

6.05 Specialised Bricks

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a. early imports

It was not uncommon for bricks to be imported to new settlements, as we have already seen in the case of Sydney. They were generally intended for quite specific and limited purposes, such as ovens and chimneys, rather than for general building work. Some were carefully stowed, but others were taken on almost fortuitously when there was spare capacity or a need for ballast. There are persistent reports of bricks having arrived in Australia as ballast on sailing ships, and they tend to be rather misleading. There were cases where materials such as gravel were dumped in the hull for this purpose, but would be surprising if bricks were treated in quite this way. For one thing they required careful stowage. They may have arrived as non-urgent, durable, low-paying or speculative cargo suitable to ballast a ship, but when a reference can be followed up it almost always seems to indicate the bricks which came were special ones of some sort, and fire bricks in particular. Morison has expressed similar scepticism about the regular reports of bricks coming to the United States from Holland as ballast,¹ and Smith, writing of exports from Holland to Britain, points out that ballast consisted of materials which had practically no value, so that at the port of destination they were simply thrown overboard, and the occasionally used term 'saleable ballast' is virtually an oxymoron.²

Ten thousand bricks are reported as reaching the Swan River [Perth] on the *HMS Sulphur* in 1829, but even that quantity is not large in relation to the building requirements of the settlement, and the majority of bricks were made locally, mainly in East Perth.³ The *Africaine*, en route to Australia in 1836,

¹ Hugh Morrison, *Early American Architecture from the First Colonial Settlements to the National Period* (New York 1952), pp 108, 140.

² T P Smith, 'On "small yellow bricks ... from Holland"', *Construction History*, 17 (2001), p, p 37.

³ D C Markey, 'Pioneer Perth', in J Gentilli [ed], *Western Landscapes* (Nedlands [Western Australia] 1979), p 356.

collected a cargo of bricks and other building materials at Cape Town.⁴ This was not pre-planned, for there had been some doubt whether the ship would even call at the port. Imported English bricks were offered at auction at Holdfast Bay [Glenelg] on 11 April 1837,⁵ but T H James found that at Port Adelaide goods, including bricks, were left because of the cost and difficulty of transport to Adelaide itself. 'Stacks of what were once beautiful London bricks crumbling away like gingerbread, and evidently at each returning tide covered by the flood.'⁶

This report sounds unconvincing, but it is true that the cost of transport was always the issue. None of the main coastal settlements was totally lacking in brick earth, and it was therefore cheaper to make common bricks than to import them at normal commercial rates. The hothouse conditions of the gold rushes were responsible for the exception, and in July 1853 Charles Maplestone asked his brother-in-law in Richmond, England, to send out best white Suffolk bricks, which Maplestone was confident of selling at £25 a thousand.⁷ They did not arrive, but others did import bricks at this time.

b. fire bricks

A number of bricks which are or appear to be British-made fire bricks have been reported, generally recognised by their brands, 'Cowen';⁸ 'Cumbernauld';⁹ 'J M Craig Ltd' (of Kilmarnock);¹⁰ 'Darley F B Co',¹¹ Fordel's Patent / Wilson & Son / 18 Glasgow 51;¹² 'Garnkirk';¹³ 'Gartcraig' (both of

⁴ Penelope Hope [ed], *The Voyage of the Africaine* (London 1838), p 24.

⁵ Bingham Hutchinson, *Journal of a Voyage om the Buffalo*, quoted in Noris Ioannou, *Ceramics in South Australia 1836-1986: from Folk to Studio Pottery* (Netley [South Australia] 1986), p 6.

⁶ T H James, *Six Months in South Australia* (London 1838), p 28.

⁷ Charles Maplestone to Marianne Miller, 24 July 1853, in [Charles Maplestone], 'Diary and Letters of Charles Maplestone on the Outward Voyage and in the Colony of Victoria' (compiled c 1934, held by the Melbourne City Council), p 35.

⁸ Found on the Mornington Peninsula, Victoria; also illustrated in Gemmell, *And So We Graft from Six to Six* (North Ryde [New South Wales] 1986), p 39. These were made by J Cowen & Co of Blaydon-on-Tyne, and were shown at the Melbourne Exhibition in 1880: Melbourne International Exhibition, 1880, *Official Catalogue of the Exhibits* (2 vols, Melbourne 1880), II, p 317.

⁹ From a house in Albert Park, Melbourne, reported to me by John Dollman in 1980. Also Gemmell, *And So We Graft*, p 39.

¹⁰ R J Fergusson, *Rottnest Island: History and Architecture* (Nedlands [Western Australia] 1986), p 28. Pearson, *Tile Gazetteer*, p 410, illustrates brick in the men's lavatory at the pier head, Rothesay, Bute, labelled J. & M., Craig Ltd / Kilmarnock / Makers of White and Coloured Glazed Bricks, Sinks, &c.'

¹¹ For Darley Fire Brick Co: found under the floor of a house in South Melbourne. Also a number of curved bricks, designed for a circular structure, at Archbold's Treatment Works, Castlemaine, Victoria.

¹² At 35 Hanover St, Fitzroy, Melbourne: information from Paul Roser, 2002.

¹³ Gemmell, *And So We Graft*, p 39. The Garnkirk Company (M & T Sprot) showed articles of stoneware at the Great Exhibition, and advertised small fire bricks and

Scotland);¹⁴ 'G E C & S' (of Stourbridge);¹⁵ 'G E C & S' (of Cardowan, Scotland);¹⁶ 'Harris & Pearson' / Stourbridge';¹⁷ 'Geo. K. Harrison' (of Stourbridge);¹⁸ 'Hurl' (unsourced);¹⁹ 'Lackmannan / 1846';²⁰ '?Lochairn';²¹ 'Ordish';²² 'Ramsay';²³ 'Starworks' of Glenboig, Scotland (see below);²⁴ 'A.A. Christie, Wallyford Brickworks';²⁵ 'Jos. Wolstencraft'.²⁶ Warwick Gemmell has also collected Balthasar Kreisler of New York).²⁷

Amongst the earlier of these, Ramsay's firebricks from Newcastle-on-Tyne, were imported to Victoria from the early 1840s, and in 1855 R B Smyth subjected them to physical testing (by way of a control against local bricks).²⁸ 'Stourbridge' appears to be applied generically to the various makers at that location,²⁹ and 'Stowbridge' bricks were advertised at Campbell's Wharf,

other ceramic products. Great Exhibition of the Works of Industry of all Nations, *Official Descriptive and Illustrated Catalogue* (3 vols, Spicer Brothers, London 1851), I, p 117 and advertisements p 47. The Garnkirk Fire Clay Company exported chimneypots to the United States in the 1870s (of a form which has not been identified in Australia), marketed by Miller & Coates of New York, though their advertisement gives no indication of the country of origin: A J Bicknell, & Co, *Specimen Book of One Hundred Architectural Designs, &c* (New York 1878), p 72.

