

2.05 Shingles

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origins of shingles

Shingles had been a traditional roof covering in northern Europe, and in England in particular, and they were used in Australia from the first years of settlement, although they were no longer current in England itself. Observers speak as if they are quite unfamiliar: Mary Ann Beasley, for example, comments on the 'wooden tiles' to be seen on roofs in Adelaide in 1839.¹ Jane Cannan, who reached Melbourne in 1853, was struck by the 'wooden roofing composed of small pieces smaller than ordinary slate - called here shingle.'²

Changes in practice over time relate to the species and source of timber, the means of fixing, the size, and the means of manufacture. In Britain shingles were traditionally of oak, in sizes such as 150-200 mm wide by 300 mm long, and were fixed by wooden pegs or pins.³ These pins were hooked over the upper edge of a batten or lath, in much the same way as the projecting knob on a clay roof tile, but this batten in turn was likely to be fixed onto a layer of boarding. Only when nails came into common use was it reasonably easy to fix shingles direct to a sarked or boarded surface. In the mid-nineteenth century a shingle (also known as a *shide*) typically would be of oak, but would be somewhat smaller than in the past, measuring 100 mm wide by 200 to 250 mm long, 25 mm thick at one end, and tapering towards the other. Normal practice was to lay it directly onto rough boarding, rather than simply on battens as was usually the case in Australia, and fixing might be by either wooden pins or nails.⁴ In Australia pegs were used from 1788, according to Irving, but nails began to be used after 1800.⁵

manufacture

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- 1 Colin Kerr, *An Execlent Coliney* (Adelaide 1978), p 106.
 - 2 David & Jane Cannan to James [?Cannan], 24 August 1853, no 5 in Cannan Family papers, National Library of Australia, MS 401.
 - 3 C F Innocent, *The Development of English Building Construction* (Cambridge 1916), p 184, quoted Robert Irving, 'The First Australian Architecture' (MArch, University of New South Wales, 1975) p 188.
 - 4 S C Brees, *The Illustrated Glossary of Practical Architecture and Civil Engineering, &c* (London 1853), p 237.
 - 5 Irving, op cit, pp 189, 191.

British shingles were produced by splitting the timber along the grain with a *fromard*, also known as a *froe* or *throw*, an L-shaped tool comprising a short wooden handle carrying at right angles a heavy but narrow blade, 230 mm long. At the outset the blade was hammered into the end grain with a wooden mallet called a *beetle*, or *bittel*, and thence it was levered and forced through the wood by the operator.⁶ In the United States the word 'shake' was used of a rough split shingle, for it was an Elizabethan verb meaning to split or crack, which had remained in use in the southern Appalachians, whereas in New England shingles were 'riven'.⁷ This has given rise to a spurious use of the word 'shake' in Australia by dealers in American shingles, though it is historically irrelevant here, and the more so because it is applied to shingles which are sawn rather than split.

The first United States patent for a shingle-cutting machine was granted in 1802, and in 1839 there was a small spate of patent applications, by L M Parsons; Hanman, Thatcher & Palmer; and Burt & Smith.⁸ By 1850 there many patents in force⁹ and shingle machinery was in use in California, if not by 1849 when it is supposed to have given the name to Shingle Springs, El Dorado.¹⁰ As American shingles were generally shorter than those used in Australia, and the timber softer (though not necessarily more fissile), it cannot be assumed that these machines would have been suited to Australian conditions, and there is no evidence of their use. In 1856, however, the Brisbane carpenter D F Longland invented a machine for splitting shingles 'all gauged to one thickness',¹¹ and in 1865, similarly, Ernst Brandt of Bendigo was granted a Victorian patent for improved shingle cutting machinery.¹² Regrettably the examples which Brandt showed at the 1866-7 Exhibition had become cast and warped out of shape due to being cut when the timber was too green.¹³

types and timbers

Shingles were made at Sydney from the first months,¹⁴ and in February 1788 Surgeon Worgan reported 'that the Tree, which I have said grows something like the Fir, answers very well for the making of Shingles'.¹⁵ A shingle roof was completed for the hospital in

6 Irving, op cit, pp 188-9, quoting James Arnold, *The Shell Book of Country Crafts*, p 89, and Ketteridge & Mays, p 122.

