

## 10.11 *Blinds & Louvres*

- a. **fabric blinds**
- b. **mesh blinds and screens**
- c. **venetian blinds**
- d. **luffer boards and louvres**
- e. **glass louvres**
- f. **sunbreakers**

In Australia window blinds have an explicit role in climate control, whereas in Britain their purposes may be little more than decoration and the establishment of privacy. However earlier examples have rarely survived in either country, and the technical details are too fine to be visible in illustrations.

### *a. fabric blinds*

Fabric blinds have for the most part long gone, and we know only a limited amount about the types used in Australia. The basic form of blind, more or less forgotten today, is a simple frame with material stretched over it, whether translucent or opaque, and used either inside or outside a glazed window. Nathaniel Whittock illustrates scenes suitable for painting on these blinds, and also the mechanism for straining the blind, a rectangular frame with solid wooden sides and threaded rollers at top and bottom. The fabric was tied to the rollers, which were turned until it was moderately taut, then either isinglass or parchment size was applied, and (apparently) the sheet strained fully before painting.<sup>1</sup>

In 1834 W Bacon of London advertised 'transparent paintings and imitations of stained glass' and could supply blinds 'painted to any design, mounted and complete with fixing':

he has prepared an elegant assortment ... consisting of Architectural, Italian, and Swiss scenery. The correctness of drawing, colouring, and general effect, render them an useful and ornamental appendage to drawing-room windows. Also many others from Grecian and Gothic designs, in imitation of stained glass, admirably adapted to church, chapel, library or staircase windows.<sup>2</sup>

Joseph Stubbs, of the Quadrant, Regent St, produced designs including a view of the Thames Tunnel, the interior of Canterbury Cathedral, and compositions derived from Claude Lorraine.<sup>3</sup>

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<sup>1</sup> Nathaniel Whittock, *The Decorative Painters' and Glaziers' Guide, &c, &c* (London no date [1827]), pp 193-203.

<sup>2</sup> B Critchett, *The Post Office London Directory for 1834, &c* (London 1834), advertisements, no page.

<sup>3</sup> *Architectural Magazine*, May 1834, p 127.

It is not generally realised that early references to blinds in Australia - where not explicitly qualified as 'venetian' - most generally mean panels of this basic sort. Another term for the same thing is 'shades', as in a Melbourne advertisement in January 1854<sup>4</sup> for - inter alia - 'paperhangings, painted shades and paper curtains'. The shades were probably not of paper, but of fine Scotch cambric or lawn, sized with isinglass, upon which scenery might be painted - a traditional practice which is now largely forgotten.<sup>5</sup> 'Watford Villa', Avoca, Victoria, is an imported German house of about 1854. It has casement windows with fixed transom lights above, and on each side of the transom are two hooks, one at the top and one at the bottom, presumably for stretching some sort of fabric blind.<sup>6</sup> But there is nothing to suggest that this was standard British or Australian practice.

In England, as described by Loudon, the simplest was a piece of cloth the size of the window, fitted along each side with rings which passed over two upright rods. A fillet of wood or an iron rod at the bottom provided the weight to keep the blind in place, but could be pulled up by means of a cord passing over a pulley in the soffit of the window head, thus raising the whole blind. A variant of this type was the bonnet blind, which projected out from the window in the same way as the Venetian fan blind. The cloth used in these blinds was generally a blue and white striped gingham, and the cornice and window surrounds were painted a stone colour.<sup>7</sup>

The range of blinds available in Britain was soon enormous, and by the 1860s the range available even in Australia was fairly diverse. English advertisements on the 1840s list Spanish, Oriental, Florentine, louvre and Venetian shades for outside use; blinds for shop fronts; and for inside use Venetian and dwarf Venetian blinds, patent wove wire, metallic gauze, perforated zinc, transparent landscape and Holland blinds on springs, patent and common rollers, including patent roller blinds 'mounted on the newly improved Scotch furniture'.<sup>8</sup> At the Great Exhibition George Osmond of London showed improved fittings for roller blinds of his own invention,<sup>9</sup> and James Jenkins showed an improved blind roller and spring bracket:

The spring is introduced into the bracket instead of the roller, in order to make the apparatus more simple, neat and cheap, and less liable to get out of repair. The roller can be removed from the bracket, and the blind slid into a dovetail groove.<sup>10</sup>

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<sup>4</sup> *Argus*, 27 January 1854, p 10.

<sup>5</sup> Nathaniel Whittock, *The Decorative Painters' and Glaziers' Guide* (London, no date [1827]), pp 166 ff, 193-103. Such painted blinds are discussed by Ian Gow, 'Scottish Luminaries', *Country Life*, CLXXXIII, 23 (8 June 1989), pp 298-300.

<sup>6</sup> Inspected 2007.

<sup>7</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 558], p 270; [§ 2002], pp 1009-1010.

<sup>8</sup> *Builder*, III, 100 (8 March 1845), p 120; 138 (27 September 1845), p 467. The patent roller blinds would probably be, firstly, that patented in 1839 by the Birmingham brassfounder William Newman, and made by Simcox & Company, and, secondly, E Smith's 'Registered Archimidean Blind Roller', said to be cheaper and less liable to damage than a spring, and usable in long narrow windows. *Mechanic's Magazine*, XXXII, 855 (28 December 1839), p 223; *Builder*, III, 141 (18 October 1845), p 508.

<sup>9</sup> London, Great Exhibition of the Works of Industry of all Nations, 1851, *Official Descriptive and Illustrated Catalogue* (3 vols, London 1851), II, p 664.

<sup>10</sup> London, Great Exhibition, 1851, *Catalogue*, II, p 657.

In 1856 'Barwon Bank', Geelong, had roller blinds in the drawing room, dining room and two bedrooms.<sup>11</sup> By 1858 Mitchener & Richardson of Melbourne were manufacturing Spanish, Venetian, Florentine, wove wire and spring blinds, and a number of other makers soon followed suit.<sup>12</sup> Roller blinds were now well-known, but in Western Australia Janet Millett commented that rollers and cords were seldom seen.<sup>13</sup> In about 1885 the boudoir of the 'Villa Alba' in the Melbourne suburb of Kew had an external window treated in the manner of a Moorish archway, including a roller blind of 'fine embroidered Srian [?Syrian] handwork on a woven texture of silk of rich golden hue.'<sup>14</sup>

Split bamboo blinds probably played a minor role, but the Asian connections of the Australian colonies ensured that they were known. 'Bamboo window blinds' were advertised in Sydney in 1837, and Chinese window blinds, probably meaning the same thing, in 1842.<sup>15</sup> In 1889 Frederick Harrison recommended 'Japanese matting' for blinds to enclose a homestead verandah.<sup>16</sup>

### ***b. mesh blinds and screens***

Yet another type of blind rather resembled today's flyscreen: canvas, gauze or fine wire cloth was stretched over three or more light wooden frames which folded across the outside of the window in a complicated manner. Screen blinds were required especially for dairies, where ventilation was important and flies a special problem, and in 1819 Abraham Rees (who was certainly read in Australia) recommended the use of fine gauze. However this was not to be stretched over the windows but used to completely line the rooms, and it was covered with a layer of fine wire netting,<sup>17</sup> presumably as a way of supporting it.

An early example of fly screening for specific openings occurred at Palladio's Villa Capra, which originally had a 2.1 metre oculus at the centre of the dome, where Inigo Jones saw a 'Net to cover the top Hole to keep out the Flies'.<sup>18</sup> This would have been literally a net, rather than a gauze-like material, for this was sufficient for fly control.