¹⁴ Gemmell, *And So We Graft*, p 39.

¹⁵ Gemmell, *And So We Graft*, p 39.

¹⁶ Gemmell, *And So We Graft*, p 39.

¹⁷ At the Lal Lal Blast furnace, Victoria, illustrated in Ian Jack, 'The Iron and Steel Industry', in Judy Birmingham, Ian Jack & Dennis Jeans [eds], *Australian Pioneer Technology* (Richmond [Victoria] 1979), p 93. Also Gemmell, *And So We Graft*, p 39.

¹⁸ Gemmell, *And So We Graft*, p 39. George King Harrison of the Lye Fire Clay and Brick Works, Stourbridge, showed fire bricks at Sydney in 1879 and Melbourne in 1880, as did Harper & Moores of the same town: Sydney International Exhibition 1879, *Official Catalogue of the British Section* (London 1879), p 94; Melbourne Exhibition 1880, *Catalogue*, II, p 318. J Hall & Co of Stourbridge also showed at the latter.

¹⁹ Gemmell, *And So We Graft*, p 39.

²⁰ From the beach at Southend, South Australia: information from Peter Bell, 1991.

²¹ First letter obscured: recycled bullnose bricks in a farm wall near Portsea, Victoria, inspected 1987.

²² Archbold's Treatment Works, Castlemaine, Victoria, inspected 2004.

²³ Both a cream and a brown version are in the Archaeological Museum, Norfolk Island, but normally they are cream. Found in Blair's Store, Geelong, a building of the 1840s and 1850s, also at 'Woodlands' homestead, Tullamarine, 1840s: information from Janet Beeston, 2002. G H Ramsay of Derwent Hough, near Newcastle, showed his fireclay products at the Great Exhibition: Great Exhibition of the Works of Industry of all Nations, *Official Descriptive and Illustrated Catalogue* (3 vols, Spicer Brothers, London 1851), II, p 772.

²⁴ Gemmell, *And So We Graft*, p 39.

²⁵ From the Schnapper Point Lime Kiln, Victoria, of 1862: Wallyford is near Musselburgh, East Lothian, Scotland. William Culican & John Taylor, *Fossil Beach Cement Works Mornington Victoria* (Deception Bay [Queensland] 1972), pp 53, 67-8.

²⁶ Loose brick near the stables at 'Memsie', Bridgewater, Victoria, inspected 2004.

²⁷ Gemmell records it as 'B Kreisohr'.

²⁸ R B Smyth, 'On the Comparative Value and Durability of the Building Materials in use in Melbourne', article III in *Transactions of the Philosophical Society of Victoria*, I (August 1854 - July 1855), pp 30-1, 33.

²⁹ Apart from Harris & Pearson and George K Harrison, as listed above, there was Harper & Moore of Stourbridge, whose bricks have not been reported in Australia, but were shown at the Great Exhibition in 1851: Great Exhibition of the Works of Industry of all

Sydney, in 1850.³⁰ Imported brands continued to be preferred even though local fire bricks were being made by this time. In 1853 ten thousand fire bricks were imported for use in the Sydney Mint,³¹ where there were a number of furnaces and boilers, and these were branded:

[upward arc of lettering
STAR WORKS
]
J [six-pointed star] D
GLENBOIG

James Donnachie manufactured these at the Glenboig Star Fire Brick Works near Glasgow, and he claimed to be the sole manufacturer of bricks for the Siemens furnace. They were shown at Sydney in 1879 and Melbourne in 1880.³² In 1888-9 fire bricks were shown at Melbourne by what must have been a descendant or related company, the Glenboig Union Fire Clay Co Limited of Glasgow.³³ The Darley fire bricks seem to have been imported up to the mid-twentieth century.³⁴

Fire bricks were made in Melbourne in the 1840s, and by a number of manufacturers in the 1850s, but only in the 1860s did the local product achieve a consistently high standard, notably that of Knight Brothers of Lal Lal, near Ballarat,³⁵ and, apparently, G P Steiling of Richmond, Melbourne, whose bricks have been found as far away as 'Kolor' homestead, near Peshurst in western Victoria, of 1868. These are inscribed:

G.P. STEILING
BRIDGE ROAD RICHMOND
BRICK NO 1.

Fire bricks were among the products Steiling showed at the Victorian Exhibition of 1861, though his name is recorded as 'Sticing', and he received a patent for the use of kaolin and alumina in bricks &c, in the name of 'Stieling'.³⁶ The Darley Firebrick Co at Darley, near Bacchus Marsh, was

Nations, *Official Descriptive and Illustrated Catalogue* (3 vols, Spicer Brothers, London 1851), I, p 117.

³⁰ *Sydney Morning Herald*, 8 February 1850 p 1.

³¹ Archives Office of New South Wales, 2/763 R97, p 1, quoted in Fiona Starr et al, *The Royal Mint, Sydney (1853-1926): a Survey of the Documents Associated with the Mint* (Sydney 2001), p 18.

³² Sydney Exhibition 1879, *Catalogue of British Section*, p 93; Melbourne Exhibition 1880, *Catalogue*, II, p 317.

³³ Melbourne, Centennial International Exhibition 1888-1889, *Official Record* (The Executive Commissioners, Melbourne 1890), p 747.

