

2.06 Thatch

thatching materials

grass houses

thatched roofs

thatched barns

rush or brush walling

cane

thatching materials

Thatching was of course a traditional English method, and for grass thatching rye straw was thought the best, but wheat, barley, oats and natural grass were all used.¹ Thatching with reed in particular was common to East Anglia and North Wales, though references to 'reed' in thatching can sometimes be misleading, for in West English usage this was the technical term for combed wheat straw - the stiff unbroken stalks for thatching which the thatchers carefully separated from the fodder straw.² John Wood called this 'haulm' or 'straw that has not been thrashed [threshed], but the sheaves of wheat first combed with an iron toothed comb made for that purpose, and cleared from all short straws, from weeds and grass, and then the ears cut off with a sharp sickle.' It was a little more expensive than threshed straw, but all the other expenses of laying were identical, and it could be expected to last twenty-five or thirty years, rather than only twelve or fifteen.³

In Ireland wheat straw was most favoured, but in some parts rye was grown specifically for thatching; rushes from poorly-drained ground were also quite widely used, as well as reeds in certain areas where they were available. Other materials used were heather, marron grass ['bent'] and flax.⁴

In the Australasian colonies wheat or other straw was most common, but both reeds and grass tree were used where they were available, and tohi⁵ and 'snow grass'⁶ have been referred to in New Zealand. Most Aboriginal uses of thatch-like material would seem to be too crude to have influenced European settlers, but Basedow illustrates a hut in the Arltunga area of Central Australia which, though irregular in form, is fairly homogeneously clad in

1 C F Innocent, *The Development of English Building Construction* (Cambridge 1916), p 191. See Wyatt Papworth [ed], *The Dictionary of Architecture* (London 1853-1892), sv Thatch, for a range of materials and forms used in Britain and elsewhere.

2 C B Allen, *Cottage Building* (London 1854 [?c 1845]), p 45; or, according to Innocent, *Development of English Building Construction*, p 192, 'reed' was the term for unthreshed straw prepared for threshing. According to Williams-Ellis, reed was the name used in Devonshire for straw which had been hand threshed with a flail specifically to preclude the stems being broken: Clough Williams-Ellis, *Cottage Building in Cob, Pisé, Chalk & Clay* (London 1919), pp 46-7.

3 John Wood, *A Series of Plans for Cottages or Habitations of the Labourer* (London 1806 [?1781]), p 18.

4 Alan Gailey, *Rural Houses of the North of Ireland* (Edinburgh 1984), pp 95-6.

5 F N Barker, *Station Life in New Zealand* (Auckland 1973 [1883]), p 110.

6 Martin Hill, *Restoring with Style* (Wellington 1985), p 7.

porcupine grass.⁷ This may well be a clue as to the roofing of the circular and other stone huts on the Arltunga goldfield, which will be discussed below. The thatching materials available to Aborigines before European settlement would have been limited, in the absence of cultivated grain crops and of tools which could conveniently cut standing plants in any quantity. However in Gippsland, Victoria, the Ganai are reported to have used the local tussock grass (possibly *Poa* species).⁸

Rush cutters were employed even at Port Jackson,⁹ and reed thatch was much used. The fact is commemorated in the name of Rushcutters Bay, and some of the first temporary stores were thatched, while others were shingled.¹⁰ J D Lang refers to reeds or coarse grass being used to thatch Andrew Lang's 'Dunmore' homestead in the Hunter Valley in 1826.¹¹ Reeds were used in Van Diemen's Land, where W T Parramore thatched his huts with them in 1823.¹² Reed thatched roofs were also used at the Sorrento settlement, Port Phillip, and in the General Orders for 27 November 1803 it was announced that all the available reeds might be needed for public purposes, and none were to be taken until the proposed use had been approved.¹³

The marines were at first obliged to put thatched roofs even on their tents,¹⁴ but these may have been of grass rather than reeds. To thatch the gaol in Sydney in 1797 Governor Hunter was obliged to levy twenty-four large bundles of grass from each household, and fifty bundles from the civil and military officers.¹⁵ Many later views of Sydney show thatched roofs, but it is of course impossible to deduce the nature of the thatching material. The first depot building at Bathurst by 1815 was 'very neatly made and well thatched',¹⁶ probably with native grasses or reeds, as cultivation would not have been much advanced at this stage, and in 1832 Barron Field noted straw or reed thatch as the normal roofing in Bathurst due to the lack of timber for shingles.¹⁷ David Burn refers to the use of long grass (necessarily indigenous grass at this stage) to thatch a typical settler's first hut in Van Diemen's Land.¹⁸

7 Herbert Basedow, *The Australian Aboriginal* (Adelaide 1925), plate XV(2).

8 Coral Dow, 'Tea Tree and Reeds', *Gippsland Heritage Journal*, 21 (March 1997), p 3.

9 Two men collecting rushes for thatch were found on 30 May 1788 to have been killed by the Aborigines: Arthur Phillip, *Voyage of Governor Phillip to Botany Bay* (London 1789), p 130. See also 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 50.