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<sup>11</sup> *Geelong Advertiser*, 28 July 1856.

<sup>12</sup> Victoria Industrial Society, *Catalogue of the Eighth Annual Exhibition of Manufactures, Produce, Machinery, and Fine Arts* (Melbourne 1858), p 13. For detail of other makers and merchants see Miles Lewis, 'Tradition and Innovation in Victorian Building' (3 vols, PhD, University of Melbourne, 1972), II, pp 407-8.

<sup>13</sup> [Janet] Millett, *An Australian Parsonage* (London 1872), p 55.

<sup>14</sup> *Table Talk*, 26 June 1885, p 4.

<sup>15</sup> *Sydney Herald*, 8 June 1837, and *Sydney Gazette*, 3 May 1842, reproduced in James Broadbent, 'A Survey of Colonial Imports', in James Broadbent [ed], *India, China, Australia: Trade and Society 1788-1850* (Sydney 2003), pp 119, 156.

<sup>16</sup> *Building and Engineering Journal*, 10 August 1889, p 131..

<sup>17</sup> Abraham Rees [ed], *The Cyclopædia, or Universal Dictionary of Arts, Sciences and Literature* (45 vols, London 1819), sv Dairy.

<sup>18</sup> Camillo Semenzato [translated Ann Percy], *The Rotunda of Andrea Palladio* [Corpus Palladianum, I] (University Park [Pennsylvania] 1968), p 21, quoting Inigo Jones, 'Notes and Remarks of Inigo Jones upon Plates of the Second Book of Palladio's Architecture', in the 1742 edition of *The Architecture of Palladio: Four Books*, I, pp 70-71 (which had been annotations by Jones in the 1601 edition, once in his collection).

Loudon reported that a net of white or light coloured thread with openings an inch or more in diameter was sufficient to prevent the entry of house flies, and was traditionally used in Italy. This did not work if there was light entering the room from another source opposite or lateral to the window in question, for then the flies passed through without hesitation.<sup>19</sup> In any case there was no suggestion that this net would work for mosquitoes, so more rigorous measures were required in Australia.

Tim Flannery has suggested that neither flies nor mosquitoes were a serious problem in Sydney until the 1830s,<sup>20</sup> but this is refuted by evidence collected by James Broadbent. The effects of William Kent, sold upon his departure from Sydney in 1805, included mosquito curtains; 'China gauze' for curtains was advertised by David Best in 1810, and mosquito hangings of green gauze were advertised in 1816.<sup>21</sup> Another material 'Plain, striped or figured leno' (a cotton gauze) for mosquito curtains was advertised in Sydney in 1828.<sup>22</sup> These insects were certainly a problem from the outset in South Australia. Robert Gouger warned of the 'large meat-fly of Australia' or blow-fly, which deposited live maggots,<sup>23</sup> and Mary Roberts wrote of the fleas, flies and mosquitoes which tormented the settlers at Holdfast Bay [Glenelg].<sup>24</sup> Gouger said that 'musquito-curtains' would certainly be required by settlers.<sup>25</sup>

It is unclear when flyscreens came into general use, but in 1826 Loudon refers to the need to screen windows in a dairy, without feeling any need to explain or elaborate,<sup>26</sup> and elsewhere he refers more explicitly to the use of 'a fixed frame of wire netting or lawn cloth' for the purpose.<sup>27</sup> Outside wire blinds had not yet appeared in Britain when Loudon wrote, but he advocated their use because they would allow the occupants to look out, while preventing outsiders from looking in.<sup>28</sup> In other words, there was no thought of them as a means of keeping out insects. On the other hand he also quoted a specification for a milk house with windows 'to have louvre (luffer) boarding ... with wirecloth inside',<sup>29</sup> which cannot have been for privacy, and must have been for protection against insects and/or wind-blown detritus. In another design for a dairy which he published in 1846, gauze wire was used specifically to keep out flies.<sup>30</sup>

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<sup>19</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 2528], p 1276.

<sup>20</sup> Tim Flannery on Radio National, January 2001, discussing his new book, *The Beginnings of Sydney*.

<sup>21</sup> Broadbent, 'Survey of Colonial Imports', p 158.

<sup>22</sup> *Sydney Gazette*, 17 December 1828, quoted in J M McMillan, *The Two Lives of Joseph Docker* (Melbourne 1994), p 33.

<sup>23</sup> Robert Gouger, *South Australia in 1837; in a Series of Letters: with a Postscript as to 1838* (London 1838), quoted in Penelope Hope, *The Voyage of the Africaine* (South Yarra [Victoria] 1968), p 26.

<sup>24</sup> Quoted in Hope, *Voyage of the Africaine*, p 117.

<sup>25</sup> Quoted in Hope, *Voyage of the Africaine*, p 27.

<sup>26</sup> J C Loudon, *An Encyclopædia of Agriculture* (London 1826), § 6304, p 980.

<sup>27</sup> Loudon, *Encyclopædia of Agriculture*, § 6298, p 979.

<sup>28</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 560], p 271.

<sup>29</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 1778], p 858.

<sup>30</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 2311], p 1164.

Gauze cloth was also used for flyscreens in early nineteenth century South Africa<sup>31</sup> and on the island of St Helena.<sup>32</sup> In the early nineteenth century flyscreens were used by the British army in malaria-prone areas, and it appears that a Colonel Smith (or probably Smyth) was regarded as the authority on the subject.<sup>33</sup> It was found that the use of gauze wire or mosquito netting reduced not only the number of insects but the incidence of fever, this notwithstanding the fact that the role of the mosquito as a vector in Malaria was yet to be recognised. By 1837 one Professor Trail of Glasgow had recommended the use both of gauze curtains for beds, and copper wire gauze for window openings.<sup>34</sup> In 1838 Captain Brandreth suggested the use of a copper gauze mesh of 1/24th of an inch [about one millimetre], set in cast iron frames.<sup>35</sup> In 1889 Frederick Harrison proposed 'shutters of fine wire gauze' for all the openings in a country dairy.<sup>36</sup>

The use of the word 'gauze' refers back to the earlier use of real gauze cloth (rather than wire) and therefore seems to imply a finer material than the 'wove wire blinds' which were available in Australia from at least the 1860s. A rather grander sounding 'wire gauze window blind' contained in a wooden frame, was made by C D Young & Co of Glasgow in 1850, with 'Mahogany Frames and Brass Mountings, painted landscape and borders',<sup>37</sup> but this would appear still to have been for use inside rather than outside the window. The same would be true of the 'Wire Blinds, in mahogany frames, and bolts complete', advertised in 1851 by the Wire Netting and Window Blind Manufactory of London.<sup>38</sup> In 1846, however, there is a reference in Australia to what are apparently external ones: Godfrey Mundy referred to the 'wire window-blinds' of a Sydney house - not because they were technically remarkable but because the ambitious emancipist who owned the house had had his factitious armorial bearings emblazoned upon them.<sup>39</sup>

In 1839 perforated zinc blinds were advertised for the use of emigrants to South Australia,<sup>40</sup> but so far no early reference to wire gauze has been identified. Only in 1868 is there mention of gauze wire window blinds supplied with the iron houses sent from Adelaide to the new settlement of Palmerston [Darwin],<sup>41</sup> and in 1870 W P Welch of Sydney showed at the New South Wales Exhibition a 'Curved top gauze

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<sup>31</sup> Ronald Lewcock, *Early Nineteenth Century Architecture in South Africa* (Cape Town 1965), p 228.