³⁴ I have found them at the Tarooma Hotel, south of Hobart, and though it was not clear where they were used, they appeared to be coeval with the building, which dates from about 1946: inspected 2004.

³⁵ Miles Lewis, 'Tradition and Innovation in Victorian Building 1801-1865' (3 vols, PhD, University of Melbourne 1972), I, pp 174, 176-7.

³⁶ Victorian patent no 1130 to George Philip Stieling, 20 July 1868. For improvements in the manufacture of retorts, fire-bricks, and such like articles. This involved the

foiunded by Whittick & Akers with insufficient capital, but was expanded substantially in the early twentieth century by David Mitchell, with a bottle kiln and three square kilns, with a total capacity of 82,000 bricks.³⁷ In the 1920s Victorian makers included the Australian Gas Retort & Fire Brick Manufacturing Co of South Yarra, the Darley Fire Brick Co, Hoffman Brick & Potteries, and the Ordish Fire Brick Co.³⁸

In South Australia the Burra Smelting Works at first imported fire bricks, but from 1851 made them on site, as the seventeen furnaces would require when in full operation an estimated thousand bricks a week for repairs alone. An inventory in 1852 showed that the company owned 'Apparatus and kiln for making fire-brick', and it is reported that the clay was a kaolin from a deposit at Motheralls, twenty-nine kilometres east of Burra, and was the best to be found in the colony.³⁹ A number of brands were later made in New South Wales, and are illustrated by Gemmell.⁴⁰ Although slag bricks are not a ceramic product, they should also be mentioned in this context. They were made from the slag of copper smelting in South Australia, as they were also in South Wales and in Chile, by tapping the slag from the furnace directly into iron moulds. They were dark in colour and very durable, but liable to fracture under a sharp blow.⁴¹

Fire bricks were occasionally used for complete walls rather than kilns, ovens &c, though it is hard to see that there would be any real advantage in this. In 1855 the Theatre Royal in Melbourne had its own gas plant, with the walls up to six metres high in fire brick. This was perhaps mainly for strength, and they were left 'to rest' for six months before being built upon, to avoid the risk of settlement.⁴² In 1888 the architect Clarence Backhouse clad a whole of front façade in Glenboig fire bricks at the NSW Electric Light and Power Supply Building in Kent Street, Sydney.⁴³ These were not necessarily the 'Starworks' bricks from Glenboig referred to above, but possibly the products of the Glenboig Union Fire Clay Co, which were currently on show at the Centennial International Exhibition.⁴⁴ Only in rare cases were fire bricks used as an external facing as an aesthetic choice, but one apparent example was a

combination of kaolin and alumina in any proportions, and the use of kaolin alone and also with other materials. It seems remarkable that such a patent would be granted..

³⁷ *Bacchus Marsh Express*, 23 February 1907, p 3.

³⁸ J S Gawler, *The Architects' and Builders' Index (Victorian Edition)* (Melbourne 1928), p 25.

³⁹ David Bannear, *The Burra Smelting Works: a Survey of its History and Archaeology* ([?Burra] 1990), pp 39-40.

⁴⁰ Gemmell, *And So We Graft*, pp 38-9.

⁴¹ Wyatt Papworth [ed], *The Dictionary of Architecture* (London 1853-1892), sv Slag.

⁴² *Argus*, 10 July 1855, p 5.

⁴³ *Australasian Builder & Contractor's News*, 23 November 1888, p 402.

⁴⁴ Centennial International Exhibition 1888-1889, *Official Record* (Melbourne 1890), pp 443, 465, 467, 747. Glenboig is described as being near Coatbridge.

Melbourne house offered for sale in 1873, and probably built about a decade earlier, reported to be built of 'best English fire bricks.'⁴⁵

c. paving bricks

Some forms of paving tile will be discussed below, but there were also paving elements which more resembled bricks. This was especially true of stable, which required a durable, non-slip, readily drained surface to deal with urine. By the 1860s F & G Rosher of London were advertising such bricks. They were placed vertically, so that the small or header ends formed the floor, measuring something of the order of 100 x 70 mm and with all the arrises chamfered to ensure that the joints drained efficiently and the edges do not chip.⁴⁶ Bricks of this sort are found in the stables at 'Carranballac', western Victoria, but are of early twentieth century date.⁴⁷ The police stables at Landsborough are floored in half bricks (formed as such, not cut) with chamfered edges on top. The police stables at Beaufort are also floored in half bricks, though it is not clear whether these are chamfered.⁴⁸ Elsewhere conventional bricks were used, as in the stables at 'Wiridgil', Camperdown, Victoria, where they bear the brand of the Portarlington Brick and Tile Works, and are apparently machine pressed.

A mysterious baked clay slab has been found at a house of the 1850s in Brunswick, Victoria. It is of cream clay and identical to a brick in quality, but measuring about 600 x 455 x 145 mm. It seems too short for a hearth and too thick for a fireback, and in any case shows no signs of burning. It is too square in proportion for any normal step, and too thick for any normal paving. There are signs of fixings to indicate that it was a machine base.⁴⁹

d. hollow bricks

It was the extrusion machine invented by the Marquis of Tweeddale in 1836⁵⁰ which simplified manufacture enough to bring terra cotta tubes - as distinct from pots - into more general use. John Elliot claimed to have made tubular bricks measuring 20 inches long by 7 square [510 x 178 x 178 mm] in about

⁴⁵ *Argus*, 13 December 1873, p 2: this is a sale advertisement for the former house of Winfield Attenborough, South Yarra, and as he had been at this address at least by 1863 it is probable that the house was built before that date.

⁴⁶ F W Laxton, *Laxton's Builder's Price Book for 1863* (43rd ed, London 1863), advertisements, no page.

⁴⁷ Inspected 2000.

⁴⁸ Information from Lorraine Huddle 2003.

⁴⁹ 79 Weston St, Brunswick, inspected 2005.

⁵⁰ *Mechanic's Magazine*, XXXI, 829 (27 April 1839), p 62.

