

6.04 Brick Veneer

proto-veneer

Canada

United States

New Zealand

Australia

acceptance of brick veneer

proto-veneer

Brick veneer construction is in a sense a hybrid of two forms already discussed, the cavity wall and the stud frame, but its origins in Australia are shrouded in mystery. We must ignore a rather fatuous claim in the *Australian Home Beautiful* in 1938,¹ and repeated by the late J M Freeland, that Tyntyndyer homestead on the Murray was an early example of brick veneer.² If we were to accept this, then we would have to give priority to an earlier example, a prefabricated cottage by Manning of London, built in 1839 in Pennington Terrace, North Adelaide, by Henry Watson, bother-in-law of J B Hack. Watson found it inadequate for the extremes of heat and cold in Adelaide, and within a year he had encased it in brick, in which form it survives today.³ The same procedure was followed in New Zealand between 1850, when Charlotte Godley reported staying in an English prefabricated weatherboard house in Dunedin 'coated with single brick at the windy end, and rough cast'.⁴ These are timber buildings which happen to have been later encased in brick (as was also to be especially common in Pennsylvania⁵), and are nothing to do with brick veneer construction.

It is again no more than marginally relevant that in South Australia a sort of stone veneer is reported in nineteenth century cottages in the Adelaide Hills, Onkaparinga District. This consists of vertical timber planks encased in a thin layer of stone, set in mud mortar.⁶

1 *Australian Home Beautiful*, XVI, 12 (December 1938), p 21, quoted in Peter Cuffley, *Australian Houses of the '20s & '30s* (Fitzroy [Victoria] 1989), p 141.

2 J M Freeland, *Architecture in Australia* [Melbourne 1968], p *; see also R G Holloway, 'Tyntyndyer Homestead' - a *Short History* [no publication details or pagination].

3 D W Berry & S H Gilbert, *Pioneer Building Techniques in South Australia* (Adelaide 1981), pp 77-8, citing letters of Henry Watson to English relatives, 1838-43, in the Archives Department of the State Library of South Australia. Apparently Watson migrated in December 1837, and his three bedroom house reached Adelaide on the *Henry Porcher* three months after he did. Information from Watson's descendant, Peter T C Watson of Colchester, England, 21 December 1988.

4 *Letters from Early New Zealand written by Charlotte Godley* (Plymouth [New Zealand] 1936), quoted in John Hale, *Settlers* (London 1850), p 345.

5 Nancy Van Dolsen, 'The Brick-Cased Log Houses of Cumberland County, Pennsylvania', in Thomas Carter & B L Herman [eds], *Perspectives in Vernacular Architecture, III* (Columbia [Missouri] 1989), pp 99 ff.

6 Information from Peter Bell, 1991.

Canada

Canada appears to be the home of brick veneer as a deliberate construction method. A serious fire in Montreal resulted in a requirement for all urban buildings to be clad in a non-combustible facing from 1850, though the timber structure within was very solid, and quite unlike the stud frame within a modern Australian brick veneer building. It consisted of three inch [75 mm] thick timber planks in a frame, known as *carré de madrier*, or Quebec frame, with long nails left sticking out to bond into the brick skin.⁷

Mark Fram points out that, quite apart from the influence of such regulations, timber was so plentiful and cheap as to encourage the use of a timber core, and had the advantages - he claims - that larger openings could be provided than in solid brickwork, and late nineteenth century picturesque forms could be more easily realised.⁸ This is probably a reference not to the Quebec frame but to a less distinctive form, with voids between the timber members. Late in the nineteenth century, according to Jean-Claude Marsan, Montreal housing had been standardised, in areas like Ontario Terrace, into a form with two flats on the ground floor and two above, constructed of a wooden frame covered with red brick.⁹ Here the frame consisted of heavy uprights, onto which were nailed planks, typically two inches [50 mm] in thickness.¹⁰

Thomas Ritchie illustrates a modified version of this in a late nineteenth century Ottawa house. The framing is lighter, of four by two inch [100 x 50 mm] studs, and is filled with brick-on-edge nogging between the studs. It is faced not with planks but with sheathing board one inch [25 mm] thick, over which is 'sheathing paper', probably meaning a tarred paper, as discussed below. A brick skin was built up on the outside, and above every few courses of brickwork a row of nails was driven into the timber, in such a way that the tops of the nails were embedded in the next mortar joint. This was how the wall was tied together.¹¹ Ritchie speaks of an even simpler version of this which he seems to imply was in use by about the turn of the century, and was still current in the 1960s. It consisted of a balloon or similar frame, covered with sheathing boards of unspecified thickness, and nails at every fifth or sixth brick course.¹²