<sup>32</sup> Mabel Brookes, *St. Helena Story* (London 1960), p 191.

<sup>33</sup> John Weiler, 'Colonial Connections: Royal Engineers and Technology Transfer in the Nineteenth Century', *Construction History*, XII (1996), p 15.

<sup>34</sup> Captain Smyth, 'On the Construction of Barracks for Tropical Climates', *Royal Engineer Corps Professional Papers*, 1844, quoted in Don Roderick, 'Malaria, Miasma & Mosquitoes: the Origins of the Queensland Elevated House' (Mt Ommaney [Queensland] 2001), p 22. See also Roderick [thesis], p 46, where there is an interesting discussion of the idea that mesh was a protection from the miasma, then thought to be the cause of diseases such as malaria.

<sup>35</sup> Weiler, 'Colonial Connections', p 15.

<sup>36</sup> *Building and Engineering Journal*, 10 August 18889, p 132.

<sup>37</sup> *Illustrated and Descriptive Catalogue of Ornamental Cast and Wrought Iron and Wire Work manufactured by Charles D. Young & Company* (Edinburgh 1850), p 85.

<sup>38</sup> London, Great Exhibition, 1851, *Catalogue*, I, advertisements p 36.

<sup>39</sup> G C Mundy, *Our Antipodes* (3 vols, London 1852), I, p 96.

<sup>40</sup> John Stephens, *The Land of Promise* (1st ed, London 1839), Advertising Sheet, no page.

<sup>41</sup> Elfrida & Rolf Jensen, *Colonial Architecture in South Australia* (Adelaide 1980), p 422.

wire blind. Ornamented with embossed scroll in gold.<sup>42</sup> In 1875 the house 'Glenmore' on the coast near Melbourne had french windows and 'sliding wire-sashes, impervious to vermin', presumably meaning insects.<sup>43</sup> If the french windows opened outwards, the wire sashes must have been on the inside. It is now clear that they are insect screens, and one imagines that this was the case at Darwin. In 1879 Czar Lodge at Hay was reported to have gauze screens on the windows<sup>44</sup> - probably meaning wire gauze - and in the same year tenders were called in Melbourne for 'galvanized iron blinds' for a large Gothic window,<sup>45</sup> probably that of the Presbyterian Church, East St Kilda. In 1883 Mayes lists 'inside blinds' of both 'gauze wire' and perforated zinc, in cedar polished frames.<sup>46</sup>

At 'Martindale Hall', South Australia, of 1878-80, the wire gauze window screens slid into a wall cavity, and they still survive.<sup>47</sup> By 1889 'Expanding Window Fly Screens' were available in Sydney, and as they were said to hinder neither light nor ventilation:<sup>48</sup> these may have been attached to the sash and drawn upwards to screen only the opening, but more probably they were the same as the device still in use today, a pair of light screen panels about 300 to 400 mm high, sliding across each other laterally to fill the required width of the opening, the sash being lowered to meet them. In 1912 the Melbourne architect H D Annear advocated the use of the single sash window which when raised would disappear into the wall cavity above it.<sup>49</sup> Annear was to make this a standard detail in his own houses,

The Martindale Hall concept appears again in a South Australian house of about 1913, probably imported from California, where there are flyscreens sliding either vertically or horizontally into the wall space, depending upon whether the windows are casement or double-hung.<sup>50</sup> For the casements they are drawn across out of the wall, using a lifting brass ring pull, but in the case of the double-hung sashes the screen is in the wall below, and is attached to the bottom of the sash, rising automatically as it is opened.<sup>51</sup> A flyscreen concealed in the wall cavity and attached to the base of the window sash, so that it rose into place as the sash was raised, was again used by the Melbourne architect Eric Beedham in 1928.<sup>52</sup>

Screens that rolled up appeared later than those which slid into a cavity. A British patent of 1860 described a 'sheet of wire gauze attached to the top of the sash and

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42 *Illustrated Progress of New South Wales*, p 45.

43 *Argus*, 24 November 1875, p 2.

44 Gardam, *The Bishop's Lodge*, p 10, quoting *Riverine Grazier*, loc cit.

45 *Argus*, 15 September 1879, p 3.

46 Charles Mayes, *The Australian Builders' Price-Book* (4th ed, Melbourne 1883), p 1415

47 Elizabeth Warburton, *Martindale Hall* (Adelaide 1979), p 81.

48 H D Annear, 'Domestic Architecture', *Evelyn Observer*, 2 May 1902, quoted in Harriet Edquist, *Harold Desbrowe-Annear: a Life in Architecture* (Melbourne 2004), p 60.

49 *Australasian Builder & Contractor's News*, 2 November 1889, p 419.

50 The house is at 161 The Esplanade, Brighton, and is thought to have been built either in 1913, when the site was bought, or very soon after. Tradition ascribes its origin to Canada, but California seems more probable. Information from Peter Mallatt, March 2000, and extract from McDougall & Vines, *Brighton Heritage Review* (1998).

51 Information from the owner, Andrew Hapek, March 2000.

52 *Age*, 6 May 1989, p 41, on 'Carn Brea' at 429 Glenferrie Rd, Malvern, probably from the *Australian Home Beautiful* of November 1928, which is cited.

onto a spring roller fixed to the top of the opening.<sup>53</sup> By the 1890s the International Rolling Screen Co of Massachusetts was marketing a screen of copper bronze 'wire-cloth' which was rolled up in a case at the bottom of the opening, and could be pulled up as desired, independently of the sash.<sup>54</sup> In the 1930s the Australian Reinforced Concrete Engineering Co Pty Ltd of Melbourne was making the 'B.R.G. Rolscreen', in which wire mesh again rolled up in the fashion of a blind, but was kept taut by various inbuilt devices.<sup>55</sup> At the end of the decade a block of flats by Arthur Plaisted had windows which were claimed to be the first in Victoria of an American type with inbuilt flyscreens,<sup>56</sup> but the precise nature of these is not known. Another spring roller blind flyscreen appeared after World War II, as a product of A F Agnew & Co ('Agco') of Sydney.<sup>57</sup>

Generally speaking, flyscreen doors seem to have come later than window screens, but in 1888, following the example of Czar Lodge, Bishop's lodge at Hay was fitted with 'gauze' screens on all doors as well as windows.<sup>58</sup> Fly screen doors were available in 1889 from the same Sydney source as the expanding window fly screen referred to above,<sup>59</sup> but from observation screen doors seem to have become standard only in the Edwardian period.

In northern Queensland Peter Bell has found that wire flyscreening is in general quite a modern addition, though the segregation of part of the verandah as a sleepout or 'mosquito room' was known earlier in the twentieth century. The earliest form of general screening was a trellis formed of two layers of 25 mm laths spaced 10 mm apart, crossing each other at right angles. Canvas blinds or wired laths were also used in the nineteenth century, as well as a wooden blind type branded 'Luvalax', consisting of very thin 20 mm wide wooden laths, wired together so as to overlap, and capable of being rolled up. Wooden louvres generally date from after World War I. Another feature of the northern Queensland verandah, not uncommonly, is a secondary awning cantilevered out below the verandah eave,<sup>60</sup> giving the building a stepped-out or almost pagoda-like effect.

### *c. venetian blinds*

The history of the venetian blind is problematic, because it tends to be confused with the *jalousie* or *jhilmil*, which makes its first appearance difficult to pinpoint.

