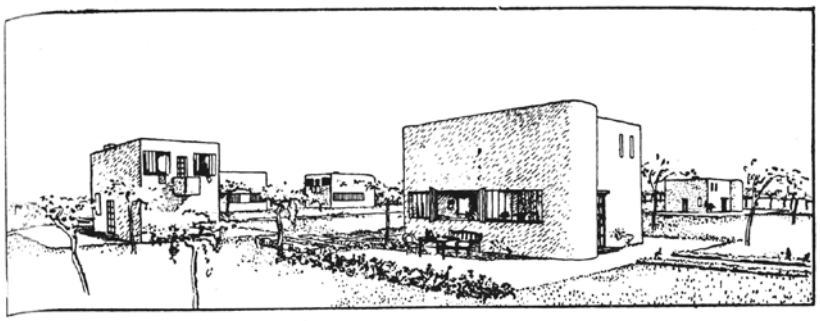
those leading protagonists among whom Mackintosh would always be included. His work may have been suppressed and forgotten about as being irrelevant in his own country until after his death in 1928 but, in reality, it formed a significant part of a fragile continuum of buildings and structures in Scotland erected in the period between 1900 and when Modernism finally came to be embraced in the late 1930s. The adoption of new forms of building construction was not enough in itself, as is illustrated by *The Lion Chambers* erected on Hope Street, Glasgow, in 1904 by James Salmon Jr and J Gaff Gillespie - in essence, this is little more than a novel concrete multi-storey building method imported from France, dressed up in historic garb and with the walls smooth rendered in early Portland cement - however significant that may be in itself as the first of a type. Comparison is merited with Auguste Perret's rational use of concrete frame technology to confirm the extent to which developments elsewhere had jettisoned historicism and were exploring the opportunities of a new aesthetic. In Scotland, the fragile thread of modernism is much more likely to be found in the lesser known structures which expressed the new forms of construction quite radically as part of a rationalised engineering or industrial tradition, in which function would be paramount and the ornamentation of facades and historicism had no place. Examples might be found in the rear walls to the service lanes of the early twentieth century multi-storey office buildings erected in Glasgow, echoing the remarkable buildings of the 1860s of the pioneer architect Peter Ellis in Liverpool, of which a particularly fine example is to be found at the rear service lane elevation of the Northern Assurance Building on Glasgow's St Vincent Street (John A Campbell, 1909). They may also be found in the structures erected for the purpose of manufacturing components for the 1914-18 War, for instance, in the buildings erected for Weirs at Cathcart with the concrete frame and glass infill panels by the American architect, Albert Kahn (from 1915)[169]. In this context, it is not unreasonable to consider Mackintosh's later work as being 'Proto-Modern'.

Despite a few rumblings before the mid-1930s in Britain, the revival of interest in Mackintosh's work, and his place in the evolution of modern architecture, might be attributed squarely to Nikolaus Pevsner's seminal book of 1936[170]. However, his reputation had never diminished in quite the same way in the rest of Europe, of which Robert Furneaux Jordan's entertaining account of Mallet-Stevens's admiration for the architect during the previous decade reminds us (page 50). While *The Hill House* (and other Mackintosh works where his clients permitted him the full rein of his powers of expression) had been imbued with thinly veiled references to the spirit of Scotland's national architecture, there are still remarkable similarities to be found between his line drawings prepared around the turn of the twentieth century, and those of the early 1920s by Le Corbusier (Charles-Édouard Jeanneret, 1887-1965) which are not so easily explained away. Both architects were working through similar programmes of architectural expression for experimental building types, with construction forms and materials harnessed to suit this purpose. Le Corbusier was to illustrate these - for an artist's house, workers' houses and other architectural programmes for factories and mass housing – in the massively influential *Vers une Architecture*, published in 1923. The degree of abstraction from simple form-making, the use of long horizontal strip windows counterbalanced by vertical slot windows, and the use of large unadorned areas of walling given a textured surface (what Le Corbusier referred to then as a 'cement-gun' finish) all have resonances with Mackintosh's sketches around the turn of the twentieth century (see also page 37). Mallet-Stevens was clearly alluding to this aspect of Mackintosh's work and, in doing so, seemed prepared



LE CORBUSIER, 1922. ARTIST'S HOUSE

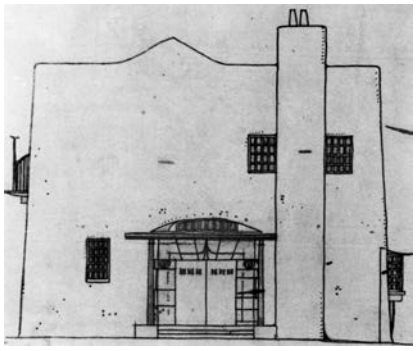
Framework of reinforced concrete with cavity walls, each thickness being about 1½". State your problem clearly to yourself: determine the type of house according to the needs required: resolve the problem as those of railway carriages, tools, etc. are resolved.



LE CORBUSIER, 1922. MASS-PRODUCTION WORKMEN'S HOUSES

A sensible housing scheme; the same house-unit being used in varied ways. Four concrete piers; "cement-gun" walls. Its æsthetic? Architecture is a plastic, not a romantic, affair.

Upper and lower right: Le Corbusier's experimental programme (1922) for housing for an Artist's House and for mass-production houses for artisans (both images from Frederick Etchell's translation of *Vers une Architecture* pp220-221)
Below: Mackintosh's sketch for the west (garden) elevation of a Country Cottage for an Artist (1900-1901) (from Macleod, p86)



to overlook the excesses of the decorative elements of the style of the Glasgow Four which brought them instant fame in Vienna, but had all but sealed their ostracism in Britain. With the influence of other groups at work in the early 1920s - for instance, De Stijl, under whom the breakdown and abstraction of architectural form were taken to entirely new levels - these elements merged into a recognisable new aesthetic inspired by abstraction in painting by the end of the 1920s. This distinctive emerging architectural style would be christened the 'International Style' in 1932 from the title of an American book[171]. It found full expression at the Weissenhofsiedlung housing exposition at Stuttgart in 1927 which had attracted the leading luminaries in Europe, including Le Corbusier and his cousin Pierre Jeanneret, Mies van der Rohe (who prepared the masterplan for the site), Walter Gropius, JJP Oud, Mart Stam, Peter Behrens, and Hans Scharoun, among others. The style was marked by smooth, sleek flush surfaces of painted render, steel and glass, to which ends the forms of construction adopted were always made subservient to the overall aesthetic. The structural frame of either steel or concrete would be normally disguised behind the external walls and strip glazing, and would appear only at ground level if the building were raised above the ground, or at roof level as a sculptural element of the composition. The collaboration from this successful event led to the foundation of CIAM in 1928 (Congrès Internationale d'Architecture Moderne), an influential gathering of like-minded individuals which continued meeting until the early 1950s which, for some, marked the beginning of the end of the Modern Movement as new forms of expression in steel and concrete were taking shape.

Mackintosh's conversion of the terraced brick house at 78 Derngate, Northampton for the industrialist WJ Bassett-Lowke (1916): the Guest Bedroom (from Nathaniel Harris, pp70-71)

The International Style was received hesitantly at first in Britain, becoming more familiar only in the mid-1930s as England hosted a number of the leading talents from Germany who were no longer permitted to practise in their own country due to the suppression of *avant-garde* art, architecture and design by the National Socialist Party. They included Marcel Breuer, Walter Gropius and Erich Mendelsohn. For most, though, setting up in England was to be little more than a staging post for the United States where greater opportunities beckoned, but their influence left its mark indelibly on firms like Tecton, led by the Russian-born Bertholdt Lubetkin, Connell Ward and Lucas, and on Gropius's former partner, E Maxwell Fry. The engineering tradition of a structural frame and clean glazing lines was best exemplified by Owen Williams, whose work in Scotland included several reinforced concrete bridges and the sleek curtain-walled Glasgow Herald Building in Glasgow of polished Vitriolite black glass (1936). TW Marwick's unashamedly modern extension to the St Cuthbert's Co-operative Association store on Bread Street in Edinburgh used a seamless glazed curtain wall system over several storeys to good effect in the following year, 1937. The 1938 Glasgow Empire Exhibition, more than any other single event, established the importance of the modern architecture in Scotland.

Although Mackintosh's contribution to the evolution of modern architecture in Britain had been recognised from as early as 1924 (see the introductory extract), the use of the term 'modern' at that time could not have related to the work of the architects behind the International Style in Europe in the 1920s. Le Corbusier's book was not translated into English by Frederick Etchells until 1927, and even then the title lost something in translation when it became *Towards a New Architecture* which distorted the directness of the original French title. It was only after Mackintosh's death that an appreciation of his genius surfaced once more in his native Scotland, and this was to be initiated from within his own profession. While, as Charles McKean has pointed out, his own firm of Keppie & Henderson did everything within its powers to disown him and the contribution he had made to the practice, others were beginning to see differently. From the beginning of the 1930s due credit was given to Mackintosh as a visionary from within the pages of the RIAS's own magazine, *Quarterly.* Within a short space of time his reputation had grown substantially, reaching new heights by the time of the RIBA Conference held in Glasgow in 1935 when the delegates from all around Britain were taken to see the School of Art. The RIBA President, Percy Thomas, gave out an exhortation at the conference dinner, encouraging the recording of the buildings of 'that genius Charles Mackintosh' - in other words, before it became too late to do so[172]. In the pages of *Quarterly* in the following year, the same year in which Pevsner published his *Pioneers of the Modern Movement*, John Begg wrote of Mackintosh, echoing Marriott's words:

> What, exactly, is the Modern Movement? Was it not the movement started only a generation ago by that remarkable Scotsman, Charles Rennie Mackintosh of Glasgow? Ask Continentals about this. You will find that they regard Charles Mackintosh as the arch-apostle of the modern school in architecture just as Karl Marx is regarded as the arch-apostle of communism.[173]

Such a homespun view was gaining widespread support elsewhere, and not only as a result of Pevsner's advocacy. The unique contribution by Mackintosh and *The Hill House* to the development of Modernism in Britain was recognised by FRS Yorke in his highly influential book *The Modern House in England*, first published in 1937. Mackintosh's relative obscurity at this time may have been such that Yorke had got the date of the house wrong by several years, believing it to have been completed in 1911, but he showed Mackintosh to be pivotal in a line extending from Philip Webb, through


1899


1899


1911


1926

Page 11 of FRS Yorke's *The Modern House in England* (1937) shows works by Voysey, Mackintosh's *The Hill House* (wrongly dated) and Peter Behrens's *New Ways* designed for Mackintosh's former client, WJ Bassett-Lowke

Voysey to a house, *New Ways,* designed by Peter Behrens in 1926 for the Northampton industrialist WJ Bassett-Lowke, which he claimed to be 'probably the first manifestation in England of the new manner that had already arrived on the Continent'[174]. There was of course an irony in this: Bassett-Lowke had been among very few clients in England to have engaged Mackintosh for any architectural work after he had departed Glasgow, for whom he remodelled the Victorian red-brick terrace house at 78 Derngate, Northampton, some ten years earlier.