7 Eric Sloane, *A Reverence for Wood* (New York 1973 [1965]), p 32.

8 *Mechanic's Magazine*, XXXIII, 881 (27 June 1840), p 6; 884 (18 July 1840), p 142; 900 (7 November 1840), p 463, in each instance quoting the *Journal of the Franklin Institute*.

9 D S Waite, 'Roofing Early America', in C F Peterson [ed], *Building Early America* (Radnor [Pennsylvania] 1976), p 137,

10 H H Bancroft, *History of California*, vol VII, 1860-1890, in *Works of Hubert Howe Bancroft*, vol XXIV (San Francisco 1890), p 77, quoting the *Pacific News*, 15 January 1850.

11 Donald Watson & Judith McKay, *Queensland Architects of the 19th Century* (Brisbane 1994), p 114.

12 Victorian patent no 840 to Ernst Brandt, 2 August 1865.

13 Intercolonial Exhibition of Australasia, *Official Record, containing Introduction, Catalogues, Reports and Awards of the Jurors, and Essays and Statistics* (Melbourne 1867), pp 47, 386.

14 [Francis Fowke, attributed], 'Sketch and Description of the Settlement at Sydney Cove, &c', reproduced in Tim McCormick et al, *First Views of Australia 1788-1825* (Chippendale [NSW] 1987), p 37: two shingling parties are located inland from the cove, to the south.

15 G Worgan, *Journal of a First Fleet Surgeon* (Sydney 1978), p 39, cited in Helen Proudfoot, 'Fixing the Settlement' in Graeme Aplin [ed], *A Difficult Infant: Sydney Before Macquarie* (Kensington [NSW] 1988), p 60.

April 1788, fixed with pegs made by the female convicts,¹⁶ but these shingles quickly decayed, and had to be replaced with tiles after only three years.¹⁷ The pegs were made of *Acacia*¹⁸ and the shingles of *Casuarina* or she-oak as long as the supply lasted, and according to Irving this timber was split radially, rather than tangential to the growth rings as was the custom with English oak, and it seems that it was easier to get thin shingles by this means.¹⁹ *Casuarina* shingles, apparently as late as the 1850s, survive at the house 'Don Bank' in North Sydney. Bridges identifies the tree used at Sydney in the early years specifically as *Casuarina Fraseriana*.²⁰ Swamp oak [*Casuarina glauca*] resembled forest oak, and was also used for shingles. James Atkinson, in 1826, identified the ironbark tree as a source of excellent shingles, and forest oak as providing less durable ones, but with the advantage that they could be nailed directly, rather than bored with a gimlet. Stringybark was identified as a source of palings, so it can be assumed to have been used for shingles as well.²¹ Ironbark shingles, bought at £11.14s a thousand, were used for 'Lyndhurst', Sydney, in 1835.²²

Dennis Jeans identifies peppermint as a shingle timber in Tasmania,²³ but the overwhelming proportion of shingles and palings exported from the island were of stringybark. Within Van Diemen's Land itself shingles were ubiquitous, and William Thornley noted the size of those he saw there in 1818 as fifteen by nine inches [375 x 225 mm].²⁴ David Cannan (from his jaundiced viewpoint as an agent for Morewood & Rogers's iron tiles and other products), wrote²⁵

... this is great shingle country - to see a fine house with hewn stone covered with shingles makes me sick + furious at Morewood - they are however very cheap, keep the water out + will last about seven years
 ... There are very few slate roofs - chiefly the beastly shingles which I hate though they may be picturesque ...

Shingle roofs were used for the first public buildings designed by H W Revely,²⁶ and elsewhere in Western Australia,²⁷ the usual materials being jarrah and she-oak.²⁸ The

16 David Collins [ed Maria Collins, James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 28.

17 Collins, *The English Colony*, p 125.

18 Irving, 'The First Australian Architecture', p 189.

19 Irving, 'The First Australian Architecture', pp 189-190.

20 Peter Bridges, *Foundations of Identity* (Sydney 1995), p 28.

21 Atkinson, *Agriculture and Grazing in New South Wales*, pp 15-16.

22 Barrie Dyster, *Servant and Master* (Kensington [NSW] 1989), p 101.

23 Dennis Jeans, 'The Building Industry: Materials and Styles', in Judy Birmingham, Ian Jack & Dennis Jeans, *Industrial Archaeology in Australia: Rural Industry* (Richmond, Victoria, 1983), p 98.

24 William Thornley [ed J S Mills], *The Adventures of an Emigrant in Van Diemen's Land* (Adelaide 1973 [London, no date (1840s)]), p 23.