United States

A version of brick veneer was well established in the United States by the early twentieth century, and it was described in 1911 in the Chicago-published text, *Radford's Portfolio of Details*, as 'this popular method'. The frame was clad in horizontal shiplap boarding, papered over, and connected to the outer brick leaf with metal wall ties at intervals.¹³ Another Chicago publication of the time showed diagonal sheathing, 'tarred felting', and ties

7 Information from Dinu Bumbaru, Directeur Programmes, Héritage Montréal, 1991.

8 Mark Fram, *Well-Preserved* (Ontario 1988), p 116.

9 J-C Marsan, *Montreal in Evolution* (Montreal 1981 [1974]), pp 270-271, 276, 279.

10 Harold Kalman, *A History of Canadian Architecture* (2 vols, Toronto 1994), I, p 251.

11 Thomas Ritchie, *Canada Builds 1867-1967* (Toronto 1967), p 222.

12 Ritchie, *Canada Builds*, p 219.

13 W A Radford, *Radford's Portfolio of Details of Building Construction* (Chicago 1911), p 39.

consisting either of metal straps or of wire ('the patented tie').¹⁴ Similar forms are illustrated in Radford's *Framing*, of 1919, which describes the various types of masonry veneer construction as being especially common in the eastern states.¹⁵

Good practice as later described was to sheath the timber entirely, typically in diagonal boarding, cover it in tarred paper, and then encase it in brick as before. The simple encasement of a naked timber frame with a skin of brick, as was to become the norm in Australia, was regarded as a cheap and undesirable form.¹⁶ The leading American text of 1929, D F Holtman's *Wood Construction*, shows the timber frame sarked with horizontal boarding on the outer face, and a number of other details which differ from Australian practice.¹⁷

New Zealand

The most probable source of brick veneer as used in south-eastern Australia is New Zealand, where Clive Lucas has reported the existence of brick veneer even before the turn of the century at 'Ugbrooke', Blenheim. The house was extended in brick veneer in 1897 by the Wellington architect Thomas Turnbull.¹⁸ Lucas believes it may have been developed as a system which would be more earthquake resistant than solid brick, but a New Zealand text on earthquake design does not suggest that this was a general perception. Brick veneer construction is not explicitly mentioned in the book, but it may have been implied in a reference to the use of timber interior walls and partitions:¹⁹

A type of building is very common in New Zealand and other countries in which external walls are of brick, but the interior walls and partitions are of wood. It has been conclusively shown that this type of construction is one least capable of withstanding earthquake shock. The exterior brick walls and internal wooden frames, vibrating with different periods, are mutually destructive.

It would not be unreasonable to infer that 'interior walls', as distinct from partitions, is a reference to the inner leaf of the exterior wall: however the illustration of this construction is the California Hotel, Santa Barbara, which seems clearly not to be brick veneer.

In 1915 there was a New Zealand example of stone veneer construction: the Rayner house at 77 Almorah Road, Auckland, designed by James Lloyd, was a two storey timber framed building with a ground floor clad in a basalt rubble skin.²⁰ In 1916 a book of house designs by James Christie of Auckland included a cottage of brick veneer construction, with very little comment to suggest that this was unusual, except that it was reported to make 'quite a substantial house, combining all the advantages of outside brickwork and inside wood and

14 F T Hodgson et al, *Architecture, Carpentry, and Building* (5 vols, Chicago 1925-6 [1910]), II, p 139.

15 W A Radford, *Framing* (Chicago 1919), pp 174-9.

16 W S Lowndes, *Common Brickwork* (2nd ed, Scranton [Pennsylvania] 1930 [1920]), pp 28-30.

17 D F Holtman, *Wood Construction* (New York 1929), pp 308-310.

18 Robyn Turner, 'The Homestead at Ugbrooke Station', *Pacific Way* (Air New Zealand house journal), no 19 (July 1989) pp 14-15.