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<sup>53</sup> Great Britain, patent no 2733 to William Cooke, 7 November 1860. No 1190 to D B White, 17 April 1866, seems to be essentially the same.

<sup>54</sup> International Rolling Screen Co, *The International Rolling Wire Window Screen* [brochure] (Boston [Massachusetts] no date (c 1895), passim.

<sup>55</sup> University of Melbourne Architectural Atelier, *Bulletin* (Melbourne 1932), p 38. See also F W Ware & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1949), §51/1; *Ramsay's Catalogue* [1954], §51/1; *Australian Home Beautiful*, November 1958, p 104.

<sup>56</sup> Flats at 45 Acland Street, St Kilda, *Herald*, 8 November 1939, in RVIA Press Cuttings, SLV.

<sup>57</sup> Ware & Richardson, *Ramsay's Catalogue* [1949], §30/4; also *Ramsay's Catalogue* [1954], §51/2; *Australian Home Beautiful*, January 1954, p 56.

<sup>58</sup> Gardam, *The Bishop's Lodge*, p 13.

<sup>59</sup> *Australasian Builder & Contractor's News*, 2 November 1889, p 419.

<sup>60</sup> Peter Bell, *Timber and Iron* (St Lucia [Queensland] 1984), pp 195-7.

'Jalousie', according to Papworth, is simply a French term for the Venetian blind, which is one that can be drawn up or down by means of lines passing through holes in the laths, and which can be reversed so that the laths slope either inwards or outwards. Those set within folding frames, common on the Continent, are called *persiennes* in France and *persiani* in Italy. made of laths.<sup>61</sup> Despite the implied origin in Persia, documentary evidence of the venetian blind seems to begin in the Anglophone world. According to French & Sons, John Webster of London advertised his venetian blinds in the United States in 1767. This suggests that he may also have been the maker of the venetian blinds installed in 1761 in St Peter's Church, Philadelphia. Such blinds can be seen in J L G Ferris's painting of 1787, 'The Visit of Paul Jones to the Constitutional Convention 1787'.<sup>62</sup> They were if anything less familiar in France, though Rondelet illustrates a *jalousie suspendue* without further discussion,<sup>63</sup> and an engraving by L P Delincourt, prior to 1820, shows a wooden slatted venetian blind.<sup>64</sup> The nearest reference to Venice itself is Papworth's somewhat enigmatic quotation of the words of Selvatico in 1847, 'non avea nè vetriate, nè imposte, o scuri'.<sup>65</sup>

Wood slatted external Venetian blinds were supplied for Ellis Bent's house in Sydney by the cabinetmaker and upholsterer Lawrence Butler in Macquarie's time,<sup>66</sup> and early in 1818 a carpenter was making and hanging Venetian blinds at Government House, Parramatta.<sup>67</sup> In Hobart Daniel Mendes of Pottery Hill was advertising in 1816 as a 'black lead Pencil, Birdcage, and Venetian Blind Maker'.<sup>68</sup> It seems reasonable to suppose that the 'green Venetians' common on Cape Town houses in 1836 were similar,<sup>69</sup> though it is hard to be certain that louvred shutters were not meant. Venetian blinds were being sold in Melbourne by George Lilley in 1839,<sup>70</sup> and were supplied with wooden houses sent to South Australia in about 1840.<sup>71</sup> In 1861 Donald Bethune of Ipswich, near Brisbane, was advertising as builder, carpenter, joiner, glazier, and maker of venetian blinds.<sup>72</sup>

Wood slatted venetian blinds were made for external, as well as for internal use, and when used externally were suspended on light brass chains rather than tapes, and

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<sup>61</sup> Wyatt Papworth [ed], *The Dictionary of Architecture* (6 vols, London 1853-1892), sv "Jalousie".

<sup>62</sup> Thomas French & Sons Limited, *Venetian Blinds* (Manchester 1941) p 11.

<sup>63</sup> Jean-Baptiste Rondelet, *Traité Théorique et Pratique de l'Art de Bâtir* (6 vols, Paris 1812-17 [1812, 1814, 1814, nd, 1817, nd]), IV part 2.

<sup>64</sup> French, *Venetian Blinds*, p 8.

<sup>65</sup> Papworth, *Dictionary of Architecture*, p 501, presumably referring to P Selvatico, *L'Arte nella vita degli Artisti* (1870).

<sup>66</sup> James Broadbent, 'Aspects of Domestic Architecture in New South Wales 1788-1843' (2 vols, PhD, Australian National University, 1985), II, pp 77-8; also Morton Herman, *The Early Australian Architects and their Work* (Sydney 1954), p 33, ref the list of improvements submitted by Ellis Bent's widow, Mrs Bent to John Campbell, Government Secretary, 14 December 1816, *Historical Records of Australia*, 1st series, IX, p 301. [Broadbent says 17 December & p 302: CHECK].

<sup>67</sup> James Broadbent, *The Australian Colonial House* (Sydney 1997), p 67.

<sup>68</sup> *Hobart Town Gazetteer*, I, 20 (12 October 1816), p 1.

<sup>69</sup> W H Leigh, *Travels and Adventures in South Australia 1836-1838* (London 1839), p 37.

<sup>70</sup> *Port Phillip Patriot*, 20 February 1839, p 1.

<sup>71</sup> R G Jameson, *New Zealand, South Australia, and New South Wales* (London 1842), p 16.

<sup>72</sup> Donald Watson & Judith McKay, *Queensland Architects on the 19th Century* (Brisbane 1994), p 17.

fitted with cornice boxes into which they could be drawn up.<sup>73</sup> The venetian fan blind, made in England by Barron and Mills, was made to project out from the window opening at a variable angle, up to 45°, with the triangular spaces at the side protected by the slats of a two fan blinds, coming out from narrow boxes in the side frame, and operated by the same cord as the main blind.<sup>74</sup> Two relevant patents were taken out in Victoria, the first in 1858 by George Brooks, for a means by which outside blinds could 'be opened or closed from within, and by which the levers or pieces are rendered moveable', and also a means by which the blind could be used as a shutter.<sup>75</sup> The second was that of John Perry, apparently himself a manufacturer, taken out in 1865 for an improved method of hanging, and of opening and closing the louvres of Venetian shutters or blinds.<sup>76</sup>

At the 1866-7 exhibition William Sterry & Sons of Melbourne showed venetian and other blinds made by them, with their own improvements<sup>77</sup> - probably those referred to below. In 1869 no less than four Victorian patents were issued in relation to Venetian blinds, to H E M Moore, William & John Lloyd, H J Browne and John Tracey.<sup>78</sup> In 1870 John Tracey of Sydney exhibited blinds, including his newly invented and patented form of venetian, W P Welch of Sydney exhibited a green venetian blind, apparently of his own manufacture, 'Fitted with patent action and turning wires'. and Edward Chandler of Melbourne showed a venetian blind with registered tapes, 'having the cross tape registered with eyelets instead of being sewn with cotton, preventing them dropping off.' W 'Skerry' [Sterry] & Sons of Melbourne exhibited something which sounds very like the mechanism used in venetian blinds today:

The blind requires no tying up; when required to be lowered it can be done by pulling the check-string, with tassel attached, to any distance required.<sup>79</sup>

A England of the Melbourne suburb of Richmond, showed a machine for punching venetian blind laths at the International Exhibition of 1880.<sup>80</sup>

In the early twentieth century Milroy & Simmons of Sydney advertised as the sole New South Wales makers of Thurlow's Patent Chain Venetian Blinds,<sup>81</sup> but exactly

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<sup>73</sup> J C Loudon, *An Encyclopaedia of Cottage, Farm and Villa Architecture* (London 1846 [1833]) [§ 556], p 270.