1841-2, using a borrowed 'hand tile machine'.⁵¹ In 1843 a Frenchman, Collas, patented a mechanical means of shaping hollow bricks, probably by extrusion,⁵² and two years later Robert Beart patented perforated bricks made by expression through dies, not only the common form, but in a great variety of shapes for copings, door and window mouldings &c.⁵³ The 'patent perforated English bricks offered for sale in Melbourne in 1854'⁵⁴ must have been of the Beart type.

A special form of hollow brick has been identified on only one Australian site, though there may well be many other examples as yet uncovered. The building is the 'Villa Alba', in the Melbourne suburb of Kew, and the hollow bricks date from the rebuilding of 1887. They are in the upper floor in a partition which spans over a larger room below, and lightness must have been the critical consideration. They are of normal brick size, with a hollow core through them lengthwise, so that they are close to being square tubes. There are also a few bricks, doubtless intended for corners, with two cores running in the vertical direction (like a modern concrete block) so as to present an intact face on the end as well as the side. Both types appear to have been moulded rather than extruded.

e. fixing bricks

The use of fixing bricks for the attachment of door frames, joinery, &c, is not an easily researched matter. Wooden plugs inserted into the normal brick joints have always been the commonest way to provide for fixing,⁵⁵ but wooden fixing bricks - pieces of wood of the same size as a regular brick - were also a standard British element. A specification given by Loudon has 'Oak wooden bricks to be provided in the jambs, for fixing the several linings where required, not exceeding 2 feet apart.'⁵⁶ On occasion wood bricks might be distributed throughout an external wall to provide fixing for a cladding material, as in a design reproduced by Loudon in 1846. In this instance they were placed in every seventh course vertically, and spaced horizontally with three normal bricks between them. Battens were to be fixed to them to carry the weatherboards which were called for by the Swiss theme of the building.⁵⁷

⁵¹ *Builder*, VII, 325 (28 April 1849), p 199.

⁵² Elliott, *Technics and Architecture*, p 49 & illustration, from British Ceramic Society, *Transactions*, February 1959.

⁵³ Wyatt Papworth [ed], *The Dictionary of Architecture* (6 vols, London 1853-1892), sv Hollow Brick.

⁵⁴ *Argus*, 8 August 1854, p 8.

⁵⁵ In the United States, Thomas Jefferson's 'Poplar Forest', of 1805 onwards, used 3 x 1/2 inch [80 x 13 mm] blocks fitted into the vertical joints, some of them built into the work and others driven in afterwards. T C McDonald, 'The Brickwork at Poplar Forest', *APT Bulletin*, XXVII, 1-2 (1996), p 41.

⁵⁶ J C Loudon, *Encyclopædia of Cottage, Farm and Villa Architecture* (London 1846 [1833]), § 852, p 428.

⁵⁷ Loudon, *Cottage, Farm and Villa Architecture*, § 2282, p 1150.

An Australian specification of 1878 makes general references to the provision of wood bricks, plugs and fillets, but regrettably gives no details.⁵⁸

In Britain Edmund Beckett (on the advice of an experienced builder, as he claimed) maintained that because these pieces of wood swelled when damp and shrank when dry, they were often loose even before the wall was plastered. He therefore thought it better to put pieces of wood into the mortar joint,⁵⁹ though he did not seem to consider the arguments against this – it meant that fixing was restricted to certain locations, which might or might not be convenient, and that it was hard to locate the fixing point once the wall had been plastered.

In Australia a variant type of wood brick was used by Francis Greenway in the Hyde Park Barracks, Sydney, in 1817-19, of the same cross-section as a regular brick but much longer (perhaps twice as long). More commonly such bricks were of the size of a brick or half a brick - as was recommended by Thomas Mitchell in about 1828,⁶⁰ and these were widely used at least until the late 1850s. A specification of 1839 required that 'wood bricks of well-seasoned deal or pine must be built in where pointed out',⁶¹ and one of 1854 calls for 'No. 3 woodbricks in each door and window jamb, and for skirtings not more than 2 ft 6 in [750 mm] apart'.⁶²

In 1861 John Ackrill, a Melbourne plasterer,⁶³ invented a new form of fixing brick, and it seems that he entered partnership with at least two other people, Charles Maplestone and Frederick Kawerau, both architects in the Public Works Department, to develop the idea. The basic invention seems to have been a brick with a dovetail recess along the side, into which a matching fillet of timber was placed, which could not be pulled out by anything fixed into it on the wall surface. His colleagues developed other types in which a half dovetail was formed on one edge of a brick, such that the full dovetail recess was created only when two matching bricks were laid side by side.⁶⁴ A

⁵⁸ Reed & Barnes, 'Specification of Work to be done and Materials to be used in the Erection of Banking Premises at "Kooringa S.A." for the Bank of Australasia' (Melbourne 1878), p 14.

⁵⁹ Edmund Beckett, *A Book on Building* (Crosby, Lockwood and Co, London 1876), p 164.

⁶⁰ Sir Thomas L Mitchell, Memoranda Book, 1827-1829, Mitchell Library ms ML C38, reel CY 1992.

⁶¹ [Joseph Burns], 'Specification of sundry works required to erect and complete a School-house, in connection with the Presbyterian Church, Melbourne, according to the accompanying plans' (1839), in Michael Cannon [ed], *Historical Records of Victoria*, III (Melbourne 1984), p 517.

⁶² Russell, Watts & Pritchard. 'Specification for ... dwelling houses .. at Elwood ... for Joseph Docker', 13 December 1854, Docker Papers, Manuscripts Collection, SLV, pp 9-10.

⁶³ So identified in the patent, *infra*.

⁶⁴ Maplestone, 'Diary', *passim*. See the leaflet Ackrill & Co, 'Ackrill & Co.'s Patent Fixing-Bricks with Wood Keys' (Melbourne c 1861) in Maplestone, 'Diary', pp 198-9 and elsewhere. Charles Maplestone to S W Rix, 22 April 1862, 'Diary', p 209, refers to brick no 9 as being Ackrill's original invention, and this is identified from the patent illustration, as the leaflet contains no no 9.