10 Tench, *Sydney's First Four Years*, p 71.

11 J D Lang, *A Historical and Statistical Account of New South Wales* (2 vols, 1st ed, 1834), II, p 123.

12 K R Steiglitz, *A Short History of Ross with some Tales of the Pioneers* (Evandale [Tasmania] 1949) pp 34-5.

13 John Shillinglaw [ed], *Historical Records of Port Phillip: the First Annals of the Colony of Victoria* (Melbourne 1879), p 46.

14 David Collins [ed Maria Collins, James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 23.

15 *Historical Records on New South Wales*, III, p 209, quoted in Peter Bridges, *Foundations of Identity* (Sydney 1995), p 35.

16 H C Antill, 'Journal of an Excursion over the Blue or Western Mountains, &c', in George Mackaness [ed], *Fourteen Journeys over the Blue Mountains of New South Wales 1813-1841* (Sydney 1966), p 83.

17 Barron Field, 'Journal of an Excursion Across the Blue Mountains of New South Wales, October, 1822', in Mackaness, *Fourteen Journeys over the Blue Mountains*, p 172.

18 David Burn, *A Picture of Van Diemen's Land* (Hobart 1973 [1840-41]), p 172.

Reeds were an obvious choice for the later settlers at Port Phillip, who could collect their thatching reeds downstream from Melbourne among the ti-tree swamps.¹⁹ The first buildings in Melbourne belonging to Fawkner's party were thatched by the crew of the *Enterprise* on 2 September 1835,²⁰ while Batman not long afterwards built a reed thatched building at the corner of King and Bourke Streets (which subsequently became the lock-up).²¹ 'Garryowen' states that at the end of 1836 the twenty-seven buildings which then constituted Melbourne were all roofed either with the long reed from the Yarra or with bark. He specifically mentions Halfpenny's house as one in which reed was used, and he also names reed as one of the roofing materials typically used with wattle and daub construction.²² Hugh Murray used a reed thatch at Lake Colac,²³ and at 'Trawalla' the first structure put up in 1839 to house the stores was simply a reed thatched roof on posts.²⁴ In Gippsland (eastern Victoria) reeds were used from at least 1844, being mainly *Phragmites australis* (common reed) or sometimes *Typha domingensis* (bulrush or cumbungi).²⁵

Rush thatch was used in Western Australia by the Bussells at their first settlement at Augusta, Cape Leeuwin, in 1830.²⁶ J F Wollaston used 'sedge' for his St Mark's Chapel, Picton, of 1841, as will appear below, and the same material was presumably used for the thatched roofs of the Clifton family's cottages at the same place.²⁷ 'Flag grass' is said to have been used to thatch the first buildings in Hobart,²⁸ and reeds were used for thatching at the Port Essington settlement in Northern Australia.²⁹

The terms 'reed', 'rush', 'sedge' and 'flag' are used confusingly for a range of plants growing in water or in damp places, especially in South Australia, but they are far from interchangeable. Indeed Dr Charles Everard carefully distinguished the 'reeds' used to roof his hut at Holdfast Bay [Glenelg] from the 'flags cut in the lagoon' which were used for its walls.³⁰ His son William referred to the reeds as being 'similar to those you occasionally see in England', and though he did not explain the 'flags', he said that the walls in which they were used were about six inches [150 mm] thick.³¹ They were probably some type of rush, and not literally a member of the Iris family. Robert Gouger reported that at Holdfast Bay there was plenty of long sedge grass, which was used for thatching,³² but when he built his