<sup>74</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 557], p 270.

<sup>75</sup> Victorian patent no 135 to George Brooks, 22 December 1858.

<sup>76</sup> Victorian patent no 614 to John Perry, 13 March 1863. At the exhibition of 1866-7 Perry showed samples of colonial timber bent into various form: Intercolonial Exhibition of Australasia, 1866-67, *Official Record* (Melbourne 1867), p 31.

<sup>77</sup> Intercolonial Exhibition 1866-67, *Official Record*, p 37.

<sup>78</sup> Victorian patent no 1270 to Henry Edward Magenty Moore, 15 July 1869, for improvements to Venetian blinds; no 1302 to William Lloyd and John Lloyd, 13 September 1869, for improvements in the construction of Venetian blinds; no 1130 to Hugh Junor Browne, 22 November 1869, for a stop or check for running gear, principally that of Venetian blinds; and no 1334 to John Tracey for Tracey's improved venetian blinds. A further patent no 1389 issued to W J Lloyd on 25 May 1870 for a box through which the blind cords would pass and which would then hold them without tying them.

<sup>79</sup> *The Industrial Progress of New South Wales* (Sydney 1871), pp 45-7.

<sup>80</sup> Melbourne International Exhibition, 1880, *Official Catalogue of the Exhibits* (Melbourne 1880), p 50.

what these were has not been established. A significant improvement, however, was the ladder type, which gave less scope for the laths to be displaced. The English firm of Thomas French & Co seemed to claim that their 'fleur-de-lis' brand ladder tape was the only or the leading type, 'used by every Blind Manufacturer.'<sup>82</sup>

Another form of venetian blind available in the early nineteenth century had iron laths and was described as 'bullet-proof' but this was criticised by Loudon as 'most unsightly',<sup>83</sup> and it can be of little relevance to the modern form of metal or plastic slatted internal Venetian. This first appears in about 1851 when two manufacturers, Quincey and Geary, showed at the Great Exhibition Venetian blinds made with thin perforated metal laths, taking less space than wooden ones and, in Quincey's case, of a convex cross-section so that the overlapping pieces would effectively keep out the light. There is no evidence of anything of this sort appearing in Australia until 1875, when Henry P Welch & Co, the Melbourne importer, advertised the:

WINDOW BLIND OF THE PERIOD  
(PATENT METALLIC VENETIANS)

These blinds are manufactured from metal of the thickness of notepaper; are light, durable and elegant; and when drawn occupy less than half the space of wooden blinds.<sup>84</sup>

This seems to have been an abortive enterprise, for nothing more is heard of metallic venetians until the twentieth century. The English company Thomas French & Sons Limited dated their introduction to about 1930, and a decade later were selling aluminium venetians to a minority market. In one design the cloth tapes were replaced with tapes formed of bronze alloy links, so that the blind was almost entirely of metal.<sup>85</sup> The company also sold translucent venetians of Lamicaid, a bakelite phenolic resin laminated under pressure,<sup>86</sup> though it is not clear whether they were much used. Wartime conditions were probably not conducive to the gratuitous use of aluminium, but the industry boomed in the United States after World War II. In 1949 D V Isaacs & J W Drysdale reported that metallic venetians were in extensive use in the USA - but not, it was implied, in Australia, Britain or elsewhere. These American blinds were light - of about 30 gauge [0.3 mm] metal, and very easily operated using a small worm and pinion.<sup>87</sup> In 1951 Grove & Dickens of Melbourne advertised 'Ven-Sun' Venetians of a 'featherweight aluminium alloy',<sup>88</sup> and in 1954 the same company advertised 'Fetha-Flex' venetians in hard baked enamel, in fourteen pastel shades.<sup>89</sup>

<sup>81</sup> *Book of Australian Bungalows* (Sydney, no date [c 1920]), p 2.

<sup>82</sup> Thomas French & Sons Limited, *Venetian Blinds* (Manchester 1941), pp 8, 12ff, 35.

<sup>83</sup> Loudon, *Cottage, Farm and Villa Architecture* [§ 557], p 270.

<sup>84</sup> *Official Catalogue of Exhibits*, of the Victorian Intercolonial Exhibition, 1875 (Melbourne 1875), advertiser p 40.

<sup>85</sup> French, *Venetian Blinds*, pp 184-5.

<sup>86</sup> French, *Venetian Blinds*, p 275.

<sup>87</sup> D V Isaacs & J W Drysdale, *Building Technique and Building Research* (Sydney 1949), p 47.

<sup>88</sup> *Australian Home Beautiful*, February 1951, p 9.

<sup>89</sup> *Australian Home Beautiful*, January 1954, p 7.

Metal laths largely superseded timber in the next decade or so, and wooden venetians are generally assumed to be much older, but this is not necessarily the case, for after World War II they were still sold even in the United States, where Oregon, Basswood and Redwood were the favoured timbers. In England, they were mainly of St John Spruce or the cheaper Columbian Pine,<sup>90</sup> and in Australia Canadian red cedar was used, albeit painted in a glossy cream.<sup>91</sup> There has been a further revival of interest in timber venetians in more recent years.

Carr & Sons of Melbourne marketed a product which they somewhat misleadingly called 'dwarf venetians'. So far as one can make out from their advertisement these came in side-hung frames - a pair of these is illustrated, like casement sashes. Within each frame were vertical slats, and these were apparently rotated by turning a knob at the top of the frame.<sup>92</sup> The company which became Thurlows, of the Brisbane suburb of Albion, claimed to have been founded in 1903 and to be the inventors of the ladder chain Venetian, though what this might have been is not apparent.<sup>93</sup>

#### *d. luffer boards and louvres*

The various forms of louvred shutter are difficult to distinguish clearly, and are even, as we have seen, commonly confused with venetian blinds. Rondelet illustrated examples of *jalousies* or *persiennes*, some with fixed and some with pivoting blades.<sup>94</sup> Industrial and agricultural buildings in Australia, as in Britain, frequently made use of louvres or luffer boards to provide fixed ventilation, and Loudon's specification for a milk house with luffer boarding has been mentioned above. The grain store at 'Warrock', Victoria, thought to date from about 1844, and the blacksmith's shop, undated, both have openings with fixed timber louvres.<sup>95</sup> The English architect Frederick Rogers designed the church of St John the Baptist at Yengarie, Queensland, with louvres in the lancet openings, and Horbury Hunt did the same at Griffith Cathedral, New South Wales, of 1880-4.<sup>96</sup> If these boards were fixed they were of limited use, but in at least some cases they pivoted, either by turning each individual blade or by means of a master control such as a vertical rod (something apparently unknown to Rondelet).

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<sup>90</sup> French, *Venetian Blinds*, p 194.

<sup>91</sup> They were painted in high gloss cream: *Australian Home Beautiful*, XXVII, 7 (July 1948), p 2.

<sup>92</sup> *Farmer and Grazier*, 1892, p 74.

<sup>93</sup> *Thurlows Blinds and Shutters*, passim.

<sup>94</sup> Rondelet, *l'Art de Bâtir*, IV, part 2, pp 3-5; CLV, C.