Victorian patent covering both types was obtained in Ackrill's name in 1861,⁶⁵ and Anderson, Sharp & Wright of the Carron Timber Yards were appointed Melbourne agents.⁶⁶ Ultimately the bricks with the full dovetail were withdrawn from the range, because they could not get them made to consistent dimensions, whereas those with the half dovetail could be adjusted to fit by varying the mortar joint.⁶⁷

The bricks were shown at the Victorian Exhibition of 1861,⁶⁸ and were awarded a first class certificate. Maplestone and Kawerau obtained a public endorsement from their head, William Wardell, who said he considered them 'one of the most useful inventions for building purposes'.⁶⁹ Attempts were made to extend the patent to the United States, when Ackrill's brother-in-law was visiting the country, but it seems that the partners had failed to complete some necessary formalities.⁷⁰ Maplestone tried persistently to get the patent extended to the United Kingdom, and to get Frederick Ransome of Ipswich to take it up, but without success, for Ransome declined to involve himself.⁷¹ They were finally advised that it was not patentable there because it resembled an earlier patent, now lapsed - probably that of the inventor George Jennings.⁷² However, the government agreed that they should be used in all its buildings, as did George Higinbotham, Chief Engineer of the railways.⁷³

To date surviving examples have been identified only in two buildings, the first being the director's house at the Botanic Gardens, Melbourne, built in the 1860s.⁷⁴ The bricks were branded:⁷⁵

A. & Co.
PATT.

An example has also been discovered in the Melbourne General Post Office (c 1860 - 1862).⁷⁶ In 1872 the Melbourne architect Ralph Wilson was quite rightly refused a patent for his improved bricks with dovetailed grooves, which would seem to simply a rather less practical version of the Ackrill bricks.⁷⁷

⁶⁵ Victoria, patent application no 471, granted to John Ackrill, 21 June 1861.
⁶⁶ Ackrill, 'Ackrill & Co.'s Patent Fixing-Bricks'; see also C B Mayes, *Australian Builders' Price-Book* (2nd ed, Melbourne 1862), p vii.
⁶⁷ Charles Maplestone to F Ransome, Ipswich, 18 March 1862, in Maplestone, 'Diary', p 207.
⁶⁸ Victorian Exhibition 1861, Catalogue *with Prefatory Essays* (Melbourne 1861), p 201.
⁶⁹ Ackrill, 'Ackrill & Co.'s Patent Fixing-Bricks'.
⁷⁰ Charles Maplestone to S W Rix, 18 April 1862, in Maplestone, 'Diary', p 209.
⁷¹ Maplestone, 'Diary', p 209.
⁷² S W Rix to Frederick Ransome, 17 May 1861, Maplestone, 'Diary', p 209. There is a hint that Jennings was originally responsible in Charles Maplestone to S W Rix, 22 April 1862, in Maplestone, 'Diary', p 210.
⁷³ S W Rix to Frederick Ransome, 17 May 1861, Maplestone, 'Diary', p 209.
⁷⁴ Information from Peter Lovell, Melbourne, 1994.
⁷⁵ Mayes, *Australian Builders' Price-Book*, [1862], p vii.
⁷⁶ Specimen kindly provided by Simon Davies, 2002.
⁷⁷ Victorian patent application no 1713, not granted to Ralph Wilson.

During the twentieth century breeze blocks (discussed below) came in sizes designed for fixing purposes. The custom in more recent times has been to insert wooden plugs into the mortar joints as required, after the wall is finished, or to drill the wall to take commercially available plugs.

f. coloured bricks

The development of coloured bricks was perhaps more a matter of fashion than of technology, but of course it involved the selection of special clays and additives. Even in Macquarie's time fortuitous effects were obtained by the use of softer 'rubbers' to form the voussoirs of arches, which consequently presented a warmer red colour than the body brick of the wall around.⁷⁸ Before the mid-century some use was made of the natural colour variations between bricks from different sources to create patterned wall surfaces. The same was done with bricks burnt darker on the end, which allowed a pattern to be picked out in headers. These contrasts were generally mild ones, in what was mainly an Elizabethan tradition. It was mainly in the 1860s, as we have seen, that the written works of Ruskin and Street, and the built works of Street and Butterfield, promoted a much more strident patterning inspired by Italian rather than British prototypes, and requiring bricks deliberately manufactured in stronger colours.

In about 1860 John Glew of Phillipstown [West Brunswick] began to produce the white bricks which were essential to Joseph Reed's polychromy, and to much that followed, and it seems that he soon produced other colours as well. But these white bricks were sometimes used as the main body of the walling, and quite often they were used as dressings in bluestone work. Elsewhere the manufacture of coloured bricks was less advanced, and in Sydney the cream bricks used at 'The Swifts' of 1882 (principally a sandstone house) are branded 'HAYES OAKS', and are thought to be British rather than locally made.⁷⁹

An alien development in this context was the manufacture of blue bricks by Chinese immigrants. In 1860 blue bricks were made by the Chinese at Bendigo, and were reportedly preferred to reds, and especially favoured as dressings around doors and windows, with the body of the wall in white brick.⁸⁰ Some of these bricks survive in a wall built in 1860 at the corner of Forest and Rowan Streets, Bendigo,⁸¹ for the local lawyer John Lysaght, who

⁷⁸ Morton Herman, *The Early Australian Architects and Their Work* (Sydney 1954), p 66.

⁷⁹ Information from Clive Lucas, 1998. Lucas believes that William Wardell also made some use of these bricks.

⁸⁰ *Australian Builder*, 28 January 1860, p 20.

⁸¹ Shown to me by Mike Butcher, 1997.

had a substantial Chinese clientele.⁸² These are very shallow, perhaps closer to American proportions, and of a blue-grey colour not unlike the common bricks still to be seen in Beijing and Tianjin. The appearance of these latter, as Chinese colleagues inform me, is governed by the choice of particular silty brick earth, and it may be surmised that some similar material was available in Bendigo, possibly as a by-product of mining processes.