Trained as an architect and, like Pevsner a critic and writer for *The Architectural Review*, JM Richards set out to demystify the Modern Movement to a bewildered public with his book *Modern Architecture*. First published in 1940, it enjoyed lasting popularity, and was reprinted several times. While placing Mackintosh in the context of the Arts and Crafts Movement, and noting the association of the Glasgow Four with the European *Art Nouveau* style, he singled his work out as that of an individual, a genius who worked in relative isolation:

He has already been mentioned as one of the pioneers of the new vernacular domestic architecture. He is still very little known in his own country, but in Scottish isolation he designed buildings of remarkable originality and having many qualities in common with modern architecture.[175]

Alan Reiach and Robert Hurd set out to emulate Richards's message and do much the same for Scotland with the propaganda of their illustrated book *Building Scotland ,* promoting modern architecture in what they termed 'a cautionary tale'. First published in 1941 it pays homage to Mackintosh and includes a photograph of the garden elevation of *Windyhill*, still with its original roughcast finish, but virtually unrecognisable from the addition of the shutters and the softening of plants growing on the walls (page 32). Of their fellow countryman, they wrote, under the heading of the influence of 'Tradition':

Tradition is the pool of a nation's continuous experience, from which we can draw both inspiration and warning. Slavish copying of period styles in buildings for modern needs produces dreary archaisms, but plan, form, proportion and colour of building in one country differ from those in another, and it would be foolish to ignore the social, physical and psychological reasons behind these national differences. The pioneer architect Charles Rennie Mackintosh, whose influence on modern European design was considerable, himself drew inspiration from basic Scottish traditions ….. but he was a prophet in his own country.[176]

From what has been stated above, Richards may not be quite correct about a lack of recognition by that time in his own country, it was certainly true that recognition of the originality of his work had been very largely absent during the time he was alive. Thomas Howarth set out, of course, some years later to validate the claims laid by Pevsner and Richards.

Richards's evaluation is consistent with the views of the majority of architectural historians charting the Modern Movement and its historical origins. If it is accepted that Mackintosh had never quite set out to be a 'modern architect', nonetheless it remains the case that the manner in which he is perceived allows his later work to be considered among the canons of the Modern Movement. The sensibilities found in his work are entirely consistent with the work of the leading architects of the International Style some twenty years or so after he had designed *The Hill House* for Walter Blackie. He shares with these architects of the European *avant garde* the same sensibilities of using new materials in ways that liberate aesthetic qualities that are wholly abstract. These materials disguise everyday construction methods which are used for no other purpose than to

give support to the surface coatings, providing a measure of unity to the architectural design programme. Where Mackintosh had relied upon early Portland cement roughcast to achieve the same sense of abstraction in his designs, dispensing with the use of historic detail and ornamentation, exactly the same sorts of technical difficulties are posed as is found in the buildings of the Modern Movement. Notwithstanding the reasons set out above, if there is to be any lingering discomfort over associating *The Hill House* with the Modern Movement, this surely must be dispelled when considering the truth of the matter - that the building is a supremely important example of Twentieth Century Architecture.

4.3 The problems of conserving twentieth century architecture: interpreting the international conservation charters

No doubt within the last fifty years a new interest, almost like another sense, has arisen in these ancient monuments of art; and they have become the subject of one of the most interesting of studies, and of an enthusiasm, religious, historical, artistic, which is one of the undoubted gains of our time; yet we think that if the present treatment of them be continued, our descendants will find them useless for study and chilling to enthusiasm. We think that those last fifty years of knowledge and attention have done more for their destruction than all the foregoing centuries of revolution, violence and contempt.
Extract from the Manifesto of the Society for the Protection of Ancient Buildings (1877)

In the mid-1990s, when English Heritage was pursuing the listing of England's post-war architecture, the architectural historian Andrew Saint was faced with the task of considering the degree to which modern architecture posed a unique set of conservation problems. These perceived problems have been debated consistently since at conferences in Britain and around the world. Organisations such as the Twentieth Century Society (founded as the *The Thirties Society* in 1979) and the organisation with the rather clumsy title of DoCoMoMo International (founded 1988, distilled from 'Documentation, Conservation of Modern Monuments') have always taken an active interest in them. It is often the same issues that are debated – while some may claim that the international conservation charters are insufficiently flexible to address the ideological and technical issues raised by these buildings, others state that the charters are all embracing, and the spirit in which modern architecture is conserved is essentially no different from traditional buildings. As is so often the case, the truth may lie somewhere between the two, but the discussions seem to carry on endlessly. Other than from the many case studies that have been reported upon and documented, there is currently no body of consolidated advice which sets down the principles of how to conserve it. Neither is there currently an international charter by ICOMOS dedicated to the values of modern architecture. Meanwhile, in Scotland, the focus through the excellent series of Technical Advice Notes (now discontinued) in the recent past, and other publications from Historic Scotland, has been geared towards traditional buildings and construction techniques for which a cut-off date of 1919 is normally accepted. Only now is there evidence that this is beginning to change.

Technically, *The Hill House* falls outside the remit of either organisation in Britain charged with safeguarding the heritage of Britain's twentieth century architecture. The Twentieth Century Society's interests are those buildings erected *after* 1914, which disqualifies all of Mackintosh's mature work in Scotland, while the focus of DoCoMoMo is the buildings of the Modern Movement onwards, of which it is acknowledged that this covers structures erected after the pioneering buildings in Europe of the 1920s and 1930s[177]. Sustained and informed interest in Mackintosh's works is perhaps best exemplified by the Mackintosh Society, a charity based in Glasgow at Mackintosh's Queen's Cross Church, founded in 1973.

Saint identified correctly that all of the modern charters were based on the premise that underpinned the Manifesto of the Society for the Protection of Ancient Buildings (SPAB), founded in 1877, from which an extract from this over-lengthy document is set out above. It was established out of sheer frustration, and concern, over the damage caused to England's historic buildings from over-zealous, if mostly erudite, 'Restoration' practice by the leading exponents of the Gothic Revivalists in the latter half of the nineteenth century. As may be seen from the above extract from the Manifesto a cautious approach was promoted, with the focus slanted towards the preservation of original fabric and the promotion of traditional craft skills. Saint wished to test out whether these values were appropriate for modern buildings to anything like the same extent, given that their construction was no longer of traditional materials and, in many cases for buildings of the post-war era, involved highly industrialised processes in both the manufacturing and supply of materials, and in the assembly of components in the factory and on site[178]. Helpfully, he identified the challenging question of 'authenticity' in relation to the conservation of

Extracts from the Venice Charter, 1964

Imbued with a message from the past, the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to safeguard them for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity.

Article 3
The intention in conserving and restoring monuments is to safeguard them no less as works of art than as historical evidence.

Article 9 (abridged)
The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for material and authentic documents…..

Article 11 (abridged)
The valid contributions of all periods to the building of a monument must be respected, since unity of style is not the aim of restoration…..

modern monuments, noting the difficulties encountered frequently in repairing fabric on a 'truth to materials' basis in accordance with the SPAB creed and how the appearance of a modern monument in a decayed, or weathered state, may be at odds with the designer's original intention. Through this, although he did not highlight the issue specifically, he was raising the issue of authenticity in so far as this related also to the preservation of an original design, or concept[179]. If the principle of a SPAB 'honest repair' was to be adopted in these buildings the integrity of the original design could be compromised, over which the original designer would, no doubt, have been appalled. Devoid of the features by which accelerated weathering might be controlled - of oversailing cornices, projecting coping stones to walls and chimneyheads, overhanging roof eaves and bargeboards, and projecting window cills – the buildings of the Modern Movement have, inevitably, weathered badly, and over time appear they can appear disfigured or mutilated, even. The values by which the icons of the International Style of the 1920s are measured might suggest that constant maintenance would be required in order to preserve them in a pristine state whereas, say, the values by which a 1960s New Brutalist building, constructed of rough board-marked concrete, might be considered to be somewhat different.

The concept of authenticity in conservation lies at the heart of the Venice Charter (1964). Before addressing this, however, there is a fundamental difficulty with the application of the charter in which the wording is directed towards *ancient* monuments as having intrinsic value. While many of the generalities could apply to other elements of the historic environment there is less certainty as to how they are relevant to *modern* monuments, of which there had been no real recognition in the 1960s that such a recent category of heritage would have been considered worthy of being preserved *at all*. While the importance of the monument as a work of art is recognised, the concept is diluted by the exhortation to respect the work of all periods – while that may be true of a medieval cathedral, it may not hold true for a modern building where the original design has been compromised by inappropriate alterations that diminish its value in an appreciable way. In creating the case for appreciating the 'full richness of their authenticity' the charter makes no distinction between the desirability of preserving the authenticity of a design concept over preserving the authenticity of the original materials that have survived or, indeed, the patina of age which they have added to an appreciation of their intrinsic value. For instance, the notion of preserving the designer's intentions is heavily compromised by the notion that the work of all ages is worthy of being preserved, as 'unity of style is not the aim of restoration' (Article 11). For a building which is an icon of the International Style, 'unity of style' might, with every justification, be considered as the *primary* value to be preserved.

The concept of authenticity is, curiously, completely absent in the influential Burra Charter of 1979. Whereas for reasons of clarifying meaning, definitions are provided of the acts of conservation in relation to a site or place, there is no definition provided for this value. As a consequence of this omission a document was devised by ICOMOS in 1994 to address this specific point, known as the Nara Declaration of Authenticity to which reference will be made later in this paper. If the concept of authenticity is to be found at all in the Burra Charter, it is in the new concept of *cultural significance* which was introduced, through which no act of conservation should be undertaken without understanding the site, object, or place to be conserved. The concept of cultural significance is defined by four sets of values which are not necessarily mutually exclusive, but neither are they

Extracts from the Burra Charter (1979)

Article 3. Cautious approach

3.1 *Conservation* is based on a respect for the existing *fabric, use, association* and *meanings.* It requires a cautious approach of changing as much as necessary but as little as possible.

3.2 Changes to a *place* should not distort the physical or other evidence it provides, nor be based on conjecture.

Article 4. Knowledge, skills and techniques

4.2 Traditional techniques and materials are preferred for the *conservation* of significant *fabric.* In some circumstances modern techniques and materials which offer substantial conservation benefits may be appropriate.

Article 5. Values

5.1 *Conservation* of a *place* should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others.

5.2 Relative degrees of *cultural significance* may lead to different *conservation* actions at a place.

2.2 Aesthetic value

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use.

necessarily inclusive as the values are somewhat specific. The four sets of values are listed as 'Aesthetic', 'Historic', 'Scientific' and 'Social', but none of them cover adequately the concept of authenticity or even the evidence to be found in the fabric of the site or place to be conserved, other than from the exhortation that the fabric should be respected, harking back to the Venice Charter. Examining the definition of what aesthetic value might be considered to be unhelpfully the charter provides no definition that acknowledges the integrity to be found in the designer's original intention for a work of art, building or site. The charter advocates that levels of intervention should be based always on a cautious approach, and should never be other than the minimum necessary to preserve the fabric (Article 3).

Although James Semple Kerr was to advocate the notion of hierarchical significance as a firm basis upon which to determine conservation decisions[180], while Article 5 refers to 'relative degrees of *cultural significance*' the cautious approach is again emphasised. Actions are heavily qualified by the preceding paragraph in which, when taking all aspects of significance into consideration, there should not be 'unwarranted emphasis on any one value at the expense of others'. To some this may be considered offering justification for the policy of adopting such levels of caution for 'conserving as found' and, while in some cases - for instance, ancient monuments - this approach may be wholly justified it should not be considered to have a wider, more universal application. In the case of modern monuments such an approach can be impossible to implement, if only because of the transitory nature of some modern building materials, and the ways in which inferior construction contributes to the terminal decay of the monument, leading to actions which are unsustainable through the imposition of an unrealistic maintenance burden - especially one which is incapable of being justified in the longer term. It is also often the case that the original materials, or proprietary products or systems, are no longer available, or are manufactured so that accurate replication is no longer possible.