25 David Cannan to his mother, Lemon Springs, Hobart, &c, 30 September, 5 October 1856, &c, no 20 in Cannan Family papers, National Library of Australia MS 401.

26 The Round House at Fremantle, the Supreme Court and the Public Offices, Perth: information from Robin Campbell, 1990.

27 For example at 'Oakover', the date of which is not clear, but which was 'acquired' by Samuel Moore in 1834, and had its shingle roof at least by the 1840s: Barbara Chapman (ed), *The Colonial Eye* (Perth 1979), pp 68, 84.

former, however, tends split as it dries, and the latter to warp.²⁹ The Rev J R Wollaston reported in 1848 that his church at Albany was being roofed in 'shea-oak' shingles, which were very durable.³⁰ By 1840 shingles had been used at the Victoria Settlement, at Port Essington off the north coast of Australia, though most of the buildings were thatched.³¹ Between 1861 and 1863 six men were employed for a total of thirty-eight weeks at Jondaryan Station, Queensland, to cut 66,000 shingles.³² The Kemp house at Kerikeri, New Zealand was roofed in kauri shingles in 1821-2.³³ Subsequently shingles seem to have been less common in New Zealand than in Australia, but they are mentioned occasionally - for example as the roofing of Benjamin Mountfort's house in Christchurch, of about 1860.³⁴

Tasmanian shingles must have reached most of the coastal settlements of eastern Australia. Both shingles and laths from Van Diemen's Land were at Adelaide in the earliest phase.³⁵ Even in Maitland, which was accessible to shipping by way of the Hunter River, the local newspaper was advertising Hobart Town shingles in 1855.³⁶ Shingles were imported from overseas countries, especially to Victoria during the gold rushes of the early 1850s, for example a consignment of 20,000 shingles from Bristol which was offered for sale in 1853.³⁷ One can only guess what the ultimate source of these may have been. The following quantities were received from all sources during this period:

year	value	number
1850	£2,794	6,586,023
1851	£617	2,100,000
1852	£4,230	3,527,050
1853	£68,640	11,256,615
1854	£22,603	7,079,032
1855	£1,936	777,550

Tasmania's shingle export trade declined after the 1850s, but not its paling trade, and even in 1867 Tasmania supplied virtually all of South Australia's lath, shingle and paling requirements.³⁸

A minor variant of the shingle was the hoop chip, apparently used in Surrey and elsewhere in southern England, and recommended by Loudon as worthy of adoption in Scotland,

28 Information from John White, 1990.

29 A C Staples, *They Made their Destiny* (Harvey [WA] 1979), p 227.

30 J R Wollaston [ed C A Burton & P U Henn], *Wollaston's Albany Journals (1848-1856)* (Perth 1954), p 53.

31 For Government House see Peter Spillett, *Forsaken Settlement* (Melbourne 1972) p 150; for the hospital see Jacqueline O'Brien, 'Looking back at Nursing', in Val Dixon [ed], *Looking Back: the Northern Territory in 1888* (Casuarina [Northern Territory] 1988), p 24, and Spillett, p 91; and for the Storekeeper's hut, Spillett, p 90.

32 Susie Penfold & Sofie Tod, *Jondaryan Woolshed* (Jondaryan [Queensland] 1977), p 17.

33 Michael Fowler, 'The Siting and Disposition of the New Zealand Farm Homestead' (MARCH, University of Auckland, no date), part II, p 2.

34 J F W Cattell, 'Domestic Architecture in Christchurch and Districts, 1850-1938' (MARCH, University of Auckland 1981), p 17.

35 T H James, *Six Months in South Australia* (London 1838), p 29.

36 *Maitland Mercury*, quoted by C J Mitchell, *Hunter's River* (Sydney 1973), p 8.

37 *Melbourne Auction Mart*, 14 March 1853.

