

6.06 Roofing Tiles

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a. traditional tile types

Roofing tiles were used sporadically in Australia from the time of European settlement, the first probably being of the traditional English 'crown' or plain type,¹ held in place by wooden pegs, which were being cut by convict women during the first weeks at Sydney Cove.² Some of this type, with a single peg-hole near the top, have been excavated at the Old Government House site, Sydney, by Anne Bickford, as well as others with others with no hole but with a small part of the top edge bent down, as if with a thumb, to create a projecting lip for hanging on the batten.³ Other apparently very early tiles from the detritus of Brickfield Hill have been excavated by Rosemary Annable, and have a distinct knob of clay attached to the underside for the same purpose,⁴ which accords with traditional English practice.

Bennelong's hut, completed by mid-November 1790, is said to have been the first tile-roofed residential building in Australia,⁵ and Judge-Advocate Collins's house is shown with a tile roof in a painting by Watling.⁶ A shortage of roofing tiles held up completion of the second barracks building in 1793 for, according to Collins, there was only one person capable of making them, and he could never burn more than thirty thousand in six weeks because he was obliged to burn large numbers of bricks in the same kiln. The barracks required 21,000 tiles (as well as 69,000 bricks), and about 15,000 were burnt at a time, out of which about 3,000 were wasted by damage in the kiln or during cartage.⁷ In about 1828 McArthur, of the Australian Agricultural

¹ Wyatt Papworth [ed], *The Dictionary of Architecture* (London 1853-92), sv Plain, Crown Thack or Roof Tile, equates all these terms, though later writers have misused 'crown' to refer to ridge tiles. Papworth, sv Thack, explains that this word means thatch, and spells the tile type deriving from it as 'thacke'. Brees refers to 'plane' or crown tiles, which is very logical, but he seems to be alone in this spelling: S C Brees, *The Illustrated Glossary of Practical Architecture and Civil Engineering* (London 1853), p 312.

² Watkin Tench [ed L F Fitzhardinge], *Sydney's First Four Years* (North Sydney 1979 (1961), being an edition of Tench's *Narrative*, of 1789, and *Complete Account*, of 1793), p 71.

³ Information from Anne Bickford.

⁴ Information from Dana Mider and Andrew Wilson.

⁵ Robert Irving, 'The First Australian Architecture' (MArch, University of New South Wales 1975), p 120, quoting Fitzhardinge, *Sydney's First Four Years*, p 201.

⁶ Robert Irving, 'Georgian Australia', in Robert Irving [ed], *The History and Design of the Australian House* (Melbourne 1985), p 44.

⁷ David Collins [ed Maria Collins, James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 206.

Company, was experimenting with the manufacture of roofing tiles, though of what type is not known.⁸

By 1855 Oswald Bloxsome's house on the North Shore, Sydney, had a roof 'composed of burnt tiles of different shapes and colors turned into patterns',⁹ probably meaning flat tiles of different profiles at the lower end. Amongst the flat types terra cotta 'shingles', such as were used by J H Hunt at St Luke's Church, Blandford, New South Wales,¹⁰ are presumably differentiated from the traditional crown or flat tile mainly by their smaller area and thickness, but they may also have shaped edges. Hunt also used unglazed shingle tiles at 'Booluminbah', New South Wales, in 1886-8, in place of the originally intended wooden shingles.¹¹ In Tasmania the 'tiles' used to roof the National Bank in Launceston and the tower roof and walls of the house 'Spring Banks', Longford, in about 1887-8, also seem to have been shingles. They were made by Campbell's Sandhill Pottery in three colours, red, buff and 'grayish-white', weighed about 2½ lb [1.14 kg] and measured 11½ x 6 x ½ ins [288 x 150 x 13 mm].¹²

The other traditional English type is the pantile or Flemish tile, which has a wavy, almost S-shaped cross-section, and has not so far been found surviving in Australia, though it is known to have been made in 1858 by Hirschi & Lenni of Castlemaine, Victoria.¹³ In South Australia George Shearing was making 'ridged' roofing tiles by 1839,¹⁴ and given that he cannot have had a tile press at that date, the most likely type is that which had been invented a few years earlier by the Hon Thomas Liddell of Ravenswood Castle, England – a flat tile with an integral roll at one side, almost 450 mm wide, with a 75mm lap at the roll.¹⁵ So-called 'Roman' pattern tiles with three parallel semicircular rolls at the sides and centre may have been made by Joseph Curet, as discussed below, and were imported from Britain for at least one house of 1890-1. A French type, the Courtois tile, was a square with an upward flange on two adjacent sides and a downward flange on the other two, and was laid on the diagonal, with the angle of the upward flanges at the topmost point. These were introduced in England 'from Paris' by Sir John Robison in 1840, and are referred to by Loudon as 'the new French Roofing Tiles'.¹⁶

⁸ James Broadbent, *The Australian Colonial House* (Sydney 1997), p 266, citing AA Co Papers B850, ANU Business Archives.