The 1994 ICOMOS Nara Document on Authenticity, referred to above, built upon the proclamations of the Venice Charter. It sought to ensure that the statement was appropriate for current conservation practice and, more specifically, to embrace all cultures and aspects of cultural heritage. It was reaffirmed that the values by which authenticity could be measured could only be established through proper knowledge, and a full understanding of the heritage resource. Authenticity was identified as being the cornerstone by which values could be measured, leading to appropriate conservation actions being taken. The definition was, no doubt, deliberately a broad and inclusive one. It introduced 'design' explicitly as one of the aspects to be taken into account, although the issue of maintaining the 'integrity' of a design is not addressed directly as an aspect of authenticity. From the reference to the four sets of values set down in the Burra Charter, it is clear from Clause 13 that the advice was laid down to supplement Article 5 of that document (the bold type has been added to give emphasis):

Depending on the nature of cultural heritage, its cultural context, and its evolution though time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form **and design**, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural heritage being examined.

Extract from Scottish Historic Environment Policy (SHEP) (Historic Scotland, 2011)

Of Scotland's historic environment:

It has been shaped by human and natural processes over thousands of years. This is most obvious in our built heritage; ancient monuments; archaeological sites and landscapes; historic buildings; townscapes; parks; gardens and designed landscapes; and our marine heritage, for example in the form of historic shipwrecks or underwater landscapes once dry land …….

……. Importantly, it also includes our buildings erected before 1919.

In the last sentence it becomes immediately apparent that the perceived shortcomings of the Burra Charter are being addressed. If knowledge of the value of what was being conserved was bending towards the inclusion of modern architecture, there is evidence that attitudes towards what constitutes the historic environment had changed relatively little by the time that Historic Scotland published its own charter in 2000 ('The Stirling Charter'). If evidence were to be sought of an undue emphasis being placed on a narrow antiquarian interpretation of traditional buildings being constructed of traditional materials, it is found in the introduction to the document in which the importance of 'authenticity' is raised in the 'tangible and visible' record of what has been passed down to the present generation:

Distinctive Scottish styles of building have evolved since prehistory. Whether they are built in stone, such as brochs, abbeys, tower-houses, Georgian terraces and industrial mills, or the intricate carved stones of early history; of timber and earthen materials, as in most settlement throughout the prehistoric period; or in some combination, together they weave an intricate tapestry of types and materials that gives historical depth to the landscape.

This somewhat conventional view of a pre-1919 historic environment has been superseded and rendered incomplete as a consequence of the listing survey of Scotland's post-war modern architecture, the fruits of which were broadcast in the excellent 2009 publication *Scotland: Building for the Future*[181]. There still remains a policy vacuum, however, which has not been addressed in the successive versions of the SHEPs (Scottish Historic Environment Policy documents, published from 2008 onwards) which repeats the conventional view set out in the Stirling Charter (refer to the extract, left). There is at the present time a complete dearth of technical advice on the subject of the philosophy of repairing Scotland's modern buildings. Throughout the Stirling Charter, the emphasis is otherwise founded firmly on the earlier charters referred to above, identifying levels of intervention as those being the least necessary for the preservation of historic fabric. Conservation actions should be based on knowledge of the cultural significance, and all phases of development of the element of the built heritage to be conserved.

The repair and conservation of Britain's modern architecture has been addressed in a series of publications by the specialist conservation publisher Donhead – the first and second related to conferences dedicated to the subject in 1995 and 1998 respectively[182]. The third publication was issued as a volume in the regular series *Journal of Architectural Conservation,* published in 2007[183]. In the second of these three volumes, Susan Macdonald of English Heritage returned to the issue of attempting to define an approach to the methodology for the repair of post-war buildings. She argued against the principle of increased knowledge about the history of repairs and maintenance being used to create an automatic justification for a structure being returned to its original appearance, as opposed to acknowledging its history, and by doing so she was repeating the cautionary approach set down in the Burra Charter[184]. However, she recognised that a lead required to be taken by English Heritage to set down an appropriate framework:

The recognition of the value of post-war heritage requires a reassessment of the existing conservation philosophies; new methodologies must be found to tackle the specific problems of protecting these buildings. As the Government's adviser on heritage matters, English Heritage must set standards, find ways to resolve the more controversial issues, identify appropriate repair methods and break free from the control exercised by the repair industry over what can or cannot be done. In short, we must think more creatively about how to care for these buildings.[185]

Extract from 'Conservation Principles' (English Heritage, 2008)

Principle 4 Significant places should be managed to sustain their values

4.3 Conservation is achieved by all concerned with a significant place sharing an understanding of its significance, and using that understanding to:

- judge how its heritage values are vulnerable to change
- take the actions and impose the constraints necessary to sustain, reveal and reinforce those values
- mediate between conservation options , if action to sustain one heritage value could conflict with action to sustain another
- ensure that the place retains its authenticity – those attributes and elements which most truthfully reflect and embody the heritage values attached to it

In 2008, English Heritage published revised guidelines in its *Conservation Principles*[186], intended to bring policies and guidance up to date so as to be fit for purpose, and to bring them in line with the White Paper *Heritage Protection for the 21st Century* (2007). The document has, of course, no locus in setting policy guidance in Scotland and so, understandably, it is relatively little known here. It is, however, of direct interest to this study in adopting a more inclusive, and arguably less prescriptive, view of how the historic environment is perceived. This approach allows modern architecture to be considered as a valued component of the wider historic environment. The document offers a number of useful definitions, but on the question of 'authenticity', the Nara Declaration is accepted as having validity. In defining the historic environment the contribution of modern architecture does not appear to have been specifically excluded:

All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible or buried, and deliberately planted or managed flora[187]

A further definition is added, that of 'Integrity', defined simply as being the qualities of 'wholeness, honesty'.

In stressing the importance of understanding significance, the need to reconcile conservation options - which may be in conflict with one another - is set out in clause 4.3. On the question of authenticity, the document makes it clear that this quality is not simply restricted to materials or the evidence of the fabric, and takes into account a balanced evaluation of significance. This is exemplified in clause 91, by the argument that authenticity extends beyond these factors and can 'relate to, for example, design or function, as well as fabric'[188]. In raising the question of design values, it is recognised that a clear understanding of relative significance takes on a particular importance, and the impact of inappropriate repair or accretions damaging the significance of the place, or the integrity of its design, are factors which have to be taken into account in a balanced way. Further, it states, with a degree of pragmatism:

Retaining the authenticity of a place is not always achieved by retaining as much of the existing fabric as is technically possible.[189]

In considering design values, the question of maintaining the integrity of an artistic creation is also raised especially where this extends to a rigorous intellectual programme governing the design, especially where 'Strong indicators of importance are quality of design and execution, and innovation, particularly if influential'[190]. These matters are of particular importance when arriving at an understanding of the significance of *The Hill House*.

Finally, the question of the impact of periodic renewal of materials, or finishes, is raised. With many conservation materials (for instance, lime harling, roof thatching and roofing slates) periodic renewal of materials becomes a matter of necessity, for which conservation policies are normally put in place within an adopted conservation plan which minimise the visual and physical impact on a historic building. At the simplest level, these may extend to replacing with like materials. It is acknowledged that there will be some loss of patina, as an indication of the 'age' of the property, for which the patina might be expected to return over time. Gone are the profligate days when the SPAB Manifesto stated that the answer would to build afresh, and leave the old structure to decay naturally, thereby to be transformed into a ruinous state! The policy guidance recognises that the approach of

replacing with like materials may not always be possible and, while advocating caution against the use of experimental material, it is recognised that in certain cases an insistence upon using the same materials as the original work can condemn the structure to further decay and the destruction of original fabric, or to a maintenance regime which is incapable of being sustained on financial grounds alone[191].

These guidelines are useful in that they set down a clear methodology for the repair of twentieth century architecture, for which English Heritage's publication is therefore considered timely. It represents the distillation of some thirty years or so of thinking about conservation philosophy and practice, and about the changing nature of the resource to be conserved, since the Burra Charter (with all of its perceived deficiencies) was published in 1979. For many, when an awareness of the Burra Charter only surfaced in Britain in the mid-1990s, it became the only bible to be referred to in the belief that the highest standards in conservation practice were to be achieved from observing its articles to the letter. Only now is it possible to consider its shortcomings, as knowledge of what constitutes the historic environment has expanded, and has been enriched accordingly.

The NTS's own *Conservation Principles*, compiled in 2003, are in many respects much broader than the articles set out in the corresponding Historic Scotland publications, in no small way because of the unique position occupied by the charity in reflecting the values equally of the historic and the natural environment. However, these principles may require reviewing in the light of the recommendations set out in the quinquennial report for the repair of *The Hill House.* **Principle 3**, in advocating that the NTS should take a holistic approach to conservation follows the lead of the Venice and Burra Charters in promoting an archaeological approach to evaluating significance, which should be 'without unwarranted emphasis on any one aspect or point in time at the expense of others'. Such a definition does not appear to permit evaluation of those matters which may be considered to be detrimental to the significance of the site or building, and in the case of a building detrimental to the integrity of its design (and hence its authenticity where this may be an important value to be preserved).

In **Principle 7**, it is recognised that conflicts can arise when determining the most appropriate actions, but here the conflict is aimed more at those matters arising over competing needs for the site, of which some of these may not relate to conservation at all and may be driven by commercial considerations. In such cases, conservation should always take priority. This provides a different emphasis to that given in the English Heritage document in which it is recognised that conflict can arise when determining appropriate action on conservation grounds alone.

In the mid-1980s, after the NTS had taken possession of *The Hill House*, the deeply entrenched views polarising debate about the supreme importance of its fabric were being played out in what was, then, a policy vacuum. In most respects, both sides were correct in what they were claiming, but the jettisoning of the cautionary approach regarding the use and impact of relatively untried modern materials in the preservation of the fabric, for which there was at least partial justification to be found in the Venice Charter, was based on an assumption that has been proved, ultimately, to have been patently flawed. The risk of the irreversibility of the treatment was admitted but it was, in the end, ignored. The retention of the roughcast finish on grounds of authenticity (and over which there was no agreement as to the extent of that authenticity, with the roughcast having been

repaired on occasions for which reliable documentary evidence was established), should never have taken precedence over the artistic integrity of Mackintosh's design. Neither should insistence on its retention have placed the incomparable decorative finishes of the internal fabric at such a considerable degree of risk. These competing issues constitute the sorts of difficult dilemmas that have to be faced occasionally by those carrying out conservation work which the current English Heritage guidelines recognise.

To be making these points now is not to be seeking to apportion blame. It wholly accepted that those most closely involved with the catalogue of problems facing the house at the time were acting at all times in good faith. They are made more to be sounding a cautionary note that the mistakes of the past must be learnt from in the current quest to resolve the problems with the fabric of the property. The principle of reversibility should be applied. It will be important to bear in mind that these problems are just as serious now as they have been at any time in the history of the property and, ironically, they will be yet more challenging to resolve in the light of the catalogue of surface treatments and grant-aided repairs undertaken in the 1980s.