38 J E Calder, *Tasmanian Industries* (Hobart 1869), p 62.

America and Australia. These chips were the shavings made by coppice cutters when making hoops from hazel and other coppice timbers, and were generally 25 mm or more in breadth, at least 6 mm thick, and 450 to 900 mm long. They were sewn to the roof battens like thatch, and after weathering for a time were very like thatch in appearance.³⁹ Why Loudon should imagine that such a material was readily available in Australia is unclear, but it certainly was not, and consequently no example of this roofing has been reported.

shingling practice

A characteristic of the shingle roof, as Frances Perry observed in 1848, is that it swells when damp, so that leaks which appear at the first onset of wet weather then close up as the roof stabilises.⁴⁰ A northern Queensland settler commented similarly that 'the hot weather shrinks them to such a degree that, when the breaking up of the dry season comes, for the first few days you might as well be protected by a sieve.'⁴¹ Eric Sloane has noted the same characteristic in American shingle roofs, and claims also that moss on the shingles helps the roof to seal up, and tends to preserve it.⁴²

A particularly interesting shingle roof has been found on a house of the 1850s at 370 Malvern Road, Prahran, in Melbourne. The timber is of the red oak group [*Quercus sp.*], and the shingles have been made by sawing barrel staves in half, as was first recognised by Andrew Muir. They measure 80 to 100 mm wide by 345 to 355 mm long by 5 to 12 mm thick. About 20 mm down from the top end, each shingle bears a transverse sawcut on the underside, passing a half to a third of the way through, as if to accommodate a piece of wire binding. In some of the shingles the end is chamfered off at a shallow angle, reaching almost as far as this sawcut, and the chamfer is slightly concave across the face of the shingle: the taper is to accommodate the lid of the cask, and the concavity is necessary because it is circular. The other type of shingle lacks the shallow chamfer, but the end is cut off on a slight angle, sloping in towards the inner face, and this is the other end of the stave adjoining the fixed base of the cask. Although the shingles are cut from staves, they do not appear to have been used for that purpose, and it was probably simply a commercial decision to convert them, as both shingles and oak staves were viable imports from the United States at this time.⁴³ The fixing of this roof is also interesting because the shingles have been nailed to the battens only in alternate courses, each nail passing through the toe of one shingle and the head of the one below: this saved half the nails, but left the nail heads exposed to the weather.

A hipped roof in shingles presents a special problem in the sealing of the hips. Most surviving illustrations are simply not explicit enough to be relied upon. There are four basic possibilities: run a ridge of galvanised iron or other sheet metal down the hip; place a flashing of sheet metal down the hip *below* the shingles; carefully mitre together the

39 J C Loudon, *An Encyclopædia of Cottage, Farm, and Villa Architecture and Furniture* (London 1846 [1833]), § 867, p 435; § 2359, p 1129.

40 Frances Perry [ed A de Q Robin], *Australian Sketches* (Carlton [Victoria] 1984), p 79.

41 C H Eden, *My Wife and I in Queensland* (London 1872), pp 65-6, quoted in Peter Bell, *Timber and Iron* (St Lucia [Queensland] 1984), p 115.

42 Eric Sloane, *A Reverence for Wood* (New York 1973 [1965]), p 14.

43 G F Train [ed E D & Annette Potts], *A Yankee Merchant in Goldrush Australia* (London 1970), pp 24-5, letter of 25 June 1853 published in the *Boston Post*, 20 October 1853.

cornermost shingles from both faces; or cover the hip with a pair of continuous board, mitred together. It is by no means clear what was the normal solution in Australia before galvanized iron and other metals came into use for the purpose.

After the 1850s shingles were largely superseded by iron in the older settlements, especially in the cities, where shingle roofs were more or less prohibited under the building Acts. But they remained in use in remoter parts, and over 40% of the roofs in Queensland were shingled in 1864.⁴⁴

palings

Palings, which are essentially the same as shingles but longer, seem to have come into general use later and to have been less common, but they also derive from Britain. A paling fence was constructed between the felons' and debtors' sections of the Sydney Gaol in 1797.⁴⁵ Palings were used on the walls of the Royal Victoria Theatre in Adelaide, 'the interstices between each affording most perfect ventilation',⁴⁶ and for temporary huts at Burra, South Australia, in the 1840s.⁴⁷ They were of course to be a standard material for fencing and other purposes. J C Hamilton speaks of hurdles used in western Victoria in the 1840s, measuring 1.8 by 1.0 metres 'of split palings mortised into heads large enough to admit them'.⁴⁸

Many palings were exported from Circular Head in northern Tasmania, where there was an organised industry. Elsewhere in the north there were small operators, and Charles Furlong describes this activity in the neighbourhood of Myrtle Bank and Scottsdale. Palings were taken out during the summer months, and one man might have a cart and a couple of horses, and employ one or more splitters. Each splitter paid a licence fee of five shillings a month to the government. The search for a suitable gum tree could take as much as two days, because only about one in five hundred would split straight enough. The tree was felled, cut into the appropriate lengths, then split into shingles 'with a peculiar sort of tool, the use of which is not always readily acquired' (presumably a froe). Some trees would produce eight or ten thousand palings.⁴⁹