<sup>95</sup> A R J Billman, 'The Timber Vernacular: Building Techniques of Domestic Timber Architecture in Geelong and the Western District 1840-1870' (BArch, Deakin University, 1992), diagrams 53, 69.

<sup>96</sup> Peter Reynolds & Joy Hughes, 'Private Practice: Works 1869-1904', in Peter Reynolds, Lesley Muir & Joy Hughes [eds], *John Horbury Hunt: Radical Architect 1838-1904* (no place [Sydney] 2002), p 64, for Yengarie citing Joan Kerr, 'Early and High Victorian: the Gothic Revival Architecture of Edmund Thomas Blacket and John Horbury Hunt', in A Bradley & T Smith [eds], *Australian Art and Architecture Essays Presented to Professor Bernard Smith* (OUP, Melbourne 1980), pp 26-8).

Robert Lugar spoke vaguely of the sides of a ventilation monitor on a dairy roof as being 'boarded, and capable of being opened or shut at pleasure,' and subsequently referred to these as 'luffer boards.'<sup>97</sup> They were probably adjustable slats of the type also known as lever boarding.<sup>98</sup> These pivoted, and each had a connection at its inside edge to a vertical rod, so that all moved in unison, and could be controlled either by moving the rod itself or by means of a lever attached to any one of the slats. They are common in the Far East, and known in India as *jhilmils*, though whether they originated there is an open question. Internal shutters on this principle are visible in of a painting of a drawing room in Calcutta in about 1780.<sup>99</sup> Local examples of the use of *jhilmils*, where there was a specific Indian connection, included 'Horsely', New South Wales, of about 1832, and the commandant's house at Port Arthur.<sup>100</sup> In 1868-9, perhaps somewhat surprisingly, the London builder W H Lascelles fulfilled an order for India which included about 1500 square metres of shutters, of which 'the laths ... opened and shut be means of a rod.'<sup>101</sup>

Whether or not these devices had been seen as specifically Indian, they soon lost that connotation and became a regular design feature. An example of about 1870 is found in a small cheese factory at 'Rosedale', Portarlington, Victoria. The slats have a dowel-like pivot into the frame. The link with the rod is made by means of interlocking metal staples, one fixed into the rod and one into the slat, and control is exercised by a lever attached to one of the lower slats.<sup>102</sup> The louvres in the stables at 'Gringegalgona', western Victoria, are not currently accessible to inspection, but are similarly connected to a rod on the inside by means of staples or hasps. In New South Wales J H Hunt used luffer boards operated in this fashion for ventilating the stables at 'Glenalvon', Murrurundi, in 1874-5, and they were also the only source of natural light to the interior.<sup>103</sup> The architect Frederick Harrison explained a slightly different version in which, it appears, a fillet or bar connected the ends of the slats: 'The [slats] work on a pivot, and they are opened or shut as required by a fillet screwed to the edges; the screw holes in the fillet being lengthened out to allow room for their operation.'<sup>104</sup>

In the United States, in the 1860s, the American Iron Blind Company produced shutters containing adjustable metal slats on the same principle under the name of

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<sup>97</sup> Robert Lugar, *The Country Gentleman's Architect* (London 1807), p 13.

<sup>98</sup> Wyatt Papworth [ed], *The Dictionary of Architecture* (London 1853-1892), sv Lever-Boarding.

<sup>99</sup> 'Lady Impey with her servants in Calcutta', attributed to Shaykh Zain-al-din, c 1780, from Jeremy Losty, *City of Palaces* (London 1990), reproduced in Swati Chattopadhyay, 'Blurring Boundaries', *Journal of the Society of Architectural Historians*, LIX, 2 (June 2000), p 172.

<sup>100</sup> Suzanne Rickard, 'Lifelines from Calcutta', in James Broadbent [ed], *India, China, Australia: Trade and Society 1788-1850* (Sydney 2003), p 91.

<sup>101</sup> J L Steinhardt, *The Illustrated Guide to the Manufacturers, Engineers, and Merchants of England, Scotland, Ireland and Wales* (London 1869), p 134.

<sup>102</sup> Similar shutters were used on the french windows of the house 'St Ninian's' at Brighton, Melbourne, though it has been long since demolished and the precise nature of the connecting rod is not known. The house was prefabricated in Singapore and was erected in about 1841, but it had undergone many alterations, and the shutters cannot be assumed to have been original. See Clare Lewis & Mary Lloyd, 'Portable Buildings' (BArch, University of Melbourne 1959), pl 5.

<sup>103</sup> Reynolds & Hughes, 'Private Practice', p 111.

<sup>104</sup> *Building & Engineering Journal*, 10 August 1889, p 132.

'Patent Metallic Window Blinds', with versions for inside and for outside use,<sup>105</sup> though neither has been reported in Australia. Subsequently a company in Hartford, Connecticut, produced what seems to have been a framed panel containing fine louvres, but without any rod to adjust them. Instead there was

a ratchet running the length of the opening ... embedded in the style .. and connected with the axle of each louver. The whole is worked by a simple button, which is sunk below the surface.

This appealed to Hudson Holly, because he had designed a window in which the louvered panels themselves slid down into a space below the window sill, and a connecting rod would have run the risk of fouling.<sup>106</sup>

A very elegant development of this principle is found at 'Rio Vista', Mildura, completed in 1891. A typical window has three full-width rectangular wooden panels on the inside, in three sets of channels so that they can move past each other, and light enough to be supported by friction. Each of these blinds is nearly square and is divided into four vertical panels, and each panel contains very fine adjustable jalousie boards running horizontally.<sup>107</sup> According to Andrew Ward they are branded 'Hills inside sliding blinds pat, Feby.28.84'.<sup>108</sup> The manner of citing the date suggests that this is an American patent, which would be consistent with the American connections of the owner, W B Chaffey. There is a generic resemblance to shutters advertised by Geo O Stevens of Baltimore in 1879: Stevens shows a similar arrangement of four panels of fine jalousie blades in his 'four-fold inside shutters'.<sup>109</sup>

However they are probably the work of another US maker, William Willer of Milwaukee, who was making 'inside sliding' slatted blinds in 1885.<sup>110</sup> As this is the same term used at Rio Vista it seems likely that this is the patent referred to, but that 'Willer' has been misinterpreted as 'Hill'. William Willer was a German immigrant to the United States, who founded Willer Manufacturing at Milwaukee in 1865. His son Henry E Willer took out patents in 1885 for the interior wooden sliding blind which became the company's speciality.<sup>111</sup> Whether the inscription at Rio Vista could relate to the application date for one of these patents, ultimately granted only in the following year, is not clear. By 1890, if not before, the Willer Manufacturing Co was advertising blinds almost identical with those at Rio Vista.<sup>112</sup> The Willer company collapsed in 1918 when a fire destroyed the (uninsured) factory.<sup>113</sup> Although none of

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<sup>105</sup> Daniel D Badger, *Illustrations of Iron Architecture* (New York 1865 [facsimile 1970]), pl LV.

<sup>106</sup> H H Holly, *Modern Dwellings in Town and Country adapted to American Wants and Climate, with a Treatise on Furniture and Decoration* (New York 1878), p 123.

<sup>107</sup> Inspected 2003.

<sup>108</sup> Andrew C Ward & Associates, *"Rio Vista" Conservation Analysis* (no place, 1988), p 82.