4.4 The conservation of twentieth century architecture: case studies

Le Corbusier's villas: Villas Stein and Savoye

Right: Villa Stein at Garches in 1969 with chimneys and roof feature added; the original windows have been replaced with a non-matching pattern (Photo: author)
Below: Villa Stein shortly after completion in 1926 with original fenestration (from Richards, p14 of illustrations)

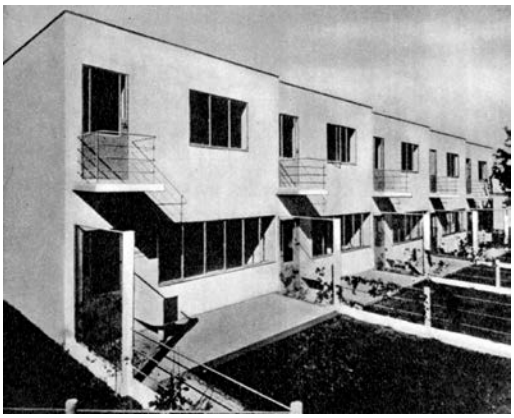
During the summer of 1969 two icons of the International Style, designed by Le Corbusier, were visited in the area surrounding Paris. Each, in its own way, was well cared for. The first, the Villa Stein at Garches, designed in 1926, remained in use as a private dwelling while the other, designed originally as a weekend house, had already been preserved and taken into the care of the State as a 'Monument Historique'. The dwelling in private hands had been altered marginally where elements of the original construction had failed. Improvements and embellishments had been carried out and, while the form of the house was relatively unchanged, the new fenestration had a major impact on its appearance and level of authenticity. To the original garden elevation Le Corbusier had designed large windows to attract the maximum amount of sunlight into the house (the earlier of the photographs shows the extent to which this required to be modulated by the sun blinds), in which the pattern of the fenestration maintained the aesthetic of strip windows with horizontal proportions set flush with the rendered wall panels of the external walls. The columns were set back from the face and were disguised by the external skin. The windows originally had black window frames of steel (the original windows with the pronounced horizontal glazing pattern can be observed in the 1969 photograph at the lowest storey level). The aluminium replacement windows, although well executed and neat in themselves, through having vertical instead of horizontal proportions and from being reflective, changed the whole character and appearance of the house.

The other house, the Villa Savoye, was located at Poissy, some distance from Paris and used as a rural weekend retreat. It was a more abstract composition, permitting the architect to explore the programme of a 'promenade architecturale'. Associated with the European *avant-garde* from the time when it was built in 1930, as with so many modern monuments it suffered at the hands of uncaring authorities. Defects in the design and construction of the house resulted in problems associated with water penetration through the roof terraces, and this, together with the difficulties experienced over heating the house adequately, led to it being abandoned by the outbreak of the Second World War. It was first requisitioned by the

Above: the Villa Savoye in the care of the State (from Goetz, p460)
Above right: the Villa Savoye in 1969 (Photo: author)

Germans, and then occupied by the Allied Forces under the Americans. By 1958 the fabric was in an advanced state of decay when the land was acquired for the purpose of erecting a new high school adjacent to the site and, although some conservation work was carried out, it was not until 1967 that the property was acquired by the State[192]. When photographed in 1969, still isolated in a field without the original landscaping having been restored, although the fabric had been restored to a pristine state there was already the evidence of blemishes in the smooth cement render of the external walls from problems with the underlying construction. Photographs taken more recently confirm the extent to which the flush detailing has contributed to problems of staining the surfaces of the white painted walls. It confirms the need for constant maintenance for the pristine appearance of the structure to be preserved. In these villas, construction was never more than a slave to the overriding artistic concept, and a historic photograph of the Villa Stein under construction confirms the extent to which basic traditional construction techniques lay beneath the skin of these icons of modern architecture.

Stuttgart: the housing exposition at Weissenhofsiedlung



Far left: the Citrohan House at the Weissenhofsiedlung by Le Corbusier and Pierre Jeanneret (1925-7) (from Colquhoun, p145)
Near left: terrace of houses by JJP Oud (1927) (from Richards, p12 of illustrations)

Similar problems to those encountered at the Villa Savoye beset the buildings of the Weissenhofsiedlung in Stuttgart. Attracting an estimated 500,000 visitors when the housing fair opened in 1927, it suffered from similar outrage and indignation at the hands of the authorities in the ensuing years. Set up as a prototype for social housing the estate comprised 21 houses erected using innovative construction techniques of prefabrication, with walls of hollow pumice concrete blocks and thermal slabs. In 1938 the whole of the site was sold to the German Reich for a military establishment, for which the properties on the estate would be demolished. Although the

scheme was never implemented, the individual buildings were allocated diverse military purposes which resulted in the loss of some from targeted Allied air raids. Other buildings had been demolished by the early 1950s, and by 1956 the buildings were listed as historic monuments. General restoration of the surviving eleven buildings was not embarked upon until 1981 by the State Office of Works, while the house designed by Le Corbusier and Pierre Jeanneret (which had remained in use as a private dwelling house) was acquired in 2002. It was subject to intensive historical research and materials and historic paint analysis, and restored to standards appropriate to the conservation of modern architecture. The building was adapted for use as a museum and interpretation centre which opened in 2005 to public and professional acclaim alike.

Tecton: Finsbury Health Centre


Finsbury Health Centre (1938-9) by Tecton

As noted in 4.1 Tecton had been among the architectural practices most influenced by the Modern Movement in Britain in the 1930s. By the late twentieth century one of the best known works of the practice, the Finsbury Health Centre (1938-9), had fallen into an advanced state of decay - in part this was due to a shortfall of funding for general maintenance within the National Health Service which was at loggerheads with the heritage interests and demanding needs of the building. Built as a local health centre the complex was facing the kinds of problems encountered by those involved with the repair of the above buildings in France and Germany respectively. Whereas in the rest of Europe, during the previous decade traditional forms of construction would normally be adapted for the non-loadbearing infill walls, which were then covered over to create the aesthetic of the prevailing International Style, in Britain reinforced concrete wall panels would often be preferred, finished with a smooth cement render which overcame problems of cracking from using dissimilar materials. Recommended practice was rarely followed, however, in the amount of concrete cover provided to mild steel reinforcement. In the 1930s a minimum of 1" cover was advised by the Building Research Station, which was increased to 1½" in the early 1950s due to problems of corrosion that had been encountered[193]. Reinforcement would be subject to alkalization where exposed at high level parapets and to spalling of the surface finishes, calling for sophisticated repair techniques. It remains a problem faced by many buildings of the post-war era.

A first phase of structural and weathertight repairs was carried out in 1995 in order to save the building. The architect John Allan has recounted the many challenges faced by his practice in reconciling the use of relatively untried materials in relatively untried ways in the 1930s with the overriding need to maintain authenticity while, at the same time, reducing the need for future maintenance by making minor, if almost imperceptible, changes to the detailing or in materials in pursuit of this aim[194]. Modern technology through the adoption of re-alkalisation techniques to prevent the risk of future erosion of the concrete reinforcement was preferred to the mechanical means of removing the original render and opening up the reinforcement for treatment, as this would have been considerably more intrusive. From the evidence of the fabric and from studying archival photographs it was possible to reinstate the original colour schemes and surface tones. Due to the fact that the original materials were no longer in production, changes had to be made to the composition of the panels within the innovative curtain walling system (the original panels had already failed, and had been renewed unsympathetically). The building also faced many of the problems encountered when adapting structures of the Modern Movement for new uses for which improved thermal performance is required, necessitating changes being made to the construction of the walls

and roofs, having the potential to alter the appearance of the building and harm the integrity of its design.

Mendelsohn and Chermayeff: De La Warr Pavilion, Bexhill-on-Sea

De La Warr Pavilion, Bexhill by Mendelsohn and Chermayeff (1934-35) (from Richards, p25 of illustrations)

Erich Mendelsohn (1887-1953) fled from Germany to Brussels, and then to Britain where he arrived in 1933. During the summer of that year he and another émigré, the socialite Russian Serge Chermayeff (who had been brought to England in 1912 at the age of twelve), set up what was to be a short-lived practice working together in London. They were appointed by the mayor of Bexhill, Earl De La Warr, in the year after Mendelsohn arrived to design the new leisure pavilion following an architectural competition. The pavilion was a landmark project which did much to establish modern architecture in Britain as the accepted style of social progress during the interwar years. After the Second World War the demise of the building was swift. The public's use and enjoyment of it diminished to the extent that, in such a degraded state, the building was little appreciated and it suffered a number of unsympathetic changes. Recognition of its architectural pedigree came late, and it was only listed Grade I in 1986 by English Heritage after an extensive campaign to safeguard its future. The first phase of repairs was undertaken from 1991 onwards but the project was not completed until 2005, and then only after several attempts to secure public funding had been made. The remedial works and alterations to the fabric were undertaken by John McAslan & Partners.

The architects recognised from an early date that the combined factors of the location of the building (heavily exposed to salt-laden spray in its maritime location), and the problems of erecting such an innovative structure by unskilled labour had contributed to the pavilion's demise. The success of the design relied on flowing open spaces and uninterrupted views of the sea. During the early design stages of the project the concrete frame had to be jettisoned on grounds of cost for a steel frame, the fabrication of which, of welded sections, was highly innovative at the time. A constant lack of maintenance had resulted in the steel frame being heavily corroded from the exposure to salt laden air, while the original steel windows had been long replaced. The rendered wall surfaces had crumbled and the whole structure and finishes suffered from a lack of expansion joints. The project architect mused that 'The architecture of the De La Warr Pavilion, as many others of the early Modern style, depended for its aesthetic impact upon conscientious upkeep and perfect weather'[195].

An overall strategy to rescue the building was agreed with English Heritage at an appropriately early stage, and this approach was supported throughout the extended course of the project. To 'conserve as found' was considered inappropriate: it would have condemned the building to an uncertain future through requiring the burden of an unrealistic maintenance regime and, moreover, would not have secured a viable end use for it. The approach was summarised as follows:

> These strategies encompassed conservation, restoration, alteration and extension. Factors considered in the development of the plan for these four elements of the strategy included extent of authenticity of original fabric still present; its condition; the current and future use of the parts of the building; reversibility; and, above all, the original design intentions.[196]

The strategy resulted in a conservative approach being adopted, while recognising that changes to the functions of the building would be required to be sustainable in the longer term as an arts and entertainment venue.

Solutions to the adaptation of the building and to establishing repair standards were guided by a conservation plan.

Frank Lloyd Wright: *Fallingwater*

Frank Lloyd Wright's *Fallingwater* (1935-38) (from Oliver Hill, p24[197])

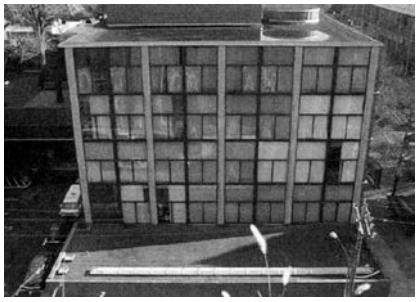
Frank Lloyd Wright's *Fallingwater* was designated a Historic Landmark in 1966, and the building has been declared the most outstanding work of American architecture over the past 125 years by the members of the American Institute of Architects[198]. Wright was appointed in 1935 by Edgar Kauffman Snr, a prominent Pittsburgh businessman and owner of a large department store. He had selected a challenging remote site within a wooded river gorge which had acted as a rural retreat for the family. Wright laboured on the plans and, after commissioning a detailed survey of the site where the waterfall cascaded over the rocks of the gorge, the architect shocked his client when he revealed that the house was to be constructed over the rocky ledge at the head of the falls, rather than in a position to look back towards it, as Kauffman had been anticipating. Having accepted the design, Kauffman was to fall out with his architect on more than one occasion. When the house was completed, given the challenges of building on the site and the general levels of dampness to which the fabric was subjected, Kauffman christened the house 'a seven bucket-building' and even gave it the alternative name of 'Rising Mildew'. There were constant leaks and problems with condensation arising from the fabric being under-insulated. The construction of the house was complete by 1938.