Palings were widely used for roofing, especially in Tasmania, where examples still survive,⁵⁰ and in Victoria in the 1850s. There is one even earlier example in South Australia: the paling roof of the oldest part of 'Gum View', near Kuitpo, which may date from the 1840s.⁵¹ Palings might also be used as the lower layer in a double roof, or as a base to carry insulating material. A cheese factory at 'Springfield', Berwick, near Melbourne, has palings on sawn

44 Ray Sumner, *Settlers and Habitat in Northern Queensland* (Townsville, Queensland, 1974), p 15.

45 David Collins [ed Maria Collins, James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 353.

46 J C Hawker, *Early Experiences in South Australia* (Adelaide 1899), pp 16-167, quoted in Kerr, 'An Excellent Coliney', p 122.

47 Peter Bell, 'An Early Timber Cottage at Burra' CHECK REF - AJHA?

48 J C Hamilton, *Pioneering Days in Western Victoria* (Melbourne 1923), p 45.

49 Charles Furlong, *The Settler in Tasmania* [formerly *Emigration to Tasmania, by a recent Settler*] (Melbourne 1982 [1879]), pp 105-7.

50 For example two buildings at the Convict Barracks, Fingal [?of the 1840s], illustrated in Frank Bolt, *Vanishing Tasmania* (Kingston [Tasmania] 1992), p 217.

51 Paul Stark, *Meadows Heritage* (Meadows [SA] 1983), p 116.

battens visible on the underside of the roof, but it seems almost certain that there was always corrugated iron above, as there is today, for it was a sophisticated building designed by an architect, and required insulation.

By about 1900 the use of sawn boards in place of split palings was common in Tasmania,⁵² especially in the vicinity of sawmills. Occasionally shingles were laid over rough boarding, as in the English tradition. Palings or boards were laid longitudinally, overlapping like weatherboards, as the base for fixing a shingle roof.⁵³ This is related to the flush boarding, usually running longitudinally, which often provided a base for fixing fabric, sheet metal even slate to more sophisticated roofs. A dairy at 'Oatlands', Narre Warren, Victoria, has a double roof with a completely open air space between the layers, and the lower roof is clad in longitudinal sawn boards lapped like weatherboarding. This is probably of twentieth century date. More puzzling is the reported use of slabs for roofing, at 'Southampton' near Balingup, Western Australia.⁵⁴

the shingle revival

Shingles enjoyed a revival in Australia in the 1880s, in response to the shingle style of the United States, but they were generally imported rather than locally produced. In 1883 Mayes's Price Book still listed Victorian shingles of 24 by 4 inches [710 x 100 mm] and unspecified but apparently local shingles of 15 x 3¹/₂ [3870 x 90 mm], but also American sawn red pine shingles of 30 x 6 inches [760 x 150 mm].⁵⁵ Soon these were being used as a wall cladding. Horbury Hunt used shingle-hung wall surfaces at Glen Alpine homestead near Werris Creek in about 1886,⁵⁶ but of what timber has not been established. In 1888 the Melbourne architect L J Flannagan completely sheathed the carcass of Richard Shann's house 'Mendip Hills', North Preston, in boarding and had nailed to it 13 mm thick Californian red pine shingles of fish scale pattern.⁵⁷ The proto-modern architect G S Jones used American redwood shingles with tile ridging on the roof of a house in Strathfield, Sydney, in 1894. A little later, at the neighbouring house 'Bickley', he hung redwood shingles over the upper part of the brick walls, and used split oak shingles on the roof.⁵⁸

In 1906 Howard Joseland, a devotee of the Arts and Crafts, favoured silver-grey shingles in combination with roughcast, red brick, brown painted verandah woodwork and blue-green

52 For example the house of John Brown, Middlesex Plains, in 1901: Archives Office of Tasmania 30/3836, reproduced in Ian Evans, *The Australian Home* (Sydney 1983), p 38.

53 This was the case at 'Leschenault House', Bunbury, a number of associated outbuildings. Ian Molyneux and Associates, *'Leschenault Homestead' Conservation Plan* (2 vols, Fremantle [Western Australia] 1996), I, pp 30, 46, 52, 54, 57.