⁹ *Argus*, 3 March 1855, p 3.

¹⁰ 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 72.

¹¹ Reynolds & Hughes, 'Private Practice', p 128.

¹² *Australasian Builder and Contractor's News*, 24 March 1888, p 128.

¹³ *Catalogue of the Eighth Annual Exhibition of Manufactures, Produce, Machinery and Fine Arts* (Melbourne 1858), pp 9-10. J Hirschi is also mentioned by C B Mayes, *The Australian Builders' Price-Book* [Melbourne 1862], p xxxv.

¹⁴ **Noris Ioannou**, *Ceramics in South Australia 1836-1986: from Folk to Studio Pottery* (Netley [South Australia] 1986), p 75.

¹⁵ J C Loudon, *An Encyclopædia of Cottage, Farm, and Villa Architecture and Furniture* (London 1846 [1833]), p 1193, §§ 2288-9.

¹⁶ J C Loudon, *An Encyclopædia of Cottage, Farm and Villa Architecture* (London 1846 [1833]), § 2449, p 1250.

b. Gilardoni tiles

The great change in tile making came when tiles could be economically moulded into more complex shapes, so that which the joints could be made reasonably weathertight without a large overlap, and the thickness was reduced without loss of strength. This meant that a given number of tiles covered a greater area, which reduced the cost of the tiling itself, and the weight was considerably less, which made a lighter and cheaper substructure possible. These properties first appeared in the 1840s, almost as soon as suitable pressing machinery became available, in what was known after its inventor or inventors as the Gilardoni tile.

The clay machine-made single-lap tile was the invention of the brothers Joseph & Xavier Gilardoni of Altkirch in Alsace,¹⁷ during the 1840s which is in dispute.¹⁸ The Gilardonis patented a similar tile in England in 27 April 1855.¹⁹ Their tiles were shown at the Paris Exposition in 1855, and a report upon this in the *Civil Engineer and Architect's Journal* of 1857²⁰ is the earliest available description of them. At this stage the Gilardoni was only the first of a number of patterns being developed for the newly available machinery.

The report begins by discussing the Courtois tile, after which came a whole category of tiles - including the Gilardoni - basically the same as those of Courtois but laid with the joints horizontally and vertically rather than diagonally, so that the upward flange is at the top and one side, the downward at the bottom and one side. Now, although this is basically true, it does not distinguish the precise nature of the side joint of the Gilardoni tile, which is a ridge and groove rather than merely a pair of lapping flanges, and is therefore far more weatherproof. Within the category as a whole the first tiles mentioned are those made by Pegnault, of the Côte d'Or, which are said to be the closest to the Courtois, and may indeed have relied upon flanges alone. The tiles made by Gilardoni 'who is said to be the originator of this class of tile' (that is, the whole category) have been given a central rib to strengthen them, and they can bear the weight of a workman despite their lightness. No particular reference is made to the side joints, but then none is made either to the joints of E Muller's tile, which was undoubtedly of the ridge and groove type.

The report distinguishes this general category of tile into two further subdivisions, according to

¹⁷ Charles Dobson, *The History of the Concrete Roofing Tile* (London 1957), p 17; *Civil Engineer and Architect's Journal*, XX, 277 (April 1857), p 112.

¹⁸ It was patented in 1841 according to Pierre Chabat, *La Brique et la Terre Cuite* (Paris 1886), p 317; E Barberot, *Traité de Constructions Civiles* (2nd ed, Paris 1900), p 427; W A McIntyre & A Zaiman, *The Manufacture of Clay Roofing Tiles in France, Belgium and Holland* (London 1928), p 10. More credible are Lami's date for the invention of 1847, and Lefèvre and Bourry's date for the patent, of 1851. E-O Lami, *Dictionnaire Encyclopédique et Biographique de l'Industrie et des Arts Industriels* (Paris 1881-1891), VIII, p 844; Leon Lefèvre, *Architectural Pottery* (London 1900); Emil Bourry, *A Treatise on Ceramic Industries* (3rd ed, London 1911), pp 312-319 ***.