As if the problems of endemic dampness were not enough the principal legacy from the design of the house was a structural one, of sufficient magnitude to throw its preservation into considerable doubt, and it had arisen from Wright's inexperience of designing reinforced concrete buildings. Disbelieving his architect's calculations, Kauffman obtained professional advice from his own structural engineers which confirmed his suspicions. When he confronted Wright with his findings he was forced to back down as his architect threatened to walk off the job, but it seems that twice the amount of reinforcement compared with that estimated by Wright's office was added to the cantilevered slabs where the balconies projected over the waterfall, most probably by the contractor. Even that measure, however, proved insufficient. Once the props were removed, there

was instant deflection, with the slab dropping by around 1¾". Kauffman was so concerned about the movement that he engaged surveyors to monitor the deflection over an extended period between 1941 and 1955. By the time that the conservation engineering practice of Robert Silman Associates had been appointed in 1995, the cantilevers had slumped to a maximum of 7½", and were at the point of imminent collapse. Props had to be inserted as a temporary measure.

After studying the original working drawings for the house Silman and his colleagues had to be sure about the reported facts regarding the addition of reinforcement, and accordingly non-invasive survey techniques were employed from Britain at a time when they were in their infancy. After lengthy analysis of the options, the problem of the excessive deflection of the cantilevers was finally overcome by a post-tensioning solution. The levels of intervention were bound to be 'monumental' from introducing the post-tensioning cables alongside the original reinforcement, but they were deemed essential if the structure of the house was to be saved and the breathtaking effect of the cantilevers preserved. Silman mused over the propriety of instructing solutions which were contrary to the 'strict letter of the Venice Charter', or indeed the government of the United States own Standards for Preservation. Without being in the least apologetic, he argued that interventions of such a serious magnitude were unavoidable if the structure were to be preserved *in any form*. Neither could the actions have ever have been reversible. In the finished work the external or internal appearance had been barely changed from the original[199]. Silman also advised on repair methods for the protective coatings to the concrete and for the stucco render, and redesigned the waterproofing systems to the roofs and the balconies.

Louis Kahn: Yale University Art Gallery



Top: Yale University Art Gallery (Louis Kahn, 1952-53) before refurbishment
Above: after refurbishment in 2006
(Both photos from DesBrisay, pp75 and 79)

By the last quarter of the twentieth century, Estonian-born Louis Kahn (1901-74) was widely regarded as one of the most influential and revered architects of the century and, although his greatest works did not appear until the 1950s, he would be ranked alongside Le Corbusier, Frank Lloyd Wright, Mies van der Rohe and Alvar Aalto. His career changed direction after being appointed a Fellow of the American Academy in Rome in 1950-1, when his designs assumed a greater monumentality and an interest in the possibilities of concrete as an expressive material in construction. When in Europe he visited Le Corbusier's *Unité d'Habitation* at Marseilles.

The Yale University Art Gallery (1952-3) marked his first major commission. Although the brief for large open spaces for the art exhibits to be created suggested that a rational Miesian form should be adopted, the finished building shows a deviation from this with the use of an exposed geometric concrete floor grid in which the services were disguised. Kahn developed a sophisticated and innovative curtain wall system for this building from the assembly of standard steel profiles, but shortly after the building had opened the window frames and glazing suffered from thermal expansion problems at the junction with the concrete frame, and from endless problems of condensation which caused rusting of the frames. The original insulated glass units in the wall failed as the movement in the subframe opened up joints at the sealed edges. Environmental conditions within the building were subject to excessive fluctuations which proved difficult to control, and could not be reconciled with the increasingly sophisticated conservation needs of the university's art collections which called for stable conditions. The building suffered from invasive alterations as the functional

uses changed, and the openness of the internal spaces was impaired, much to Kahn's personal regret while he was alive.

The university wished to restore the original functional use for its growing art collections and remove the later accretions, for which environmental improvements to the building services and to the performance of the external glazing system were required in order to meet the prescribed museum conservation standards. Although the building was not officially protected by designation, a rigorous conservation approach was adopted, and standards were set and referred to in discussions held over the proposed changes. It was deemed not possible to preserve the components of the original steel curtain wall system and so a purpose designed aluminium framed walling system was devised to achieve the required thermal breaks, and to accommodate movement at the edges of the floor slabs. The colour coating and finish to the aluminium frame was selected as an accurate match to the original frame, for which a detailed paint analysis was carried out. From the exterior of the building no changes of any magnitude had occurred, although there had been a nominal increase in the section size of some of the members of the new curtain wall which, it is claimed, were imperceptible. Work did not proceed until after a satisfactory mock-up of the new curtain wall arrangement had been erected on site, and approved. It follows in this case the authenticity of the original steel-framed curtain wall had to be sacrificed for a substitute modern system that overcame the problems inherent in the original building, a solution which promised to meet the long term needs of the building and the collections housed within it.

The work was completed in 2006. The standard relating most closely to the remedial work that was instructed, 36 CFR Part 67 of the *Secretary of the Interior's Standards for Rehabilitation* (US), was quoted by the architects involved in the project, Polshek Partnership of New York, as:

> Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, colour, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.[200]

While echoes are to be found in the above to the cautionary approach enshrined in the Venice Charter (page 94), nonetheless this adopts a more pragmatic approach that reflects, perhaps more accurately, the sorts of conservation dilemmas faced in the repair of modern monuments. The quoted standard is more akin to the wording of what might be one of a set of Conservation Policies within the framework of a conservation plan, to be observed in the course of planning for, and executing, a conservation project.

Issues to be addressed in the repair of *The Hill House*

Charles Rennie Mackintosh's *The Hill House* is, unquestionably, of international architectural importance. It shares with the buildings listed in the above case studies similar problems which are posed when buildings of the Modern Movement are adapted and repaired. Although it is often considered to be constructed fundamentally of traditional materials and methods, it possesses a level of technical innovation in the pursuit of an architectural ideal not embarked upon before, and with it accompanying levels of uncertainty over durability and long term performance. Particularly challenging details arising from the application of the roughcast finish are compounded by the restless mannerism by which the architect experiments

Above: windows at *The Hill House* of varying patterns and materials, of timber, steel, lead and glass – although they may be unconventional in design, they are capable of being repaired by orthodox conservation techniques without causing major intervention or the replacement of original material (Photos: author)

with the quest for minimalism in the design of the projecting window bays, and where windows are positioned to be flush with face of the roughcast finish, placing the window frames proud of the underlying stone or brick. This represents a purposeful level of innovation in design which also anticipates the work of the modern masters during their formative years – but it also poses similar questions about how flawed elements of construction should be reconciled with the contrived integrity of Mackintosh's design. As one advocate of DoCoMoMo International has stated, 'the experiments of modern engineers and architects have a historic value of their own'[201].

An orthodox conservation approach can be adopted for those elements of the house that do not challenge convention. For instance, the windows of *The Hill House* may cause problems from being draughty, or may suffer condensation damage from adverse environmental conditions within the house. Equally, panes of glass in the windows with leaded lights may suffer from mechanical damage from wind action and from the slumping of the lead kames, but the windows are far from being in such an advanced state of deterioration, or are made up of components that cannot be replicated, to the extent that new windows to matching profiles (and in matching materials) are called for. Each of these conditions is capable of being repaired with minimal intervention and in accordance with the articles set down in the current international conservation charters. The cautionary notes about preserving authenticity in the Venice Charter, repeated in the articles of the Burra Charter, surely apply here, as they do to the exquisite interiors which are identified as being authentic, and any original fixtures within the house.

Unlike so many icons of the Modern Movement there is no question of the future of the house being at risk from having to secure new functional uses in order to survive, with the consequential need to reconcile these uses with the significance of the fabric. Nor will the ownership of the property change hands in the foreseeable future: the NTS will continue, as it began in the 1980s, to try and safeguard the fabric in ways that are least damaging to its significance, fully alert to how that significance may be perceived to have changed over time. The house has had structural problems internally, but these cannot compare with the problems encountered with the innovative welded steel frame of the De La Warr pavilion. It does share with this building, however, and also with Frank Lloyd Wright's *Fallingwater*, problems arising from an exposed, or extreme, location together with the all the associated problems that can be especially challenging for innovative and relatively untried forms of construction. Designers in the 1920s and 1930s believed that concrete was indestructible and would last forever[202], and Mackintosh might be forgiven for holding a similar belief over the performance of a dense early Portland cement roughcast finish, based on what he had read in contemporary documents about the performance of the material and what had been widely promoted as its remarkable qualities.

An article in the Summer 2012 edition of the magazine *Brick Bulletin*[203] provides a timely reminder of similarities in construction and aesthetic intention shared by *The Hill House* with three other icons of twentieth century architecture, exemplars of Expressionism, De Stijl, and Russian Constructivism respectively. Each of these four buildings has a highly developed architectural programme in which the applied surface coatings disguise hidden elements of construction, giving expressive form to curved or planar walls and providing a reminder that architecture had evolved into one of the plastic arts, as painting or sculpture. Whereas the smooth, white cement-rendered surfaces of Le Corbusier's early villas disguised hollow

Top: the *Einsteinturm* shortly after completion in 1924 suggests a self-coloured Portland cement finish to the external surfaces (from Bennett, Plate LXIII[204])
Above right: the tower after refurbishment (1997-9) shows the change in colour from the original (web image[205])
Above: the tower undergoing repairs to overcome water penetration around 1928 (web image[206])
Below: the Schroder House under repair, showing the original brick core to the walls (from the *Brick Bulletin*)

ceramic pot tiles, behind the walls of the three projects mentioned in the article was common brickwork, a material which is also to be found supporting the roughcast of *The Hill House* and the rear walls of the Glasgow School of Art. The problems encountered for each of these buildings are remarkably similar to those experienced over the years at *The Hill House*, and hence they merit further comment.

The first of the projects mentioned in the article, Erich Mendelsohn's *Einsteinturm*, had been built on the site of the solar observatory at Potsdam between 1919 and 1924 before the architect moved to Britain. With its heavily sculpted walls it was a vigorous exercise in Expressionism and, like Mackintosh's *The Hill House*, it was constructed so as to be devoid of wall copes and projecting window cills. It caused a sensation when it was completed. Originally conceived in concrete, on grounds of cost the structure was erected in stucco-covered brick, a decision which led to countless problems during construction due to the sheer complexity of the wall profiles. Early photographs suggest that the tower had been finished originally in a self-coloured cement and that the white, or cream, paint had been applied later, possibly to overcome the disturbance to the appearance of patched repairs as cracking and dampness had resulted within the space of five years. The first round of repairs had to be supervised by Mendelsohn himself. In 1997 the fabric of the tower was subjected to a full repair programme to overcome the constant need for renovation to which it had been subjected over many decades[207]. It reopened to the public in 1999 to coincide with the celebration of its 75th anniversary.