19 C R Ford, *Earthquakes and Building Construction* (Auckland 1926), p 76.

20 Information from Jeremy Ashford of Auckland, 1993.

paper finish.²¹ By the 1920s brick veneer seems to have been fairly well accepted in Dunedin and the South Island generally, either in its complete form or as a dado to window sill height, with stucco above.²²

By the 1930s brick veneer was unequivocally established in New Zealand. It was favoured by John D Lee, the Under-Secretary for housing, when the Department of Housing and Construction was established in 1936, and it was used for some of the 'State houses', though the majority, except in Dunedin, were timber clad.²³ In 1937 the local journal *Building Progress* reported that brick veneer had only recently achieved any popularity in New Zealand generally, or in the Auckland area in particular. Although there was debate about the appropriate cavity size the journal recommended a minimum of 1½ inches [38 mm]. The timber frame should preferably be clad in Sisalkraft building paper, and galvanised wire ties should be used in every fifth course and at three foot 0.9 m] intervals horizontally. As the ties would not prevent the studs from twisting, extra noggings or 'dwwangs' (in New Zealandish terminology) should be placed between studs, typically at three levels.²⁴ One reason why the construction had not become popular at an earlier date was said to be the hitherto high price of bricks, and this reflects the fact that in New Zealand brick veneer was replacing all timber construction, at greater expense, whereas in Australia it was replacing cavity brick construction, at reduced expense for bricks. In other words, in Australia high brick prices would have encouraged brick veneer rather than the reverse. In 1943 brick veneer was reported to be especially popular in New Zealand for the ground floor of storey houses.²⁵

Australia

The first deliberate and authenticated example of brick veneer construction in Australia is as yet unexplained. In about 1890 the short-lived Queensland architectural partnership of Crawford & Mann designed offices in Brisbane for Charles O'Reilly, using a single skin of brick over a timber frame. The municipal council asserted that this contravened the provisions of the *Local Government Act*, 1881, for first class construction, and a court case ensued.²⁶ One must assume that the maverick designers had been inspired in some way by North American practice.

The earliest identifiable surviving local example of genuine brick veneer is the house 'Ardoe' at Gnarwarre, west of Geelong, built for the Armytage family in 1902.²⁷ There is no documentary information on this house, and the names of the architect and builder are unknown, but the writer has been into the subfloor space of the house to establish the nature of the construction. Again, Paul Stark, of Adelaide, has advised me of a recently

21 James Christie, *New Zealand Houses* (Auckland, no date [c 1916]), p [14].

22 C F Cameron, 'State Housing and State Sponsored Housing in New Zealand' (MARCH, University of Auckland, 1970), p 101.

23 Information from Jeremy Ashford of Auckland, 1993. See also *Building Today* [Auckland], April-June 1937, p 3, cited in Cameron, 'State Housing', p 148.

24 *Building Progress*, II, 10 (October 1937), pp 6-7; II, 11 (November 1937), pp 7-8.

25 *Building Progress*, VIII, 1 (January 1943), p 5.

26 Donald Watson & Judith McKay, *Queensland Architects of the 19th Century* (Brisbane 1994), p 49, ref *Brisbane Courier*, 2 July 1891, p 1; 7 February 1891, p 3; 23 February 1891, p 4.

27 My initial information was from a former owner of the house, Mr A H Robilliard of Warrnambool.

demolished brick veneer house in Angas Street dating from 1903, with inner walls of a 25 mm thick material like compressed fibreboard.²⁸ It is not clear whether this is a sheathing, but it could hardly have been freestanding.

A brick veneer house in the Melbourne suburb of Hawthorn is thought to date from 1914, but this cannot be confirmed.²⁹ Another mysterious example in rural Victoria is a shop and house in Beeac, said to have been built in 1917 by a builder, William Stephens, for his cousin Thomas Stephens.³⁰ Though no structural probing has been possible it seems also to be an authentic example of brick veneer construction.