Carol Hardwick credits the appearance of cream brick in the twentieth century to the Melbourne architect Edward Billson, who had seen light coloured brick in his travels in Sweden and Denmark.⁸³ On his return to Australia he persuaded the manufacturers to make these bricks, and he first used them in a block of flats at the corner of Toorak Road and Power Avenue, Toorak. The use of graded brickwork, in which a solid mass of darker colour gives way to an proportion of lighter coloured brick, increasing with height, occurred at the St Vincent's Hospital building, Melbourne.

g. glazed bricks

Glazed bricks⁸⁴ achieved a vogue in Europe in the later nineteenth century, apparently at first for sanitary purposes and then for their self-cleaning capacity in areas of urban pollution, and their reflectivity when used in light wells and confined spaces. They were also used in the United States, as in the rear light court of Adler & Sullivan's Wainwright Building, St Louis, of 1890-2.⁸⁵ In Britain in 1888 J C Edwards of Ruabon was advertising ivory white and coloured enamelled bricks, or majolica bricks in white, cream, buff, brown, black, grey, grey, blue, red and coral red. The Sneyd Colliery and Brickworks Co of Staffordshire advertised white and coloured bricks. Gibbs & Canning of Tamworth advertised white glazed bricks, and William Ingham & Sons, and Goodman & Co of London, both offered glazed bricks, of unspecified colour.⁸⁶

Warwick Gemmell cites early uses in New South Wales as the washroom and laundry of Newington College, 1876-early 1880s, and the washrooms of the Royal Prince Alfred Hospital, Sydney, opened in 1882. Both used bricks of the Farnley Iron Company near Leeds,⁸⁷ which exhibited its 'enamelled bricks'

⁸² Valerie Lovejoy, 'Reading Remains: Recovering Chinese Lives in Nineteenth Century Bendigo', *Historic Environment*, 23, 3 (2011), p 10.

⁸³ Carol Hardwick, 'The Influence of Art Deco on Architecture in Victoria' (2 vols, MArch, University of Melbourne 1980), p 106.

⁸⁴ For the manufacture of glazed bricks see A B Searle, *Modern Brickmaking* (London 1911), pp 397-411.

⁸⁵ Joseph Siiy, 'Adler and Sullivan's Guaranty Building in Chicago', *Journal of the Society of Architectural Historians*, LV, 1 (March 1996), p 14.

⁸⁶ *Building News*, 20 April 1888, pp v, xxvi, x, xii, xxi.

⁸⁷ Gemmell, *And So We Graft*, p 58.

at Melbourne in 1880.⁸⁸ Gemmell illustrates a specimen, as well as one of the Leeds Fireclay Co Ltd.⁸⁹ Doultons, of England, showed glazed bricks at the Melbourne Exhibition of 1880-1881,⁹⁰ but there is little evidence to suggest that such bricks came into use in Melbourne at this time except, perhaps, within the old E S & A Bank in Collins Street. In 1887 John Sulman advocated glazed bricks for building façades in cities like Melbourne and Sydney as a solution to the problem of discolouration.⁹¹ In 1890 white glazed bricks of unnamed origin were specified for the light court of the National Mutual Association building, Melbourne.⁹² It was only when they became fashionable for building façades that glazed bricks made much headway in Victoria, and even then perhaps later than in Sydney and Brisbane.

By 1901 glazed bricks were made by a number of British companies: the National Opalite Glazed Brick and Tile Syndicate Ltd, with concessionaries in various parts of England; Robert Brown and Sons of the Ferguslie Works, Paisley; Hutchinson brothers of Middlesborough; the Wortley Fire Clay Co of Leeds; and J C Edwards of the Terra Cotta Works, Ruabon, who advertised glazed, enamelled and majolica bricks.⁹³ In 1902 C F A Voysey designed the Sanderson wallpaper factory at Chiswick, London, with a white glazed brick cladding – probably the most famous British example. Glazed bricks were used by J A Campbell on the rear facades of the Edinburgh Life Assurance building in St Vincent Street, Glasgow, of 1904, and the Northern Insurance Building, 84-94 St Vincent Street, of 1908-9.⁹⁴ Of more direct relevance, because it was reported in Australia, was the YMCA Building in Manchester, finished in glazed terra cotta.⁹⁵ A number of manufacturers had emerged in the United States by the time of the first edition of *Sweet's Catalogue* in 1916, and it seems significant that one of them, the American Enamelled Brick and Tile Co of New York, was making both American and English sizes.⁹⁶ Others were the Opal Brick & Tile Co of Cleveland, Ohio; Andrew Ramsay of Mount Savage, Maryland; and the Tiffany Enamelled Brick Company of Momence, Illinois.⁹⁷

In Australia, Rupert Cook of Marrickville is known to have manufactured glazed bricks, probably from 1888. He received a first prize for them at the

⁸⁸ Melbourne International Exhibition, 1880, *Official Catalogue of the Exhibits* (Melbourne 1880), p 269.

⁸⁹ Gemmell, *And So We Graft*, p 42.

⁹⁰ *Argus*, 6 October 1888, exhibition supplement no 2, p 13.

⁹¹ *Australasian Builder & Contractor's News*, 25 June 1887, p 107.

⁹² Wright, Reed & Beaver, 'Specification for Erection of Premises for the National Mutual Life Association of Australasia. Corner of Collins & Queen Streets Melbourne' (Melbourne 1890), pp 4-5.

⁹³ J E Sears [ed], *The Contractors, Merchants, and Estate Managers' Compendium and Catalogue* (15th ed, London 1901), pp 49, 60, 61, 65, 232.

⁹⁴ Alistair Service, *Edwardian Architecture* (London 1901), p 136; also *ibid*, *Edwardian Architecture and its Origins* (London 1975), pp 190, 200-1.

⁹⁵ *Building*, 12 October 1911, p 53.

⁹⁶ 'Sweet's' *Indexed Catalogue of Building Construction* (New York 1906), p 45.

⁹⁷ 'Sweet's' *Catalogue* [1906], pp 49-54.