The Schröder House in Utrecht (1924) by Gerrit Rietveld (1888-1964) marks a high point in the abstraction of the De Stijl Movement, and since 2000 has been designated a UNESCO World Heritage Site. Rietveld had also wished to construct the house out of concrete, but for the same reasons as Mendelsohn on grounds of cost he resorted to building the walls in smooth rendered brickwork for which no projecting copings were provided. Soon after the house was occupied, as with the *Einsteinturm,* problems of dampness were recorded together with cracking of the render and major repairs had to be carried out, once more within the space of five years. The *Brick Bulletin* article provides an illustration of a recent repair programme in which the render has been stripped and the brick base is revealed.

Top: the Schroder House (Gerrit Rietveldt) shortly after completion in 1924 (from Curtis, p148)
Middle: the roughcast finish at *The White House*, Helensburgh, showing the same underlying red sandstone exposed during repairs as at *The Hill House* (Photo: author)
Bottom: Voysey's use of roughcast at *The Homestead* Frinton-on-Sea (1905-06) (from Hitchmough[208])

The third of the buildings covered in the article was the house erected in Moscow in 1927-9 by the Russian Constructivist architect and painter, Konstantin Melnikov (1890-1974), for his own occupation. It was a radical design consisting of two interlocking round towers. Due to shortages in the available building materials at the time brick was again used and may not have been the first choice for the complex construction of the honeycomb lattice shells from which the towers were built, particularly as numerous hexagonal window apertures had been designed to puncture the walls of the rear tower. The surfaces of the towers were given a smooth cement render, painted white. The current condition of this structure, and whether it has suffered from the problems experienced in the two other revolutionary buildings in the article, has not been established. In each of the above mentioned cases, it is highly probable that the authenticity of the original fabric – either of the external walls or the surface coatings applied to them – has had to be sacrificed at more than one stage in their relative short history order to preserve the integrity of the architect's design.

As stated in 4.2, as a Proto-Modern building *The Hill House* anticipates the later structures of the Modern Movement, and not only in the radical nature of Mackintosh's design. It is a forerunner of the designs of the International Movement in Europe in which the construction materials are used as a means to an artistic end, taking precedence over the honest expression of the underlying construction. It shared the same levels of technical innovation, using materials in unprecedented ways. It is abundantly clear that Mackintosh would not have embarked upon such a journey in expressing the forms so consciously based upon historical associations, which he used in such an abstract composition, without having absolute faith in the characteristics of the Portland cement roughcast. He must have firmly believed to be permanently weatherproof. In this respect, he deviated from the more pragmatic approach favoured by his contemporaries in the English Arts and Crafts Movement in re-establishing the vernacular tradition (and also by his compatriot, Robert Lorimer). Muthesius, when describing their work had noted that one of the advantages of specifying limewashed roughcast walls was that they could be redecorated to improve their appearance at any time in the future[209]. It is surely no accident that Baillie Scott's *The White House*, roughly contemporary with *The Hill House*, appears to have suffered significantly fewer of the problems experienced by its more celebrated neighbour further up the slope of the hill. Although it is in a slightly less exposed location, and has not been altogether free of defect in the finish of the original limewashed roughcast, a significant amount of the original roughcast appears to have survived and there has been much less rebuilding of the most exposed elements of the structure. The evidence of exposed areas of walling (where repairs were underway at the time of the visit in November 2011) upholds the view that the same red sandstone appears to have been used for the construction of the solid external walls of the house. Bricks, similar to those used in the construction if the walls at *The Hill House*, may have been reserved for use in the projecting window bays. That the original fabric has survived rather better is unlikely to be attributable to the fact that the house is built to a higher standard, and is more likely to be associated with the insertion of traditional stone margins to the window openings, and by giving the chimneyheads copes of sandstone, although it has to be admitted that greater care could have been exercised by the masons during the original construction over ensuring that the stone was laid on its natural bed. From the evidence of the roughcast finish it is probable that this is less dense, of a lesser thickness, and less cement-rich than that specified for Walter Blackie's house, and hence it could be more permeable, resulting in less damage being caused to the underlying masonry. Baillie Scott's design and specification may be

permitting moisture within the thickness of the walls to evaporate to the exterior during benign weather conditions, which has never been possible in the walls of *The Hill House*.

The consequences of Mackintosh's relentless pursuit of a compelling design aesthetic: constant problems and repeated repairs and rebuilding at raised skews where the roughcast is carried over the wallheads **(top)**, and **(bottom)** repairs in dense cement smooth render and roughcast at window cills have failed, with cracks allowing water to enter the core of the wall (Photos: author)

At *The Hill House* there is a fundamental mismatch between the desirability for the roughcast to protect the more vulnerable areas of the structure – at window cills and other horizontal surfaces, raised parapets, skews, and at the chimneyheads, so as to prevent water from entering the building - and for it to permit the walls to breathe. Mackintosh's intention had been to discourage *any* water from entering the fabric. Once it had done so and had entered the core of the walls from failures in the roughcast, or for whatever the reason, with poorly fired bricks and soft sandstone with individual stones not laid on their natural bed as a vulnerable substrate, a vicious circle was thus created in which cracks of any size in the surface of the roughcast has led to the gradual destruction of the walls of the house. This, in turn, has resulted in a loss of bond, and an inability to support the weight of the dense surface coating which is of an unusual thickness. Outbreaks of dry rot in most areas of the property have been fostered by these conditions, and they are likely to continue even now as the fabric dries out. Well-intentioned repairs in the past have not only signally failed to resolve the problems of the house, but they have contributed to them through the use of experimental and untried repair techniques. Problems have been known to exist for decades.

The extreme vulnerability of the property was exposed cruelly in the severe gales of the winter of 2011-12 when the fabric of the house absorbed significant quantities of water and became saturated. Internal finishes and fixtures were damaged, and not for the first time. During the storms, and for some days thereafter, water ran freely through to the solum below the ground floor in the worst affected areas, revealing that the problems with the roughcast are universal and are not just confined to the highest levels of the structure or the most obvious of the surface cracks, some of which have grown to be extensive over the past few decades[210]. The surface of the dense roughcast is known to be subject to micro-cracking which has led to large volumes of water being drawn in through capillary attraction under extreme conditions of driven rain, in addition to the more obvious sources of water penetration from the more exposed parts of the fabric.

To assist with identifying an appropriate repair methodology for *The Hill House* there is the growing body of evidence from the case studies on the repair of buildings of the Modern Movement and, increasingly, of the buildings of the post-war era. Since the intensive schemes of repair were undertaken to the property in the period from the 1970s to the early 1990s, knowledge of the problems encountered within the fabric of the house has increased many times over from the use of modern technology and non-invasive survey techniques. From thermal imaging surveys, we know the patterns of moisture movement through the fabric and the likely impact they will have on the precious decorative interiors of the house. From mortar analysis and petrographic reports, we know a great deal more about the characteristics of the original roughcast, including the materials from which it is composed, its porosity, density, and its compressive strength. From X-Ray Powder Diffraction reports, and further petrographic examination of the sandstones used in the construction of the house, there is now compelling evidence to add to the growing body of knowledge about the long term performance of these materials, and of the agents causing their accelerated decay. To complement the growing knowledge about the fabric of the house and what is causing the problems, a report on the

environmental conditions within the house and how these may be improved, with the potential benefit for the external fabric of the house, has also been prepared. The use of an endoscope will be able to inform us if the cavities which harbour the damp stone dust have resulted in further attacks of dry rot, perhaps before levels of intensive damage are caused to the interiors of the building.

However, despite this body of evidence, none of these reports and studies comes anywhere near to fulfilling the expectations expressed almost three decades ago by those advocating the use of irreversible repair technology to resolve the problems of the fabric - that levels of research in the intervening period would compensate for any element of associated risk. In fact, they do exactly the opposite: they confirm the full extent to which the experimental treatments of the 1980s have added considerably to the difficulties of finding appropriate solutions, taking *all* of the factors into account.

In conjunction with the key stakeholders having an interest in the property, it is for the NTS to use the volume of information gleaned about the house in its present state wisely in order to secure the long term future of this, one of most important and accessible buildings of Charles Rennie Mackintosh's entire output, and one upon which his international reputation is founded so strongly.

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[82] Eduard F Sekler *Mackintosh and Vienna* originally published in *The Architectural Review* December 1968, reprinted in JM Richards and Nikolaus Pevsner (Eds) *The Anti-Rationalists* ibid p141
[83] Macaulay *Charles Rennie Mackintosh* ibid p259
[84] Article by Walter W Blackie *Memories of Charles Rennie Mackintosh* (c1943) in *The Scottish Art Review* Volume II 1968 pp6-11
[85] Thomas Howarth *Charles Rennie Mackintosh and the Modern Movement* first published 1952, Second edition, Routledge & Kegan Paul 1977 pp23-24
[86] Article by Walter W Blackie op cit p7
[87] Article by Walter W Blackie ibid p10
[88] Philip Schreiber, NTS Surveyor, Third Quinquennial Survey for The Hill House 1998 p23
[89] Background history on strikes at slate quarry in Wikipedia entry for Ballachulish http://en.wikipedia.org.uk/wiki/Ballachulish
[90] Letter from Charles Rennie Mackintosh to Hermann Muthesius, 05 January 1903, Hunterian Museum
[91] Muthesius ibid Vol II p172
[92] Carter's cottage at No 7 Eyre Terrace, Edinburgh, established by the author to have been designed by Robert Lorimer in 1901, and the exterior walls to be constructed of cavity brickwork (May 2011)
[93] Macaulay *Charles Rennie Mackintosh* ibid p228
[94] Macaulay *Charles Rennie Mackintosh* ibid p230
[95] Alan Crawford *Charles Rennie Mackintosh* Thames & Hudson 1995 p60
[96] Macleod *Charles Rennie Mackintosh: Architect and Artist* ibid p79
[97] MacInnes, Glendinning & MacKechnie *Building a Nation* op cit p94
[98] Article by Walter W Blackie ibid p7
[99] Article by Walter W Blackie ibid p8
[100] David Walker *The early work of Charles Rennie Mackintosh* in JM Richards and Nikolaus Pevsner (Eds) *The Anti-Rationalists* ibid p123
[101] Charles Rennie Mackintosh lecture notes for *Scotch Baronial Architecture* (1891) in Robertson (Ed) ibid p53