The Melbourne architect John Gawler designed the McRorie house in The Ridge, Camberwell, in 1915, in a sort of brick veneer which was influenced, he later said, by apartment building techniques which he had seen in Chicago (probably on a visit in about 1910-11³¹). In this house the main reason for using an inner leaf of timber rather than one of brick was to simplify the fixing of timber panelling. After the Great War the firm of Gawler & Drummond continued to do this where panelling was required, but otherwise reverted to brick cavity walling.³² In 1924 the G Neville house at 96 Kilby Road, Kew, was built to the design of Gawler & Drummond. The original drawing survives,³³ and it shows a stud wall which is encased in brick up to sill height, and roughcast above. The house still exists, and it presents some problems, in that the upper roughcast surface is not set back, as in the drawings, but flush with the brickwork below. Why this is so has not yet been established. Another brick veneer house, dating from 1926, has been reported in Alfred Street, Kew,³⁴ but its designer and builder are unknown.

acceptance of brick veneer

1928 is probably the year when brick veneer passed into the building industry more generally in Victoria. The builder Christopher Procter, according to his widow,³⁵ put up a brick veneer house at 42 Beach Street, Frankston, in 1928, though it has since been demolished. On the other hand Joe Clift, who is still alive, claims to have built the first example for his father at 32 Gilbertson Street, Essendon, in the same year.³⁶ This house still stands, but contemporary directory information seems to indicate a date no earlier than 1930. Both Procter's and Clift's accounts refer to the efforts which had to be made to persuade G B Leith, Chief architect of the State Savings Bank, that this form of construction was a suitable one upon which money could be lent. Procter went on to build other

28 Information from Paul Stark, 1991.

29 The address is 34 Barton Street, West Hawthorn. The date on 1914 is that of the land title, but building permits are not available for the area until 1927. At the time of the information the owner was Mr Louis Nagy and the occupier Ms Susan Crikos. Information from Bob Cotton (9857 7017), 1997.

30 Edith C Daley [Stephens] to Sue McFall, 30 December 1983; *ibid* to Miles Lewis, 3 December 1984; G W Stephens to Miles Lewis, 12 December 1984.

31 John Gawler, *A Roof over my Head* (Sydney 1963), p 85.

32 Neil Clerehan, 'Brick Veneer ... Silver or Sapphire Anniversary?', *Age*, 27 February 1961.

33 A copy of the drawing has been kindly given to me by Ms Pam Neville, daughter of the original owner.

34 Information from Josef Hornley, 1990.

35 J Procter to Sue McFall, 4 January 1984.

36 J Clift, personal discussions, 15 May 1982 and subsequently.

examples, including his own house at Frankston, 'Kallara'.³⁷ Clift, a few months after his first house, built another one of brick veneer for his brother at 8 Glenbervie Road, Strathmore. The system was then taken up by a bigger builder in the Essendon area, R J Shaw.³⁸

Whether or not Gawler was inspired by his visit to America, standard brick veneer practice as established by builders like Proctor and Clift, is quite un-American in character. In 1924 the local journal *Building*³⁹ published an article on insulation which included illustrations of how to insulate a brick veneer house, which were reproduced from the American journal *Architectural Forum*, and again tell us nothing of local practice. In 1925 the *Australian Home Builder* published an article on San Francisco house designs suitable for Australian use, and illustrated the brick veneer construction of which they were built. The studs were of either timber or pressed steel, clad in building paper and metal lath on both faces. The inside was plastered and the outside sprayed with Gunitite. Metal ties were attached to the face of the Gunitite and bent out at right angles so as to key into the brickwork, which was then built up in immediate contact with the stucco.⁴⁰ There is no reason to suppose that this technique was used in Australia, more especially as Gunitite had yet to reach this country. In 1931 'Celotex' was being promoted for sarking in brick veneer, as mentioned above, and the construction was illustrated in *Ramsay's Architectural Catalogue*.⁴¹ But Celotex was also an American product, and the diagrams again show American rather than local practice.⁴²

In the 1930s, as a means of promoting fibrous plaster, Australian Gypsum Products Pty Ltd put out a pamphlet on brick veneer, with a cover illustration of a house at Mornington designed by F L & K Klingender and built by J J Clift. Two versions of the construction were illustrated, both relating to local rather than American practice - one with the windows set in the brick leaf, and with brick pier foundations, and the other with solid brick foundations and windows set in the timber frame.⁴³ It may be in reference to this publication that the Associated Fibrous Plaster Manufacturers claimed (in 1949), that brick veneer construction was 'invented in Australia' in 1936.⁴⁴ By 1938 brick veneer was being used for large and pretentious houses in Melbourne and Ballarat, and by leading architects such as W A M Blackett,⁴⁵ and in 1939 a descriptive article appeared in the *Australasian Decorator and Painter*, referring to the increasing popularity of the method.⁴⁶ However it was not until after World War II that brick veneer became normal form of construction.⁴⁷ It then

37 Undated newspaper cutting accompanying Proctor, op cit.

38 J Clift, discussions.

39 *Building*, 12 April 1924, p 61.