<sup>109</sup> George O Stevens, *Window Sashes, Blinds and Doors: Builders Supplies* (Baltimore [Maryland] 1879), reproduced in D S Waite [ed], *Architectural Elements* (New York, no date [1972]), p 13, unpaginated (John Oxley Library).

<sup>110</sup> William Willer, *Willers' Patent Inside Sliding Blinds* (Milwaukee [Wisconsin] 1885), cited in Steve Finer Rare Books, *Catalogue 162* (Greenfield [Massachusetts] 2006), no 125.

<sup>111</sup> US patents nos 312,051; 312,052, 312,053, cited in 'Willer Family History', <http://milwaukeewiler.blogspot.cohm/2005/11>, consulted 22 a.

<sup>112</sup> Willer Manufacturing Co, *Catalogue No. 10 Pocket Edition* (Willer Manufacturing Co, Milwaukee [Wisconsin] 1890), pp 8 ff.

<sup>113</sup> 'Willer Family History'.

Willer's blinds used a central rod of the basic jhimil type, competing types did, for the John Bremond house at Galveston, Texas, possibly of the late 1880s, has surviving internal shutters, apparently in multiply folding sections, each filled with louvres operated by a central rod.<sup>114</sup>

There were of course louvres opened by other means. The Treasury Building in Melbourne, of 1859-62, has high vents in the internal walls, opening from one room to the next for cross ventilation. They contain adjustable timber louvres, and each has a metal ring at the top of the opening, which indicates that they must have been operated by pulling a cord from below. In 1862 William Coote, who was very concerned that the Queensland kitchen should be well ventilated, argued that 'a range of louvre board apertures closing at will' would be desirable for the purpose,<sup>115</sup> and depending upon their height these also, presumably, might have to be operated by means of a cord.

#### *e. glass louvres*

The idea of glass louvres was not in itself a radical one. It is mentioned in Tomlinson's *Warming and Ventilation* of 1850 as 'strips of plate glass, arranged after the fashion of a Venetian blind [which] ...can be separated more or less apart, to regulate the supply of air, or closed entirely, so as to exclude it'.<sup>116</sup> There would be no reason to take this as implying anything more elaborate than the traditional timber jalousie, operated by a rod running down the inner face, except that it would be impracticable to connect such a rod to the edges of glass blades in the same fashion as timber ones. This was a problem addressed in France by Parpentier, and resolved by Franken. The channels holding the ends of the blades were connected to the frame by their ends rather than their centres, while the opposite ends were linked to each other by means of vertical rods, so that all the blades moved in unison. One blade only was linked to a lever projecting into the room, and this controlled the whole apparatus.<sup>117</sup>

The British solution, which was perhaps more satisfactory, was the invention of one Hurwood, of Ipswich, who had the blades pivoted centrally and linked so that they could be operated by a key at the base of the frame. Each of the pivots down one side had a small crank linked to a vertical rod. At the base was a cogwheel, also linked to the vertical rod with a crank, and this cogwheel was worked by a key inserted through a hole, so that the mechanism was completely concealed.<sup>118</sup> The device was reported in 1849, and the patent was probably not much earlier in date. A different mechanism seems to have been used by J Moore & Sons of Clerkenwell, London, who showed a 'patent lever window' at the Great Exhibition in 1851. Instead of a rod linked to the

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<sup>114</sup> Paul Goeldner, *Texas Catalog: Historic American Buildings Survey* (San Antonio [Texas] 1974), p 45.

<sup>115</sup> Ian Evans et al, *The Queensland House: History and Conservation* (Mullumbimby [New South Wales] 2001), pp 25, quoting William Coote in *Transactions of the Philosophical Society of Queensland*, I, 1859-82, unpaginated (John Oxley Library).

<sup>116</sup> Charles Tomlinson, *Rudimentary Treatise on Warming and Ventilation* (London 1850), pp 86-7.

<sup>117</sup> Pierre Chabat, *Dictionnaire des Termes Employés dans la Construction* (2 vols, Paris 1875 & 1878).

<sup>118</sup> *Builder*, VII, 320 (24 March 1849).

front edge of the louvre blades, as in the traditional adjustable timber jalousie, there was a rod against the frame at one side, linked to the pivoting brass arms, and forcing them to move in unison.<sup>119</sup> Something very similar was patented by Thomas Russell in 1853.<sup>120</sup> Moore's window is illustrated in Tarbuck's *Builder's Practical Director* of the later 1850s,<sup>121</sup> but has not so far been found in Australia. A later version seems to have been worked by a cord.<sup>122</sup>

At the turn of the century adjustable glass louvre windows were being produced by at least two London manufacturers, H W Cooper & Co and Josiah Moore & Sons (presumably the original Clerkenwell firm). In each case the blades were mechanically linked by an arm running down one side, but they were operated by means of a cord hanging from a lever at the top, unlike more modern versions. The same makers produced other window types, such as casements, in copper, brass, gun metal and iron but not, as yet, in steel.<sup>123</sup> By the 1930s Coopers had absorbed Moores, but they were still producing louvres of the same basic form.<sup>124</sup> Another maker, Pugh Brothers Ltd, of London, made a version more like the original French one, with the blades pivoting about one edge, rather than centrally.<sup>125</sup>

In the mid-twentieth century aluminium and zinc-anneal iron louvre windows became enormously popular in Australia.<sup>126</sup> In most of these a linking mechanism is concealed entirely within the side strip, rather as in Hurford's original invention, and they were manufactured by a number of companies. One of them, F W Gissing Pty Ltd of Sydney, made a type called the 'Cooper Louvre',<sup>127</sup> which suggests that it might have been a product licensed by the eponymous English firm. There were also the 'Agco Supaluvres', made by A F Agnew & Co of Camperdown, Sydney, and at first marketed in Victoria and Tasmania by Butler & Moss of Melbourne,<sup>128</sup> and the 'Paul', advertised in Western Australia.<sup>129</sup>

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<sup>119</sup> Great Exhibition, 1851, *Catalogue*, II, p 657; *Illustrated Exhibitor*, 13 (August 1851), p 243.

<sup>120</sup> Great Britain, patent no 2174 to Thomas Russell, 19 September 1853.

<sup>121</sup> [J L Tarbuck], *The Builder's Practical Director* (Leipzig, no date [c 1858]), p 132. Hooper & Bullock's registered glass louvre ventilator, though claimed in 1870 to be 'cheaper, simpler, more elegant and efficaceous, than any hitherto introduced', seems to have been identical in all material respects: J R Welsman, *Trade Prices of British and Foreign Plate and Window Glass, &c* (Bradford [Yorkshire] 1880), p 42.

<sup>122</sup> R S Burn, *Modern Building and Architecture* (London, no date [c 1870]), p 90.

<sup>123</sup> J E Sears [ed], *The Contractors, Merchants, and Estate Managers' Compendium and Catalogue* (15th ed, London 1901), pp 172, 173.

<sup>124</sup> J E Sears & J E Sears [eds], *The Architects' Compendium and Annual Catalogue* (London 1936), p 509.

<sup>125</sup> Sears, *Architects' Compendium*, p 509.

<sup>126</sup> Phillip Mayes, *The Australian Architects, Builders and Contractors Price Book and Guide* (Glebe [NSW] 1951), pp 130-131.

<sup>127</sup> G F G Mackey, *Gregory's Modern Building Practice* (Sydney no date [c 1940s]), p 209; *Gregory's Handbook for Australian Builders* (Sydney, no date [c 1950]), p 6; F Wentworth & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1949), § 30.5; *Australian Home Beautiful*, January 1954, p 60.