Royal Agricultural Society of New South Wales Exhibition in 1896, and they were used in the construction of Central Station, Sydney.⁹⁸ Whether they were used for façades is not established. A little later, however such bricks were used on the façades of the Mark Foy store in Sydney; the Queensland Ambulance Brigade building in Brisbane, by L G Corrie in 1911;⁹⁹ and the Commercial Travellers Association Building in Melbourne, by H W & F B Tompkins, of 1912-13. In South Australia the Metropolitan Brick Works produced 'enamelled' bricks at its Blackwood yard. Plain and specially shaped bricks, bisque fired, were dipped into a prepared glazed slip, or alternatively were painted on one face with the mixture. This liquid was lead-based and included borax, with mineral salts added as required to make them brown, blue or green. The bricks were then refired in a downdraught kiln for thirty-six hours.¹⁰⁰

h. shaped bricks

In early colonial architecture the tapered bricks required for arches and flat arches were usually made by cutting or rubbing 'rubbers;' or soft bricks, and as late as 1854 a specification calls for bricks for arches 'to be selected rubbed to a gauge and to be drawn colored and pointed'.¹⁰¹ At later dates normal hard bricks were sometimes sawn to form any necessary angles (usually in plan), though more commonly they would be cut before burning, so that the angled face, even if rough in texture, presented an intact surface. Unusually, however, hexagonal bricks were burnt in 1836 for the parsonage of the Orphan School at Newtown, near Hobart.¹⁰² For ornamental copings, chamfered openings, and other ornamental purposes, specially shaped and moulded bricks were increasingly used from the 1860s onwards. By 1891 a Melbourne company specialised in such bricks, and W S Law specified 'columns and projections inside and out, for all cornices, niches and chimney caps, ramps and other mouldings throughout the building [of] patent bricks from the Builders' Brick and Tile Co, Preston.¹⁰³ Bricks shaped for structural purposes are more unusual, but in New South Wales Horbury Hunt had special L and T-shaped bricks made to tie the buttresses into the wall at Armidale Cathedral, of 1870-3, and Grafton cathedral, of 1880-4.¹⁰⁴

⁹⁸ Gemmell, *And So We Graft*, pp 58, 66.

⁹⁹ *Building*, 12 December 1911, p 48.

¹⁰⁰ Ioannou, *Ceramics in South Australia*, p 223.

¹⁰¹ Russell, Watts & Pritchard, 'Specification for ... dwelling houses ... at Elwood ... for Joseph Docker' (13 December 1854 [Docker Papers, Manuscripts Collection, State Library of Victoria]), p 5.

¹⁰² *Hobart Town Courier*, 12 May 1836, p 2.

¹⁰³ W S Law, 'Specifications of Residence Drummond St. Carlton for Mrs. L. Abrahams' (Melbourne 1891), p 9.

¹⁰⁴ 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.

Shaped bricks had often been made by forming a regular brick, then cutting away a portion of it, as was the case in the rebated bricks found in the Roanoke Valley, USA,¹⁰⁵ and probably in the Ackrill's fixing bricks discussed above. The extrusion process allowed the manufacture of bricks with rebates or with tubular hollows running through them in one direction, and for unusual overall shapes (in two dimensions), like Beart's patent bricks,¹⁰⁶ and Jennings's bonding bricks for cavity walls, both in England. In Australia but, as we have seen, Jennings's brick was imitated by the local maker, T H Widdicombe, but it was moulded, not extruded. In fact the great majority of shaped bricks in Australia have been formed in an appropriate mould rather than extruded or hand modified.

Moulded cream bricks in a string course at the base of the frieze, 'Augholzie', off McNab's Rd, Tullamarine, Victoria, by A E Duguid, 1889: Miles Lewis.
[Hume].

It must have been essentially an economic question whether it was worth creating a special die to extrude the required shape; constructing a special mould for hand making or pressing it; or making a regular brick and cutting part of it out by hand. But of course, if the brick were not to be of uniform cross-section, extrusion was not an option. An unusual type of moulded brick has been found in two late nineteenth century houses at 209 and 211 Drummond Street, Ballarat, Victoria. Here the walls are bichrome, and the bricks of a frieze band under the verandah, as well as single bricks at the centres of spandrels, have relief floral patterns on the face in two different designs. They must have been manufactured especially for the builder, for there is no evidence that they were marketed generally in the area.

In the twentieth century Edward Billson wanted a smaller brick to emphasise the scale of his Sanitarium Health Food Company building at Warburton, Victoria, and persuaded the Northcote Brick Company to produce it. Billson also used a brick common in Art Deco work, the 'heeler', a long narrow brick which could be used horizontally or vertically in features of the façade. This brick, used in the Colonial Gas Company showroom, Box Hill, Victoria, and it was manufactured, *inter alia*, by Evans Brothers of South Melbourne.¹⁰⁷ A specialised product, the nature of which is somewhat mysterious, was the 'Govir' Interlocking Brick. It has so far been heard of only in Queensland,

¹⁰⁵ These bricks, found in the Huff-Stokes house, Roanoke County, Virginia are rebated across half the depth of the back face, so that a matching brick the other way up will overlap: M J Pulice, 'Unraveling the Benjamin Deyerle Legend: an Analysis of Mid-Nineteenth-Century Brickwork in the Roanoke Valley of Virginia', *Perspectives in Vernacular Architecture*, 12 (2005), p 40.

¹⁰⁶ *Builder* [UK], XI, 543 (2 July 1853), p 431; see also no 545 (16 June 1853), p 459, for the cases successfully brought by Beart against infringements of his patent. Beart's patent brick and tile machine was shown at the Great Exhibition, but there is no indication that his bricks were at this stage of a distinctive form: Great Exhibition of the Works of Industry of all Nations, *Official Descriptive and Illustrated Catalogue* (3 vols, Spicer Brothers, London 1851), I, p 295.