¹⁹ Dobson, *History of the Concrete Roofing Tile*, p 17

²⁰ *Civil Engineer and Architect's Journal*, XX, 277 (April 1857), p 112.

whether the vertical joints of the tiles in different courses coincide, or whether they are laid so as to what is technically called break joint; the former seems to have the advantage in permitting the ledge or flange to be carried uninterruptedly along the upper and lower edges of tile.

Which type was made by Gilardoni is not stated. An illustration of the 1880s shows the former type, but a later text illustrates another tile, resembling the Montchanin type discussed below, as being made by Gilardoni. The continuous joint tile is referred to as the 'Gilardoni tile No.2', 'Muller', or 'ribbed tile'.²¹ Émile Muller, of Paris, was indeed making the Gilardoni type with a central rib and with continuous vertical jointing.²² Like the Gilardonis, Muller was from Alsace, which may explain his interest in these types of tile, but by 1854 he had acquired a tile works just outside Paris.²³ The Muller tile is illustrated in the 1855 report only in the form of a special type designed to accommodate a ventilation flue, and this is the earliest available illustration of any Gilardoni-type tile. The side joint of the Muller tile was a single overlocking tongue and groove and, so far as can be distinguished, no flange. As Muller's tiles were said to permit a greatly reduced roof pitch, it may be that this degree of interlocking was more elaborate than that of their contemporaries.

Théodore Chateau expands a little on the range of French *tuiles à emboîtement* or interlocking tiles. He adds nothing to our knowledge of the Gilardoni Brothers (whom he spells 'Gillardoni'), but he identifies the Muller tiles as being made by Émile Muller & Ce at Ivry-sur-Seine, and describes them as being 400 mm long and covering at fifteen to the square metre. He refers also to the tiles made by Jolibois at Deyvillers, near Épinal in Lorraine, near Mirecourt in Lerrain, and at Corny near Metz, but he does not describe them in detail. Ch Demimuid & Ce of Gagny and Comercy are said to make a pointed tile with a double rib. Chevalier & Faconnet of Paris make the Castillon tile, which is highly ornamental, with scallops on the surface, and comes in a variety of colours.²⁴ It is notable that the Martin brothers of Marseille, who were to be critical to the ultimate development of the Marseilles tile, are here mentioned only as makers of paving tiles.²⁵

c. Chabat's classification

A detailed discussion of the various types was published in the *Revue de l'Architecture et des Travaux Publiques* in 1861, and this seems to be the basis of two

²¹ Leon Lefèvre, *Architectural Pottery* [London 1900], pp 322-5.

²² *Civil Engineer and Architect's Journal*, XX, 277 (April 1857), p 112. For an even less helpful illustration of the Muller tile (showing how to incorporate a skylight) see the illustration from Francis Fowke's report of the Exposition, reproduced in R S Burn, *Building Construction* (London 1871), p 190. It is unclear whether E F 'Amuller' of Paris, who showed 'an improved species of tile' at the Great Exhibition, is the same person. The tile described does not seem to be of the same type, though the description does refer to the tight jointing which prevents the penetration of wind and rain. London, Great Exhibition of the Works of Industry of all Nations, 1851, *Official Descriptive and Illustrated Catalogue* (3 vols, London 1851), III, p 1197.

²³ E-O Lami, *Dictionnaire Encyclopédique et Biographique de l'Industrie et des Arts Industriels* (Paris 1881-1891), Supplément, p 190; Anne Maillard, *La Céramique Architecturale 1880-1930* (Paris 1995), p 18.

²⁴ Théodore Chateau, *Technologie du Bâtiment* (2 vols, Paris, 1863 & 1866), II, pp 249-253.