<sup>128</sup> *Gregory's Handbook*, p 10; Wentworth & Richardson, *Ramsay's Catalogue* (1949), § 30.4; *Australian Home Beautiful*, January 1954, p 56. The patent was no 8934/46. By 1954 Agnews had their own branch in Melbourne, and distributors in South Australia and Western Australia: *Ramsay's Catalogue* [1954], § 30/3.

<sup>129</sup> Royal Australian Institute of Architects WA Chapter, *Exhibition 1949 Catalogue* (Perth 1949), p 37.

One distinctive local type was the 'Sandy' adjustable louvre sold by James Sandy & Co of Sydney, in which the front corners of the blades were linked by vertical rods, rather like the nineteenth century French type.<sup>130</sup> It is not clear whether it was widely marketed, as no examples have been reported, but an Australian patent was applied for, advertisements were taken out, and the system was described, somewhat opaquely, as follows:

Manufactured from heavy, extruded sections of non-ferrous metal.  
 The operating mechanism works at the end of the louvre with a 3½ in. leverage.  
 Glass holding channel supported firmly at two points.  
 Operating channel is arranged to give complete weathering when shut,  
 One side of the channel sits snugly into a groove in the extruded back section (registered design). The other side of the channel is cut out to follow the line of the overlapping glass, at the same time resting in front of a raised edge on the glass channel holder.  
 The pins holding glass channel ends on to the operating member have a compression spring insert. This ensures that the channel does not get out of position and also takes up wear and rattle.  
 The axle pins fixed to the ends of the glass holding channels have compression springs fitted so as to take up wear, also to make sure that the channel holder is held back firmly on to face of back extruded section.  
 The effect of these springs is to give a firm controlling movement to the louvre.  
 Operating mechanism works on each end of the louvre, thus ensuring balanced closing pressure.<sup>131</sup>

But the most prominent Australian louvres were the 'Naco' brand, which seem to have been first marketed under the trademark 'Venetian Air Control Windows' by Frank G O'Brien Ltd of Sydney,<sup>132</sup> with W P Tresise & Co as agents for Victoria and Tasmania.<sup>133</sup> By 1949 Naco was a division of Appleton Industries, of Brisbane, with O'Brien as the New South Wales and Tresise (in Melbourne) as the Victorian and Tasmanian representative.<sup>134</sup> In 1952 three improvements were advertised: a patented safety lock preventing them from being opened from outside.; spring clips to hold the glass blades without rattling; and 16 gauge steel frames.<sup>135</sup> Subsequently Naco products were both made and sold by N V Appleton Pty Ltd, of Brisbane, Sydney and Melbourne.<sup>136</sup> By the 1960s they were available in both anodised aluminium and baked enamel finishes.<sup>137</sup> The Agco louvres were made - or seem to have been made - of extruded aluminium, with 'Griptite' glassholders, and a pvc sealing strip up either

<sup>130</sup> *Ramsay's Catalogue* [1949], § 30/6. Here it is said that Commonwealth patent no 124278 has been applied for, whereas in *Gregory's Modern Building Practice* it is cited as patent application no 15,508/44

<sup>131</sup> Mackey, *Gregory's Modern Building Practice* [c 1951], p 188.

<sup>132</sup> Mackey, *Gregory's Modern Building Practice* [c 1940s], p 186.

<sup>133</sup> *Australian Home Beautiful*, XXVI, 9 (September 1947), p 3.

<sup>134</sup> *Ramsay's Catalogue* (1949), § 30/2.

<sup>135</sup> *Building: Lighting: Engineering*, 24 October 1952, p 56.

<sup>136</sup> G F G Mackey, *Gregory's Modern Building Practice* (Sydney no date [c 1951] [originally 1940s]), p 190; George Topham, *Be Your Own Builder* (Sydney 1952), p 78; *Ramsay's Catalogue* [1954], § 30/1. Ian Evans advises (1991) that the Naco patent is no 104321.

<sup>137</sup> *Australian House and Garden*, December 1965, p 70.

side of the frame to complete the closure. They also came in a de luxe version with end-swing blades, so that a flyscreen could be attached direct to the frame, and with a gearbox drive turned by a handle, said to be unique to this brand but 'known to thousands of users in the U.S.A.'<sup>138</sup>

### *f. sunbreakers*

At the upper end of the market the influence of Le Corbusier, Oscar Niemayer, Maxwell Fry & Jane Drew and others encouraged the development of various sun screening devices as major architectural features. In Australia they were at least put on facades the orientation of which gave them a real or theoretical function. But as elsewhere, most soon became dirty and tatty and, if movable, soon seized up. Harry Seidler used moveable vertical fins, obviously based upon the Brazilian examples had seen, in the Marcus Seidler house at Turramurra on 1949-51.<sup>139</sup> They were made by Wunderlich and described as 'interlocking metal', could black out the interior completely and had rubber gaskets to prevent wind noise. The operating handle and lock was an iron bar connecting each bank of louvres, openable from inside the window.<sup>140</sup> On the west face of his house for T Mellor at Castlecrag in 1950 he used blades fixed on an angle.<sup>141</sup> His Australian colleagues were swift to follow. Deep vertical blades were used along the upper floor of the Creche and Women's Amenities Centre at the Hyde Park Corner of Elizabeth and Park Streets, Sydney, in 1952,<sup>142</sup> and for most of the length of the A B Gibson-Kelite factory, Cheltenham, Victoria, by Stephenson & Turner in 1953.<sup>143</sup>

Egg crate sun breakers were proposed in 1953 for the MLC building in Brisbane, by Bates, Smart & McCutcheon of Melbourne,<sup>144</sup> and after the completion of the building in 1955 the architects used a similar design for the MLC building in Adelaide, completed 1957.<sup>145</sup> The honeycomb pattern appeared again in 1958 at a doctor's surgery in Gladesville, Sydney, and in an Adelaide office building by Lawson, Cheeseman, Doley & Partners. The latter was claimed, surprisingly, to be the first of the kind in Australia.<sup>146</sup> An unusual device, which did not come into general use, was solid pavement awning which could be operated electrically to appear or retract according to the weather conditions. It was used in 1954 at Harvey's Gift Store, George and Wynyard Streets, Sydney.<sup>147</sup>

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<sup>138</sup> MISSING REFERENCE; could be *Cross-Section*, prior to December 1958.

<sup>139</sup> Kenneth Frampton & Philip Drew, *Harry Seidler: Four Decades of Architecture* (London 1992), pp 46-7.

<sup>140</sup> *Cross-Section*, no 23 (1 September 1953), p 2.

<sup>141</sup> Frampton & Drew, *Harry Seidler*, p 49.

<sup>142</sup> *Building: Lighting: Engineering*, 24 November 1952, p 44.

<sup>143</sup> Philip Goad, Rowan Wilken & Julie Willis, *Australian Modern: the Architecture of Stephenson & Turner* (Melbourne 2004), p 86.

<sup>144</sup> *Cross-Section*, no 11 (1 September 1958), p 12.

<sup>145</sup> Philip Goad, 'Moderate Modernism 1945-77', in Philip Goad [ed], *Bates Smart: 150 Years of Australian Architecture* (Fisherman's Bend [Victoria] 2004), p 77.

<sup>146</sup> *Cross-Section*, no 74 (1 December 1958), p 3.

<sup>147</sup> *Cross-Section*, no 23 (1 September 1954), p 1.