[102] Frank Arneil Walker *Scottish Baronial Architecture* in Robertson (Ed) ibid p39
[103] Macaulay *Charles Rennie Mackintosh* ibid p235
[104] David MacGibbon & Thomas Ross *The Castellated and Domestic Architecture of Scotland* David Douglas, Edinburgh, 1887 Vol II p428
[105] Elizabeth Beaton, *Ross & Cromarty, An Illustrated Architectural Guide* RIAS Edinburgh 1992
[106] Crawford op cit p106
[107] Charles Rennie Mackintosh lecture notes for *Scotch Baronial Architecture* (1891) in Robertson (Ed) ibid p52
[108] Macleod *Charles Rennie Mackintosh: Architect and Artist* ibid p149
[109] Kenneth Lawson, pers comm with the author
[110] Judith Lawson *Building Stones of Glasgow* University of Glasgow 1981 p9
[111] Judith Lawson op cit p25
[112] Memo of meeting with Mrs Ruth Hedderwick (née Blackie) on 30 December 1982, NTS Archives
[113] Notes of meeting held at The Hill House on 22 February 1983, NTS Archives
[114] Nick Haynes *Perth & Kinross: An Illustrated Architectural Guide* The Rutland Press 2000 p94
[115] Entry for Charles Rennie Mackintosh in the Dictionary of Scottish Architects http://www.scottisharchitects.org.uk/architect_full.php?id=200362
[116] Minutes of the Building Committee November 1946, Glasgow School of Art Archives
[117] Minutes of the Building Committee May 1950, Glasgow School of Art Archives
[118] Hunterian Museum Collections item ref no GLAHA 41861
[119] Macaulay *Charles Rennie Mackintosh* ibid p263
[120] Entry for Charles Rennie Mackintosh in the Dictionary of Scottish Architects op cit
[121] Entry for Charles Rennie Mackintosh in the Dictionary of Scottish Architects ibid
[122] Macaulay *Charles Rennie Mackintosh* ibid p265
[123] The link with Holden is recorded in Macleod ibid p132, and his attention to it had been observed by John Summerson; however, the first to make the observation was Charles Marriott in 1924
[124] Hitchcock *Architecture of the Nineteenth and Twentieth Centuries* ibid pp297-300
[125] Crawford ibid p194
[126] Robert Furneaux Jordan *Victorian Architecture* Penguin Books 1966 p203
[127] Furneaux Jordan op cit p201
[128] Reyner Banham *Theory and Design in the First Machine Age* The Architectural Press 1960 p202
[129] Banham op cit pp217-8
[130] David Walker *Mackintosh's Scottish Antecedents* in Patrick Nuttgens (Ed) *Mackintosh and his Contemporaries in Europe and America* John Murray 1988 p38
[131] Curtis op cit pp68-69
[132] Hitchcock *Architecture of the Nineteenth and Twentieth Centuries* ibid p352
[133] Robert L Delevoy, entry for Adolf Loos in Gerd Hatje (Gen Ed) *Encyclopaedia of Modern Architecture* Thames & Hudson, first published 1963 p177
[134] Banham ibid p47
[135] Prof Sir James Dunbar-Nasmith pers comm with the author

Part II The legacy of The Hill House

Part III A litany of repairs to The Hill House

[136] Article by Walter W Blackie ibid
[137] Remarks by Miss Agnes Blackie; undated, but likely to have been recorded by Geoffrey Jarvis early in 1983, NTS Archives
[138] Memo of meeting with Mrs Ruth Hedderwick
[139] Kenneth Lawson, pers comm with the author
[140] Memo of meeting with Mrs Ruth Hedderwick, p3
[141] Kenneth Lawson, pers comm with the author; this is also confirmed in the Memo of meeting with Mrs Ruth Hedderwick, p4
[142] Memo of meeting with Mrs Ruth Hedderwick, p3
[143] Memo of meeting with Mrs Ruth Hedderwick
[144] Remarks by Miss Agnes Blackie
[145] Memo of meeting with Mrs Ruth Hedderwick, p5
[146] Glendinning, MacInnes & MacKechnie *Building a Nation* ibid p405
[147] Memo of Meeting at The Hill House with Miss Margaret Brodie and Mrs Lawson, December 1982, recorded by Geoffrey Jarvis, 04 January 1983, NTS Archives
[148] Letter, Margaret Brodie to Campbell Lawson, 24 August 1956, per Kenneth Lawson
[149] Kenneth Lawson, pers comm with the author
[150] Meeting with Miss Margaret Brodie and Mrs Lawson
[151] Kenneth Lawson, pers comm with the author
[152] Kenneth Lawson, pers comm with the author
[153] Prof Sir James Dunbar-Nasmith pers comm with the author
[154] Prof Sir James Dunbar-Nasmith pers comm with the author
[155] Recorded from the NTS Archives by Rosanne Watts, in *Hill House: Chronology of Building Repairs since 1972* (draft), April 2010
[156] The Hill House – Phase 1 Repairs, Site Meeting No 3, 08 November 1983, NTS Archives
[157] Architect's Background Note on water penetration problems at The Hill House prepared for the Historic Buildings Council for Scotland by Ingval Maxwell, 01 May 1984
[158] D Bell *The Historic Scotland Guide to International Conservation Charters* Technical Advice Note No 8, Historic Scotland 1997 p33
[159] Bell op cit p33
[160] Bell ibid p40
[161] Report on past and current proposals for rendering the Northeast Gable and their application to the remaining walls at The Hill House, the Boys Jarvis Partnership 18 May 1984 p4 NTS Archives
[162] Article by Brian Park *Cracking Up: Hill House* in *Architect's Journal* 13 May 1992 pp41-43
[163] Letter, W Neal Sharp, Senior Building Adviser to the NTS to Brian Park of Page & Park, 27 June 1988, NTS Archives
[164] Brian Park *Cracking Up: Hill House* in *Architect's Journal* op cit pp41-43
[165] Letter Ian A Walker, Architect, to Charles Strang, NTS, 25 September 1990, NTS Archives

Part IV Conservation philosophy: a discussion paper

[166] Charles Marriott *Modern English Architecture* Chapman & Hall 1924 p129; the references are not solely in relation to the Glasgow School of Art, and mention Mackintosh's Queen's Cross Church, his work on the tea-rooms

and *The Hill House*, of which one of the Lemere photographs are used to illustrate the property (opposite p225)

[167] Henry-Russell Hitchcock entry for *International Style* in Hatje (Ed) op cit pp153-4

[168] Alan Colquhoun *Modern Architecture* Oxford History of Art Series, Oxford University Press 2002 p32

[169] Fiona Sinclair *Scotstyle: 150 Years of Scottish Architecture* The Royal Incorporation of Architects in Scotland and the Scottish Academic Press 1984 p75

[170] Nikolaus Pevsner *Pioneers of Modern* Design, published originally in 1936 as *Pioneers of the Modern Movement* revised and partially rewritten for Penguin Books 1960

[171] Henry-Russell Hitchcock entry for *International Style* in Hatje (Ed) ibid p151

[172] Charles McKean *The Scottish Thirties* Scottish Academic Press 1987 p38

[173] McKean *The Scottish Thirties* op cit p101

[174] FRS Yorke *The Modern House in England* first published by The Architectural Press 1937 pp10-11

[175] JM Richards *An Introduction to Modern Architecture* first published 1940, revised and reprinted for Penguin Books 1962, p68

[176] Alan Reiach and Robert Hurd *Building Scotland: A Cautionary Guide* Second edition, The Saltire Society 1944

[177] Web reference for DoCoMoMo UK: http://www.docomomo-uk.co.uk/about-docomomo.html

[178] Andrew Saint *Philosophical Principles of Modern Conservation* in Susan Macdonald (Ed) *Modern Matters* English Heritage/Donhead Publishing 1996 pp15-28

[179] Andrew Saint *Philosophical Principles of Modern Conservation* in Susan Macdonald (Ed) *Modern Matters* op cit pp19-20

[180] James Semple Kerr *The Conservation Plan: A guide to the preparation of conservation plans for places of European cultural significance* The National Trust of Australia 1996

[181] *Scotland: Building for the Future (essays on the architecture of the post-war era)* Historic Scotland 2009

[182] Susan Macdonald (Ed) *Modern Matters* ibid, and Susan Macdonald (Ed) *Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture* English Heritage/Donhead Publishing 2001

[183] Susan Macdonald, Kyle Normandin, Bob Kindred (Eds) *Conservation of Modern Architecture* special edition of the *Journal of Architectural Conservation* Donhead Publishing 2007

[184] Susan Macdonald *Defining an Approach: A Methodology for the Repair of Post-war Buildings* in Susan Macdonald (Ed) *Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture* op cit pp35-6

[185] Susan Macdonald *Defining an Approach: A Methodology for the Repair of Post-war Buildings* in Susan Macdonald (Ed) *Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture* ibid p32

[186] *Conservation Principles, Policies and Guidance for the sustainable management of the Historic Environment* English Heritage 2008

[187] *Conservation Principles* op cit p71

[188] *Conservation Principles* ibid p45

[189] *Conservation Principles* ibid p45

[190] *Conservation Principles* ibid p30

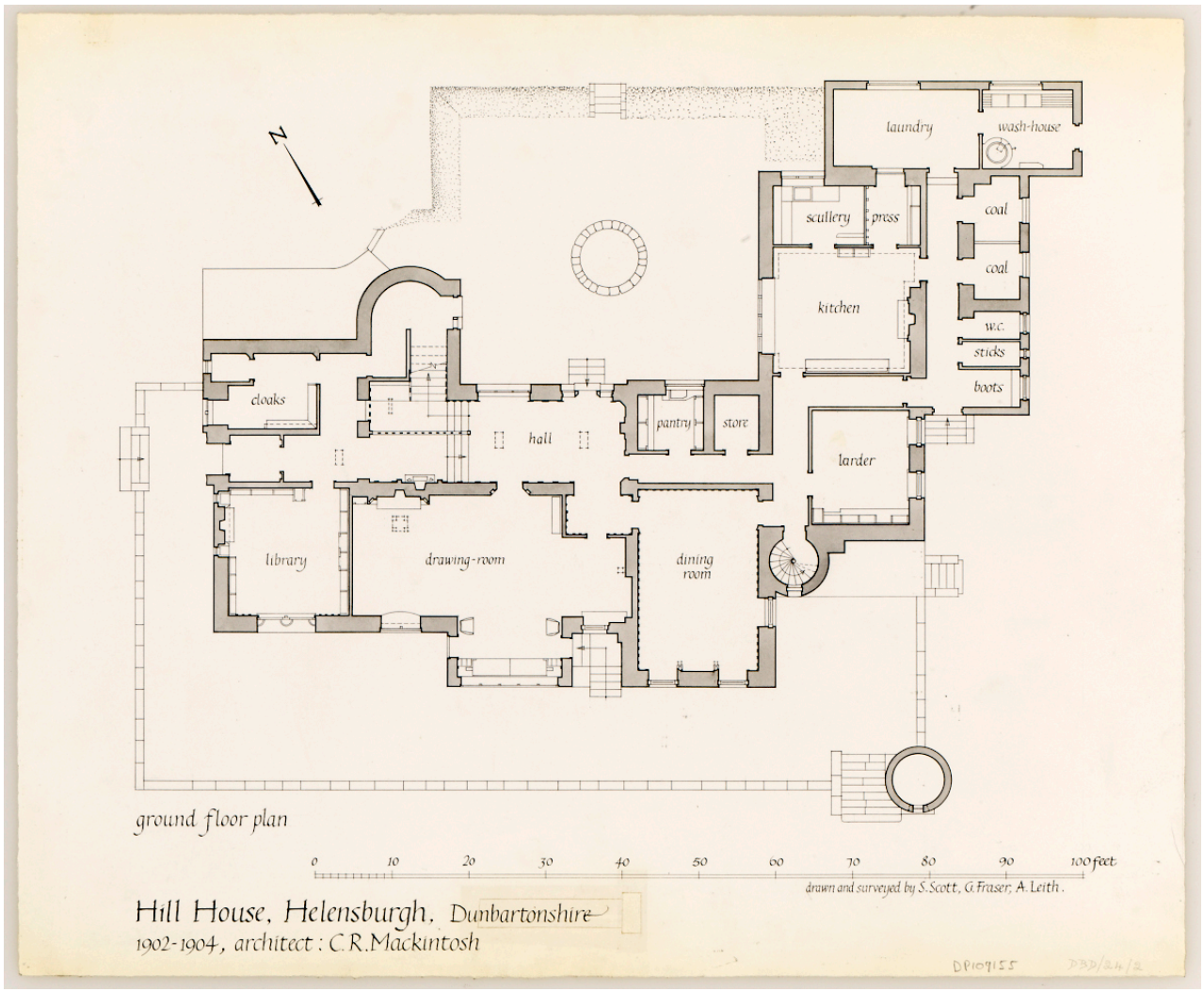
[191] *Conservation Principles* ibid pp52-3