²⁵ *Ibid*, p 352.

subsequent accounts by Pierre Chabat. The first in his famous *Dictionnaire*,²⁶ contains significant errors, and we will do best to rely more upon the second (and more extensively illustrated) in his *La Brique et la Terre Cuite*.²⁷ Chabat makes the distinction between the continuous and the discontinuous vertical joint types. There are Gilardonis tiles in each of these categories, which are described and illustrated, but the tile first patented by the Gilardonis²⁸ is of the discontinuous type, and is characterised by a diamond-shaped motif on the surface. Chabat says of it:

Elle porte canellure à gauche, couvre-joint à droite, rebord simple en tête, rebord de baséchancré au milieu pour franchir le couvre-joint inférieure dans l'assemblage par chevauchement, et rainé dans ses parties tombantes, nervure au milieu, en forme de losange, pour renfermer la tuile; a la base, au-dessous de losange, pour renfermer la tuile; à la base, au-dessous du losange, triangle saillant, accompagnant l'échancrure du rebord, servant à éloigner l'écoulement des eaux du point où le joint vertical vient rencontrer le joint horizontal; deux crochets au revers.²⁹

These tiles measured 330 by 200 by 12 to 15 mm thick,³⁰ and the point of the most significance is that they were designed for laying with discontinuous vertical joints, and were in this respect a step in the direction of the canonical Marseilles form. A somewhat elaborate version of this tile was shown at the Paris Exhibition of 1867, and illustrated for English readers by R S Burn.³¹ These diamond tiles were reported to be in the public domain - not restricted by patents - and large quantities were made in a number of parts of France, notably Montchanin (Saône-et-Loire).

There is no specific evidence that the Gilardonis themselves were still making these, and it is not clear whether they were at this time making the second of the types described by Chabat. This was designed for continuous jointing, and was characterised by a rib running down the centre, and he says:

Cette tuile est maintenue par deux crochets sur le lattis, et s'engage dans la tuile immédiatement inférieure par un rebord qui entre dans un cannelure ménagée au-dessus de la nervure longitudinale en saillie sur le plan supérieur. La jonction dans le sens vertical avec la tuile voisine se fait par l'emboîtement d'un

²⁶ Pierre Chabat, *Dictionnaire des Termes Employés dans la Construction* (2 vols, Paris 1875), I, pp 1422-3.

²⁷ Chabat, *La Brique et la Terre Cuite*, p 317.

²⁸ Chabat, *La Brique et la Terre Cuite*, p 317.

²⁹ 'It has a channel to the left, a joint cover to the right, a simple flange at the head, a flange rebated at the centre to clear the cover joint underneath the course being overlapped, and grooved on the lower edges, a rib at the middle in the shape of a lozenge, to strengthen the tile; at the base, below the lozenge, a projecting triangle, matching the rebate of the flange, serving to spread the discharge of water away from the spot where the vertical joint meets the horizontal one; two projections on the underside.' Chabat, *Dictionnaire*, I, p 1427. This account relates to his figure 2806, not 2807 as indicated.

³⁰ Chabat, *La Brique et la Terre Cuite*, p 317.

³¹ R S Burn, *Building Construction* (London 1877), p 200: his text, p 199, is totally uninformative..

couvre-joint qui occupant une des arêtes avec une cannelure qui porte le côté continu de la tuile voisine.³²

This tile is at least similar in character to that made by Muller, discussed above.

Chabat's third and fourth types are also designed for continuous jointing, and lack either ribs or diamonds at the centre. The third type was the most highly regarded, and was apparently manufactured by the Gilardonis. It was longer than the second, due to the elaborate nature of the head-toe joint, but the finished surface was the same. The fourth type, made by Muller of Ivry, and Fox of Saint-Gerni-Laval, near Lyons (Rhône), was a simplified version which lacked the projections at the head and foot by which the upper tile overlapped the lower in the preceding models. It must have been much less proof against driving rain, but presumably was also cheaper.³³ In 1888 Lami refers to Muller and Fox, and to Avril as the founder of the 'grande tuilerie' at Montchanin, but also names other makers of tiles of this general type as Cancalon, Richomme, and Perrusson.³⁴

d. the French tile in Australia

Of all these types the Marseille[s] pattern - the English spelling with the terminal 'S' is generally used - was by the far the most important, and in the twentieth century has become so ingrained as a popular symbol of good substantial building in Australia that it is regularly imitated in pressed metal and other materials. Before the Marseilles tile proper makes its appearance, various related forms of French or French-influenced tiles, all within the general Gilardoni family, appear on the local scene.