40 *Australian Home Builder*, 15 August 1925, p 41.

41 *Ramsay's Architectural Catalogue* [Melbourne 1931], pp 496, 498.

42 For example, they show balloon rather than platform framing.

43 *Brick Veneer Construction with Fibrous Plaster Interiors* (brochure, Melbourne, no date [?1930s])

44 F Wentworth & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1949), § 6.1.

45 'The Principles of Brick Veneering', *Australian Home Beautiful*, XVII, 11 (1 November 1938), pp 28-30.

46 *Australasian Decorator and Painter*, 10 February 1939, p 223.

47 Brick veneer is still not mentioned in *Bricklaying* [Technical Publication no 20 of the Commonwealth of Australia Department of Labour and National Service, Melbourne 1945]. It is, however, dealt with in Watson Sharp, *Australian Methods of Building Construction* [Sydney 1947], pp 118-120, and in C Lloyd, *The Australian Carpenter* [Melbourne 1948], pp 116-117.

appeared in its canonical form in textbooks such as *Gregory's Modern Building Practice* of the 1940s,⁴⁸ Watson Sharp's *Building Construction* of 1946⁴⁹ and C Lloyd's *Australian Carpenter* of 1949.⁵⁰

Brick veneer never became so widespread in the other Australian states as in Victoria, and it may be that the strength of the local cavity wall tradition paved the way for it. Although it was of course partly a response to the stringencies of the Depression, it was not inevitable, and elsewhere economies were effected by other means. In South Australia a practice developed after World War II of building cavity walls with the inner leaf of brick on edge, and brick veneer did not achieve vernacular acceptance until the 1960s.⁵¹ Brick on edge was also used to some extent in Western Australia, and *Building and Construction* claimed that the technique could save 28% on brick and a substantial amount of mortar and timber.⁵² The late Professor Richard Apperley of Sydney recalled that as an architecture student he had to draw brick veneer construction from Watson Sharp's text, and thought of it as being only a Melbourne practice. Professor Ken Wyatt came from Queensland to the Experimental Building Station in Sydney, and until that time had never heard of the method.

In 1949 the Associated Fibrous Plaster Manufacturers illustrated brick veneer construction in *Ramsay's Catalogue*, still with a distinctly American flavour, in that the studs were continuous through two storeys, with a ribbon beam to carry the upper floor, rather than a discrete platform.⁵³ Even in 1957 Lloyd's *Help for Home Builders* - notwithstanding his earlier publication - was illustrating brick veneer with drawings derived from Canada. He showed both 'the older' balloon method as discussed above, and the newer platform frame, but the details were very North American. The frame was sheathed either in $\frac{5}{16}$ inch [8 mm] sheathing grade plywood or in one inch [25 mm] boards, which might or might not be placed diagonally. Waterproof paper was laid over the sheathing, and a moisture barrier such as aluminium foil 'or the newer plastic membrane' might be placed on the inside of the frame underneath the wall lining.⁵⁴ In Australian practice the building paper might be used on the outer face of the frame, but timber sheathing or an inner moisture barrier would be exceptional. This use of overseas sources seems odd, given that about half the houses in existence in Victoria were now of brick veneer.⁵⁵

48 G F G Mackay, *Gregory's Modern Building Practice* (Sydney, no date [c 1945]).

49 W W Sharp, *Building Construction* (Sydney 1946), pp 118-120.

50 C Lloyd, *The Australian Carpenter* (Melbourne 1949), pp 116-7.

51 Information from Bruce Harry and Ron Danvers, 1991.

52 Barbara van Bronswijk, 'The Design of Professional Premises for General Practitioners in Western Australia, 1945-1960' (MA, Curtin University, 1994), ref *Building and Construction*, 6 June 1953, p 2.

53 F Wentworth & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1949), § 6.1.

54 C Lloyd, *Help for Home Builders* (Melbourne 1957), pp 106-7.

55 Neil Clerehan, 'Brick Veneer ... Silver or Sapphire Anniversary?', *Age*, 27 February 1961. Brick veneer had become a category in the census only in 1936.