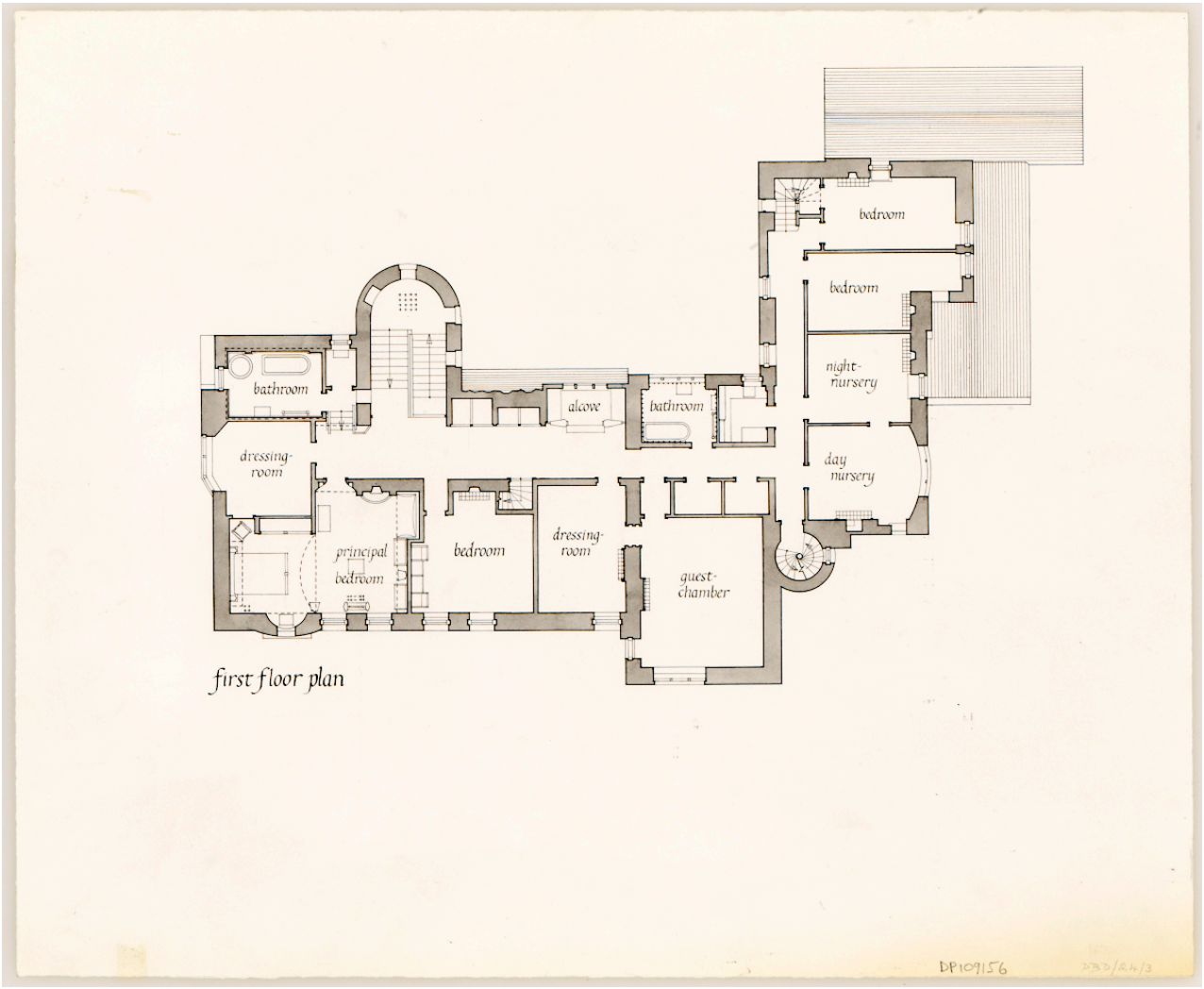
[192] Adrien Goetz (Ed) *100 Monuments; 100 Ecrivains: Histoires de France* Editions du Patrimoine, Centre des Monuments Nationaux 2009 p461

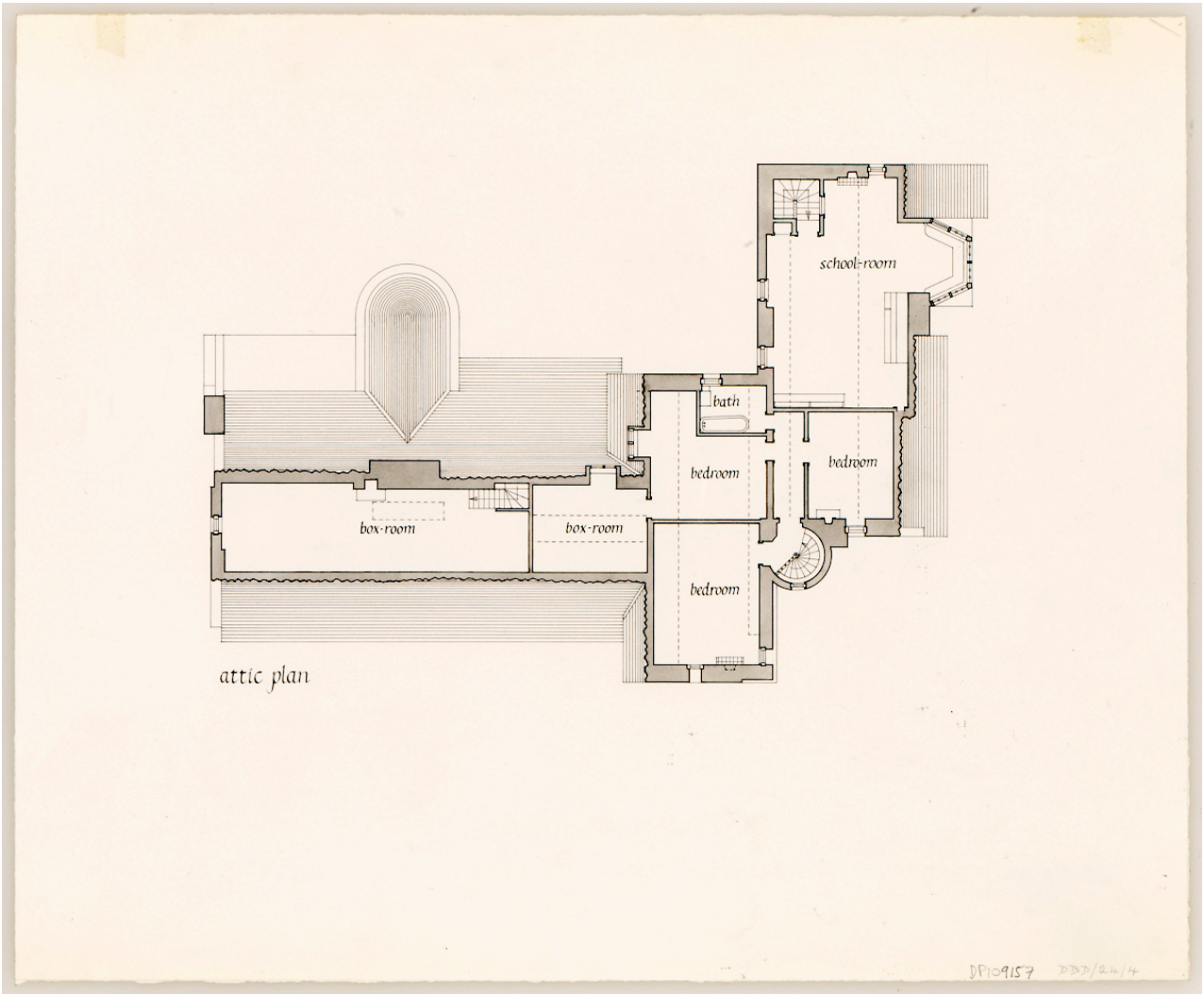
[193] Department of Scientific and Industrial Research (Building Research Station) *Principles of Modern Building* Volume I HMSO 1959 p107
[194] John Allan *Conservation of Modern Buildings: a Practitioner's View* in Susan Macdonald (Ed) *Modern Matters* ibid pp128-132
[195] Mark Cannata *The Repair and Alterations of the De La Warr Pavilion* in the *Journal of Architectural Conservation* Volume 12 No 2 July 2006, Donhead Publishing p88
[196] Mark Cannata *The Repair and Alterations of the De La Warr Pavilion* op cit p91
[197] Oliver Hill *Fair Horizon: Buildings of Today* Collins 1950
[198] Robert Silman *Fallingwater: Solving Structural Problems* in Susan Macdonald (Ed) *Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture* ibid p186
[199] P Robert Silman *Fallingwater: Solving Structural Problems* in Susan Macdonald (Ed) *Preserving Post-war Heritage: The Care and Conservation of Mid-Twentieth Century Architecture* ibid p188
[200] Lloyd L DesBrisay *Yale University Art Gallery: Louis Kahn* in Susan Macdonald, Kyle Normandin, Bob Kindred (Eds) *Conservation of Modern Architecture* op cit p83
[201] Wessel de Jonge *High Tide for Modern Heritage: Rietveld's Biennale Pavilion (1953-54)* in Susan Macdonald (Ed) *Modern Matters* ibid p165
[202] Susan Macdonald *Reconciling Authenticity and Repair in the Conservation of Modern Architecture* in Susan Macdonald (Ed) *Modern Matters* ibid p90
[203] *Precedent: Brick beneath the skin* in *Brick Bulletin* Summer 2012 Brick Development Association pp20-1
[204] TP Bennett *Architectural Design in Concrete* Ernest Benn, London 1927
[205] http://www.aip.de/einsteinturm/
[206] http://www.aip.de/image_archive/images/einsteinturm_1927_1928.jpg
[207] Wikipedia entry for the Einsteinturm: http://en.wikipedia.org/wiki/Einstein_Tower
[208] Wendy Hitchmough *CFA Voysey: The Homestead, Frinton-on-Sea, Essex* published in *Arts & Crafts Houses II* Phaidon 1999
[209] Muthesius ibid Vol II p187
[210] Rainfall during the month of June 2012 was unusually heavy but was unaccompanied by wind, and no problems were recorded from water entering the fabric during this period

Appendix

Plans of *The Hill House* prepared by RCAHMS


N
laundry
wash-house
scullery
press
coal
coal
kitchen
w.c.
sticks
boots
cloaks
hall
pantry
store
larder
library
drawing-room
dining room
ground floor plan
0 10 20 30 40 50 60 70 80 90 100 feet
drawn and surveyed by S. Scott, G. Fraser, A. Leith.
Hill House, Helensburgh. Dunbartonshire
1902-1904, architect: C.R. Mackintosh


bedroom
bedroom
night-
nursery
bathroom
alcove
bathroom
dressing-
room
day
nursery
principal
bedroom
bedroom
dressing-
room
guest-
chamber
first floor plan
DP109156


school-room
bath
bedroom
bedroom
box-room
box-room
bedroom
attic plan