Tiles of something like the Gilardoni type make their appearance in Australia in January 1859 when one Joseph Curet, presumably a Frenchman, took out a Victorian patent³⁵ for aspects of tile manufacture and for various forms of tile, including what was essentially a simplified form of the Gilardoni type. His drawing illustrates three designs, all of the continuous joint type, and two having lateral joints formed with rolls. One of these two approximates a Roman pattern tile as mentioned above. The third design has an overlocking double ridge and groove, together with a flange, though this overlocking portion appears rather inexplicably to taper somewhat towards the foot of the tile. It is unmistakably a Gilardoni tile, even though it is simpler and has no central rib. The rights to Curet's patent were bought for £400 by a Patent Tile Company formed for the purpose, and by March 1860 they had produced tiles said to be equal English ones in colour, texture and density, samples of which

³² 'It is hung onto the battening by two projections and locks onto the tile immediately below by an edge which fits into a channel recessed into the top of the longitudinal rib which projects from the upper surface. The vertical joint with the adjacent tile is made by a joint cover which comprises one of the ribs encasing grooving on the edge of the adjacent tile.'
Chabat, *La Brique et la Terre Cuite*, p 318-19. The same description appears in Chabat, *Dictionnaire*, I, p 1427, but is referred to an incorrect illustration, for the ribbed tile is not shown at all.

³³ Chabat, *La Brique et la Terre Cuite*, p 319-320.

³⁴ Lami, *Dictionnaire Encyclopédique*, VIII, p 845.

³⁵ Joseph Curet, Victorian patent application no 190, 7 January 1859.

were laid on the roof of the Builders' Museum in Queen Street.³⁶ The Patent Tile Company seems to have used the word 'Marseilles' for the first time in Australia, and conceded that:

Marseilles tiles, made upon a new principle, and possessing covering qualities superior to any hitherto manufactured, have been occasionally imported; but owing to the cost of freight and charges, could not be sold so as to successfully compete with slate.³⁷

These must therefore have been of an interlocking type, but 'Marseilles' refers to their origin and probably not to the exact pattern later known by that name in Australia. Indeed Mayes said that the company's tiles were made with rolls and with too little overlap for low-pitched roofs, which might suggest that they were of the Roman rather than the Gilardoni pattern.³⁸ He also describes them as 'similar to the Marseilles tile', but that merely begs the question of what type was then being made in Marseille. According to Robin Boyd the company ultimately failed because of the conservatism of customers and the high cost of production.³⁹

The first unequivocal Gilardoni tiles definitely known to have become commercially available in Australia were two types being imported in 1860 by a Melbourne merchant, Henry Lange, and some of these were also used on the roof of the Builders Museum.⁴⁰ One is of the 'diamond' type,⁴¹ with a single ridge and groove in the side joint, and in the upper surface of the tile is a raised diamond or lozenge with slightly concave sides and, also on the central axis and nearly touching the point of the lozenge, a triangle with its foot at the base of the tile. This is essentially the same as the pattern first patented by the Gilardoni brothers, as illustrated by Chabat, but that the diamond itself is shorter and broader, and the sinuous curves are replaced by pointed sides.⁴² This type of tile is known from later sources to have been designed for laying with a discontinuous vertical joint.⁴³ The other tile imported by Lange has a double ridge and groove side joint, and a central rib, and is clearly designed to be laid with a continuous vertical joint. The central rib suggests that it may be the actual type which Gilardoni had shown at the Exposition, and it broadly resembles types which were described some decades later as 'Gilardoni-Essones' and 'Mulden',⁴⁴ especially the latter, except that the middle rib projects in a curve from the toe of the tile.

³⁶ Robin Boyd, *Australia's Home* (Melbourne 1952), p 137.

³⁷ *Australian Builder*, 31 March 1860, advertisements.

³⁸ Charles Mayes, 'Essay on the Manufactures more immediately Required for the Economical Development of the Resources of the Colony', in *Victorian Government Prize Essays 1860* (Melbourne 1861), p 383.

³⁹ Boyd, *Australia's Home*, p 137.

⁴⁰ *Colonial Mining Journal*, 6 September 1860, p 15.

⁴¹ I do not follow Bourry and Varman in calling this the 'lozenge' type, as the terms 'lozenge-shaped' and 'losangiques' are used for the diagonally-laid Courtois type by the *Civil Engineer and Architect's Journal* and Chabat respectively.

⁴² Chabat, *La Briquerie et la Terre Cuite*, p 317.

⁴³ Chabat, *La Briquerie et la Terre Cuite*, p 317; Chabat, *Dictionnaire*, pp 1422-3; Lefèvre, *Architectural Pottery*, pp 322-4; Bourry, *Treatise on Ceramic Industries*, pp 312-319 ***.

⁴⁴ W A McIntyre & A Zaiman, *The Manufacture of Clay Roofing Tiles in France, Belgium and Holland* (London 1928), p 10.