¹⁰⁷ Carol Hardwick, 'The Influence of Art Deco on Architecture in Victoria' (2 vols, MArch, University of Melbourne 1980), p 1055.

where James Campbell & Sons were the manufacturers and agents. It came in the form of nine inch [225 mm] common and face bricks, and a twelve inch [300 mm] moulded brick.¹⁰⁸ The nature of the interlock is unclear, but it may well have resembled the Roanoke Valley bricks referred to above.

i. textured bricks

In the twentieth century the legacy of the Arts and Crafts movement has been particularly strong in the brick industry, where various rustic and textural effects deriving or purporting to derive from the manufacturing process have been seen as aesthetically desirable. The most conspicuous of these is the clinker brick,¹⁰⁹ the very thing which the earlier improvements in clamps and kilns had sought to avoid. It is darker, distorted, possibly glazed in parts, perhaps patchy in colour where it has touched adjacent bricks, and indeed with fragments from the adjoining bricks burnt onto it, and fragments of its own body missing. The fashion in Australia dates from the mid-1920s, promoted by architects such as A W Plaisted in Melbourne,¹¹⁰ and it derives principally from the United States and the tradition of the Craftsman Bungalow. G A Taylor, editor of *Building*, reported in 1916 on his visit to Seattle:¹¹¹

All sorts of little ideas are introduced to give novelty and quaintness ... For instance, clinker bricks are used for chimneys and uneven burnt bricks projecting at irregular intervals, as well as pebbles set into brickwork in places.

Linked with this was the introduction of 'tapestry' bricks. Initially these were bricks in a variety of colours, some of them fairly subtle, and made in various sizes from the standard shape to a much thinner brick of the same length, down to small squares. They were designed to be laid so as to create patterns in the wall surface, and were most specifically for fireplaces. They were invented, as it was claimed, and certainly they were introduced, by Fiske & Company of Boston and New York, who had registered the name. This occurred early in the twentieth century, and the company stated in 1911:¹¹²

¹⁰⁸ *Architect and Builder's Journal of Queensland*, April 1936, advertisement p 1 & p 38.

¹⁰⁹ Smith shows that this is really a misnomer. The Dutch referred to a hard paving brick as a klinker (klinkaert, clincert, cliner), and it became customary in Britain to use the term for the small yellow building bricks often imported from the Netherlands for building purposes. In the eighteenth and nineteenth centuries the term was applied to overburnt bricks made locally: although these were indeed hard, consistent with the original meaning, the term was now a derogatory one: T P Smith, 'On "small yellow bricks ... from Holland"', *Construction History*, 17 (2001), p 31.

¹¹⁰ For Plaisted's use of clinker bricks see Miles Lewis, '*Hartpury*' and '*Hartpury Court*' (mimeograph report, Melbourne 1989), pp 40-41.

¹¹¹ G A Taylor, '*There!*' *A Pilgrimage of Pleasure* (Sydney 1916), p 71.

¹¹² J Parker & B Fiske, *Tapestry Brick Fireplaces* (Boston 1911), p 4.

brick may now be secured which are [sic] full of wonderful and subtle variations in color, possessing a depth and richness not obtainable even from the palette of the most skilful artist.

This may not be fully appreciated by those who are familiar only with the brick fireplace as heretofore constructed of the smooth conventional brick, which has very little life or beauty in itself, and which depends on the design and the use of elaborate mouldings to give attractiveness to the finished work. This style, however, is passing, and in its place is coming simplicity of design, the elimination of mouldings, and the use of a brick which is itself full of life and character.

Something comparable was produced in Australia by the Eureka Tile Company in the 1920s, and was most poetically described:

Eureka "TAPESTRY" Brick seems to have grown on the spot: it is "fitting" because it fits into Nature's own scheme; it is restful and pleasing to the eye because its colours and surface harmonise with the rocks, the trees and the grass about it.

Eureka "TAPESTRY" Brick means the soft, rich shades and delicate tones of a fine old Persian rug translated into the unfading permanency of burned clay.

... Its charming shades are obtained by the skilful selection and blending of natural clays which give an almost infinite number of colours and intermediate shades from Indian red to olive greens, and purple browns to deep blue; light brownish grey to chamois and cream-and-coffee shades, and deep russets to golden and tobacco brown.¹¹³

These were presumably the bricks which the Eureka Company supplied in 1925 for the M H Baillieu house in Orrong Rd, Toorak, Melbourne, designed by H D Annear: they are described by Edquist as 'narrow and of a beautiful warm pinkish colour unusual in Melbourne.'¹¹⁴

By the 1930s Wunderlichs were marketing 'Brickettes' and 'Colortex Bricks'. The Brickettes were shallow wire cuts, measuring 6¹/₂ x 1¹/₄ x 3 inches [16 x 32 x 76 mm] and made in a wide range of colours, both glazed and unglazed. The Colortex bricks were made in the normal plan size of 9 x 4¹/₂ inches [230 x 115 mm] and depths of both three and two inches [76 and 51 mm] with a coarse or a fine vertical striation - 'coarse crimp' and 'fine crimp' - or a 'rug-faced' texture said to resemble heavy tapestry. The colours were 'harmonies'

¹¹³ *Australian Homes* (Melbourne 1927), p 24. The company was the only maker listed in Gawler, *Architects' and Builders' Index*, p 12.

¹¹⁴ Harriet Edquist, *Harold Desbrowe-Annear 1865-1933: a Life in Architecture* (Miegunyah Press, Carlton [Victoria] 2004), p 147.

in red, brown, yellow and green, and the finishes varied from a dull matt to a high glaze.¹¹⁵ Soon afterwards it appears that the bricks were available also in a one inch [25 mm] depth, and in red, brown, yellow buff, purple and blue.¹¹⁶ In short, one can say that in Australia generally, tapestry brick tended to consist principally of bricks of normal length but far shallower than the standard. The bricks were often given striated or otherwise textured faces, and they came to be used not only for fireplaces but for various exterior points of accent, sometimes in contrast with heavily glazed bricks in a dark manganese brown.

¹¹⁵ Wunderlich Limited, *Colour in Wunderlich Products* (Sydney 1933), pp 16-17.

¹¹⁶ C E Mayes, *The Australian Builders and Contractors' Price Book* (10th ed, Sydney 1938), p 48.