54 Information from Robin Campbell, 1990.

55 Charles Mayes, *The Australian Builders' Price-Book* (3rd ed, Melbourne 1883), pp 54, 60.

56 Peter Reynolds, *Horbury Hunt Housing the Horse and Shearing the Sheep* ([Sydney] 1992), pp 12-13. This material has been very kindly supplied by Robert Irving.

57 L J Flannagan, 'Specification ... of a half-timbered Villa Residence at North Preston for Richard Shann Esqr.' [1888], pp 8, 10, 12, 41: Melbourne University Architectural Collection WD HOU 172, La Trobe Library.

58 Leonard Martin, 'George Sydney Jones Architect, 1864-1927' (BArch, University of New South Wales, 1978, 1979), pp 20-27, citing the *Australasian Builder & Contractor's News*, 10 November 1894, p 203; *Building & Engineering Journal*, 24 October 1896; and *Art and Architecture*, September-October 1905, pp 189, 192.

eaves,⁵⁹ but by now G S Jones had changed his mind, and attacked the idea of 'shingles tacked in one place, a patch of stucco adjoining, together with some fantastic shapes in woodwork and some coloured brickwork thrown about' as indicating 'the restless spirit of the owner as well as the designer'.⁶⁰ However, shingles long remained a feature of Arts and Crafts design, especially in Western Australia where they had made their first appearance later than in the east. Examples include some cottages in Malcolm Street, West Perth, demolished in 1991,⁶¹ and at least three houses built or altered by William Williams, each with the upper floor shingle clad. Williams built one at 9 Brae Road, Claremont, in 1918,⁶² and altered another at 24 Reserve Street, at about the same time: his own house at 16 Aggett Street, though alleged to date from 1905,⁶³ must in reality have been finished at about the same time.

59 Howard Joseland, 'Castles in Spain', *Art and Architecture*, IV, 1 (1907), p 29, quoted in Ian Kelly, 'The Development of Housing in Perth', pp 269/271.

60 G S Jones, 'A Word Concerning Australian Domestic Architecture', *Art and Architecture*, VI, 1 (1909), pp 5-6, quoted Kelly, 'Housing in Perth', p 271.

61 Kelly, 'Development of Housing in Perth', p 208.

62 Ian Molyneux, *Looking Around Perth* (East Fremantle [WA] 1981), p 49.

63 Molyneux, *Looking Around Perth*, pp 40-41.

2.05 *Shingles*: check:

Innocent, *Development of English Building Construction*, p 184, quoted Robert Irving, 'The First Australian Architecture' (MARCH, University of New South Wales, 1975) p 188, on English oak shingles.

G Worgan, *Journal of a First Fleet Surgeon* (Sydney 1978), p 39, cited in Helen Proudfoot, 'Fixing the Settlement' in Graeme Aplin [ed], *A Difficult Infant: Sydney Before Macquarie* (Kensington [NSW] 1988), p 60, on wood at Sydney suitable for shingles.

Art and Architecture, September-October 1905, pp 189, 192, quoted re G S Jones in Leonard Martin, 'George Sydney Jones Architect, 1864-1927' (BArch, University of New South Wales, 1978, 1979), pp 20-27.

Howard Joseland, 'Castles in Spain', *Art and Architecture*, IV, 1 (1907), p 29, quoted in Ian Kelly, 'The Development of Housing in Perth', pp 269/271.

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C H Eden, *My Wife and I in Queensland* (London 1872), pp 65-6, quoted in Peter Bell, *Timber and Iron* (St Lucia [Queensland] 1984), p 115, on the shrinking of shingles.

James Arnold, *The Shell Book of Country Crafts*, p 89, quoted Irving, 'First Australian Arch', pp 188-9. Get publication details [2.05 *Timber and Grass: Shingles*].

Ketteridge & Mays, p 122, quoted Irving, 'First Australian Arch', pp 188-9. Get publication details [2.05 *Timber and Grass: Shingles*].

'Log building on the Queensland gold fields' source not noted.

Palings of the Royal Victoria Theatre, Adelaide: J C Hawker, *Early Experiences in South Australia* (Adelaide 1899), pp 16-167, quoted in Kerr, 'An Exelent Coliney', p 122.

Peter Bell, 'An Early Timber Cottage at Burra' CHECK REF - AJHA?