Tiles of the Gilardoni type were made in New South Wales in the later 1860s by the Australian Patent Tile Company, and it may well be that this is the same company which acquired Curet's patent and/or which took out the New South Welsh patent of 1860 previously referred to. A report in 1869 that excellent tiles were being produced in Sydney under a French patent undoubtedly refers to this company, and probably to Curet's patent (as extended to New South Wales).⁴⁵ In 1870 the company, which gave its address as 602, Brickfield Hill, displayed roofing tiles at the Intercolonial Exhibition. The judges referred to them as 'handsome grooved Italian tiles' and thought it 'a very good exhibit, and formed a cool roof-covering', though lacking the simplicity of the tiles shown by Holroyd of Parramatta (which included plain tiles, pantiles, and 'Gothic' tiles). They were priced from £2.7s.6d to £2.17s.6d per hundred square feet [9.3 m²] and said to have come into use within the last two or three years.⁴⁶ Detective work by Alfred Barbara⁴⁷ has located illustrations of three buildings bearing the tiles, the earliest of which dates from 1867, and of the company's stand at the Sydney exhibition of 1870. It is apparent from the exhibit that at least two colours were made, but the precise form of the tiles is not readily discerned from the photographs. Barbara interprets them as having a central rib, but this does not appear to be the case: rather, they have roll joints at the sides only, and seem consistent with one of the designs of Curet's patent.

We may conclude then that one Gilardoni pattern was patented in Victoria and possibly manufactured in 1859, while two others were being imported in 1860. Both Curet's locally-made tiles and Lange's imported ones were incorporated into the Builder's Museum, the specific purpose of which was to display materials and workmanship for benefit of builders, architects and others, and it may therefore be inferred that the tiles became well-known. Despite the apparent failure of the Patent Tile Company in Melbourne, it seems probable that a terra cotta tile patent taken out in New South Wales in 1860⁴⁸ was an extension of Curet's one, and it was probably upon this basis that Gilardoni tiles came to be manufactured in that colony.

e. other patterns in Australia

From 1889, as we shall see, the Marseilles tile in its canonical form began to reach the Australian colonies insignificant quantities, and within a few years local manufacturers appeared. It quickly came to dominate the upper end of the roofing market, as it still does today. But it did not enjoy an absolute monopoly either amongst imports or amongst local manufactures. In Adelaide William Shearing's Hindmarsh Pottery was producing 'corrugated roofing tiles' in 1891.⁴⁹ It is unclear what this means, but they may well have been of the Roman pattern which (though it had been made in a crude form under Curet's patent) was now imported from Britain.

⁴⁵ *Building Times*, 15 October 1869, p 5.

⁴⁶ *The Industrial Progress of New South Wales* (Sydney 1871), pp 48, 81, 450.

⁴⁷ Alfred Barbara, 'Terra Cotta in Sydney Architecture 1788-1914' (2 vols, BArch, University of New South Wales, no date [1978]), II, pp 214-300 []. The buildings, identified by Barbara from photographs in the Government Printing Office, are the Lunatic Reception House, Darlinghurst, built 1867; an abattoirs shed at Glebe, built 1869; and the Independent Methodist Chapel, date unknown.

⁴⁸ J M Freeland, *Architecture in Australia* (Melbourne 1968), p 193.

⁴⁹ Ioannou, *Ceramics in South Australia*, p 90.

The Roman pattern was used in 1886 at 'Glen Alpine' homestead near Werris Creek, New South Wales, which is attributed to J H Hunt.⁵⁰ In Victoria in 1890 Hyndman & Bates specified 'English roman tiles', particulars of which were to be had from A Maconochie, a Fitzroy slater, who perhaps held the agency.⁵¹ Butler & Ussher's 'Blackwood' near Penshurst, Western Victoria, is roofed in Roman pattern (three roll) tiles, which in this case are branded 'Major's patent', made in Bridgwater, England,⁵² and the stable is roofed in slightly smaller and inferior quality tiles of the same pattern. Walter Butler's 'Newminster Park' near Camperdown, of 1901, appears from photographs to have been roofed in the same tiles as 'Blackwood'.⁵³ Major's tiles were also used on a house at 76 Athelstan Road, Camberwell, Melbourne, built in about 1912-13.⁵⁴ In 1901 H J & C Major of Bridgwater were the only makers of Roman tiles advertising in Sears's *Compendium*,⁵⁵ but by 1936, though Majors were still making the 'interlocking double Roman' tile, there were at least three other Bridgwater manufacturers.⁵⁶ These tiles, however, do not seem to have continued in use in Australia.

The C B Fairfax house at Double Bay, Sydney, of 1887, was roofed with tiles imported from Burton & Sons of Staffordshire,⁵⁷ and the tower of the Esplanade Hotel at Queenscliffe, Victoria, was roofed in red Staffordshire tiles of an unspecified make.⁵⁸ 'Urrbrae House', South Australia, of 1890, has flat tiles imported from J K Cooper & Sons of Maidenhead.⁵⁹ George Tibbits has collected in Melbourne an imported tile which is of another type illustrated by Lefevre, the Boulet or Artois tile,⁶⁰ with a central rib ending with a hemispherical knob at the nose. Unfortunately its provenance is not recorded and its date is unknown, but it is a most interesting specimen, of smaller dimensions than the Marseilles, with a bright blue glazed upper surface, and branded presumably in Dutch 'GEBR. TEEUWEN TEGELEN'.

⁵⁰ Peter Reynolds, *Horbury Hunt Housing the Horse and Shearing the Sheep* ([Sydney] 1992), p 12.

⁵¹ Hyndman & Bates, 'Specification, &c, Villa Residence Tank +c / Camberwell / Arthur J Fuller Esq / Normanby Chambers Chancery Lane' (Melbourne 1890), p 20A.

⁵² The company was still operating in the 1930s. J E Sears & J E Sears [eds], *The Architects' Compendium and Annual Catalogue* (London 1936), pp 62-3, spelling the location as 'Bridgwater'.

⁵³ George Tibbits, 'An Emanation of Lunacy' in Trevor Howells [ed], *Towards the Dawn* (Sydney 1989), p 64.

⁵⁴ The owner was Payne, proprietor of Payne's Bon Marché, and the house has been variously dated to 1905, 1912 or 1915: information from Neil Clerehan, 1994. The former date cannot be correct, as the house is not listed in the 1906 directory, and John Payne, draper, is listed elsewhere.

⁵⁵ J E Sears [ed], *The Contractors,' Merchants,' and Estate Managers' Compendium and Catalogue* (15th ed, London 1901), p 48.

⁵⁶ J E Sears [ed], *The Architects' Compendium and Annual Catalogue* (50th ed, London 1936), pp 62-3 for Majors, and for John Board & Co Ltd; Colthurst, Symons & Co Ltd; and Barham Brothers Ltd; pp 38-40, 45-6 & 49.

⁵⁷ *Australasian Builder & Contractor's News*, 10 September 1887, p 286.

⁵⁸ *Australasian Builder & Contractor's News*, 1 October 1887, p 334.

⁵⁹ Information from Andrew Klenke, 2007.

⁶⁰ Lefèvre, *Architectural Pottery*, p 324 & p 325, fig 455.

By 1898 James Campbell of Brisbane (of whom more below) was manufacturing a patent terra cotta roof tile,⁶¹ which seems unlikely to be of the Marseilles type. There are a number of references to the Australian manufacture of tiles in patterns other than the Marseilles, of which few seem to be significant until the 1920s. In Perth there were experiments in the early 1890s in making roofing tiles, probably of traditional rather than the Marseilles pattern, and tiles were made sporadically during subsequent years at William Turton's pottery, East Guildford. In 1896 the Perth Mint was roofed in 'red tiles in the Italian fashion',⁶² the source which is not known. It was a Guildford pottery, possibly Turton's, which supplied tiles in 1901 for Parliament House. These were too porous, and are said (rather surprisingly) to have warped and twisted after fixing. Thousands had to be discarded in favour of imported tiles.⁶³ Pitman & Co's West Australian Pottery Works was making a flat shingle tile by 1910, when it was used on a lodge at Government House. This was said to be heavier and slightly more porous than the French tile.⁶⁴ Shingle tiles were to become popular in the 1920s especially in buildings of English inspiration, usually basically Georgian in style but with a greater or lesser infusion of the Arts and Crafts. In 1925 the *Australian Home Builder* wrote of the need that existed for both shingle and Cordova tiles,⁶⁵ and during this decade shingle tiles were made by the Eureka Tile Company of Ballarat, Victoria.⁶⁶

In the 1920s the Spanish pattern Cordova tile, a semi-cylinder laid alternately face down and face up, was also made by the Eureka Company. By 1925 these tiles were being used in Melbourne by the architect A W Plaisted,⁶⁷ who was a pioneer of the Spanish Mission style in Australia (for which too much credit is generally given to Professor Leslie Wilkinson of Sydney).⁶⁸ In the same year the Tasmanian architect G S Crisp, in association with the Victorian F C Purnell, designed a house at 549 Sandy Bay Road, Hobart, in Spanish taste and with Cordova tile roofing.⁶⁹ In 1926 Neville Hampson used Cordova tiles on the splendid house 'Boomerang' at Elizabeth Bay, Sydney.⁷⁰ They were soon made by many companies, including Wunderlichs, but for all of this the Marseilles tile remained dominant. In 1929 the Western Australian Potteries, which had been started in 1895, were taken over by H L Brisbane & Company Limited, who immediately began to manufacture 'Bristile' Marseilles and

⁶¹ Queensland Archives WOR / P9, Specifications 1891-98, New Lands Office, Rockhampton, February 1898, quoted in a letter from Ian Evans, 4 June 1991.

⁶² *West Australian*, 3 March 1896, quoted in Ingrid van Bremen, 'The New Architecture of the Gold Boom' (PhD, University of Western Australia, 1990), p 138.

⁶³ Bryce Moore, *From the Ground Up* (Nedlands, WA, 1987), pp 56-7. On this topic Ian Kelly, 'The Development of Housing in Perth (1890-1912)' (MArch, University of Western Australia, 1991), cites H Bowley in the *Journal of the Royal Society of Western Australia*, XXVI (1940), pp 185 & 155.

⁶⁴ Bryce Moore, *From the Ground Up* (Nedlands [WA] 1987), p 60.

⁶⁵ *Australian Home Builder*, 15 June 1925, p 13.

⁶⁶ 'Architect' [possibly A W Plaisted], 'The Roof - the Hat of the House', *Australian Home Beautiful*, 12 February 1926, pp 16-21.

⁶⁷ A W Plaisted, 'Spanish Mission Design for Australia', *Australian Home Beautiful*, 15 July 1925, pp 26-7, 46 & 60.

⁶⁸ Whilst Wilkinson showed interest in the style in 1923, his house 'Greenway' of that year is vaguely Mediterranean rather than specifically Spanish Mission in style.

⁶⁹ Barry McNeill, *Architecture from the Edge* (North Hobart 2002), p 53.

⁷⁰ Robert Irving & John Kinstler, *Fine Houses of Sydney* (Sydney 1982), pp 121-8.

Spanish Mission tiles.⁷¹ By 1934 Hallett's works in South Australia were pressing Roman, Cordova and shingle tiles as well as the traditional Marseilles pattern.⁷² Multi-coloured versions of the Cordova tile quickly followed, and were being used in Hobart by G S Crisp in 1934.⁷³

A fourth tile made by the Eureka company at Ballarat in the 1920s was called the 'Hughes-Armstrong',⁷⁴ but what this was is not apparent. Other patterns also proliferated, and Ramsays Specifications listed five types:

Marseilles, 16 x 6 inch [406 x 152 mm] with lug for wiring to battens.

Shingle, 12 x 6 inch [305 x 152 mm] with full lug and two nail holes.

Shingle, 10½ x 6½ inch [267 x 165 mm] with full lug and two nail holes.

Cordova, 18 x 7.5/8 inch [457 x 194 mm] with parallel sides and nail holes.

Mission, unspecified size, with tapered sides.⁷⁵

Although the Marseilles tile now dominated the Australian market, and extruded tiles had achieved little success in Australia, the Girr government in New South Wales launched a quixotic extrusion tile venture in 1948. This involved a government-owned extrusion plant, and an estimated cost of £180,000, which had risen to £800,000 by 1952, due partly to the need for changes in the design. Barely a third of the estimated output of 100,000 tiles a week had been achieved. The government now sought to extricate itself by entering an agreement with Porter & Galbraith to run the factory, for an initial period of seven years.⁷⁶

⁷¹ Ambrose Pratt [ed], *The National Handbook of Australian Industries* (Melbourne 1934), pp 370-1.

⁷² Ioannou, *Ceramics in South Australia*, p 223.

⁷³ McNeill, *Architecture from the Edge*, p 53.

⁷⁴ *Australian Homes* (Melbourne 1927), p 24.

⁷⁵ W L Richardson, *Ramsay's Architectural and Engineering Specifications* [Volume 1] (Melbourne, no date [1934]), p 72.

⁷⁶ *Building: Lighting: Engineering*, 24 October 1952, pp 44-7.