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- 19 Richard Howitt, *Impressions of Australia Felix, during four years residence in that Colony, &c* (London 1845), p 85.
- 20 **** Fawkner, Reminiscences, ref the diary of Captain Hunter.
- 21 Liardet ms.
- 22 'Garryowen' [Edmund Finn], *The Chronicles of Early Melbourne* (2 vols, Melbourne 1888), I, pp 8-9.
- 23 See C E Sayers's notes to T F Bride [ed, re-edited C E Sayers], *Letters from Victorian Pioneers* (Melbourne 1969 [1898]), p 101.
- 24 Memorandum of Robert Hamilton, November 1896, quoted in Hugh Anderson, *The Flowers of the Field: a History of Ripon Shire* (Melbourne 1969), p 220.
- 25 Coral Dow, 'Tea Tree and Reeds', *Gippsland Heritage Journal*, 21 (March 1997), pp 3-4.
- 26 E O G Shann, *Cattle Chosen* (London 1926), p 19.
- 27 J R Wollaston [ed C A Burton & P U Henn, *Wollaston's Picton Journal (1841-1846)* (Nedlands [Western Australia] 1975), p 19.
- 28 J B Walker, *Early Tasmania* (Hobart 1963), p 71, quoted in John Archer, *Building a Nation* (Sydney 1987), p 32.
- 29 Peter Spillett, *Forsaken Settlement* (Melbourne 1972), pp 90, 91.
- 30 Charles Everard to his sister, 29 May 1837 (SA Archives A290 B3), quoted in Penelope Hope, *The Voyage of the Africaine* (South Yarra [Victoria] 1968), p 133.
- 31 William Everard to his relations, [April 1838] (SA Archives A322 B4), quoted in Hope, *Voyage of the Africaine*, p 138.
- 32 Quoted in Hope, *Voyage of the Africaine*, p 124.

own hut he roofed it with 'a kind of reed, 10 feet [3 m] long with long wide leaves'.³³ In Adelaide William Finlayson hired a thatcher to construct a roof of reeds in 1837,³⁴ and complete rush huts were widely used, as will appear below.

Another material used for thatching in the first days at Sydney cove was *Xanthorrhoea* or grass tree [black boy],³⁵ referred to by David Collins as 'gum rush'.³⁶ Whether or not this was so around Sydney, in Western Australia it appears that the Aborigines had previously been using it for their own huts - if we may so interpret H W Bunbury's reference to 'Zanthoriza'.³⁷ By the 1860s it seems to have been in general use amongst West Australian settlers as a thatching material. The Reverend Edward Millett and his wife lived in a house thatched with blackboy, and used it for most of the outbuildings which they constructed. Janet Millett describes the plant itself, with its spreading rush-like top and the oldest foliage, of a faded brown, hanging down the side. It was this old foliage that was used for thatching, but the disadvantage was that it was highly inflammable.³⁸ On some of their huts on the Mornington Peninsula, Victoria, the McCraes used a 300 mm thick thatch of this plant.³⁹

There is one mention of the use of straw for thatching at Sydney in 1789, which, Irving points out, is too early a date for a crop of wheat to have been harvested,⁴⁰ so it is probably a mistaken reference to the use of hay from native grasses. Similarly, Peter Cunningham refers to the use of 'blady grass' for thatching in New South Wales in the 1820s.⁴¹ 'Dried grass' was used to thatch Edward and Fred Ogilvie's two huts on the Clarence River in northern New South Wales.⁴²

In Van Diemen's Land tussock grass was used in about 1822 to thatch George and Louisa Meredith's house at Waterloo Point [Swansea] on the east coast.⁴³ In 1837 the Hentys used thatch at Portland, whether of grass or reed is not clear,⁴⁴ but in 1840 John Robertson thatched his hut at Wando Vale with 'tail-grass out of the waterholes', as a recent bushfire had destroyed the grass on his run.⁴⁵ Rolf Boldrewood used 'the tall, strong tussock-grass, then so abundant' to thatch his own buildings.⁴⁶ C J Griffith in 1845 referred to 'a kind of

33 Quoted in Hope, *Voyage of the Africaine*, p 126.

34 Stefan Pikusa, *The Adelaide House* (Netley [South Australia] 1976), p 7.

35 Watkin Tench [ed L F Fitzhardinge], *Sydney's First Four Years* (Sydney, 1961), p 176; and Phillip, *Voyage of Governor Phillip*, p 60.

36 David Collins [ed Maria Collins & James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 23. For the identification of 'gum rush' with grass tree, see Robert Irving, 'The First Australian Architecture' (MARCH, University of New South Wales, 1975) pp 84, 85.

37 H W Bunbury, *Early Days in Western Australia* (1930), pp 72-6, cited in A C Staples, *They Made their Destiny* (Harvey [Western Australia] 1979), p 13.

38 [Janet] Millett, *An Australian Parsonage* (London 1872), pp 45, 69, 94.

39 Hugh McCrae [ed], *Georgiana's Journal* (Sydney 1966 [1934]), p 209 [p 154 in the original].

40 Robert Irving, 'The First Australian Architecture' (MARCH, University of New South Wales, 1975) p 85.

41 Peter Cunningham, *Two Years in New South Wales* (2 vols, London 1827), II, p 161.

42 G Farwell, *Squatter's Castle* (Melbourne 1973), quoted in Stone & Garden, *Settlers and Squatters*, p 41.

43 Vivienne Rae-Ellis, *Louisa Anne Meredith: a Tigress in Exile* (Hobart 1990 [1979]), pp 53-4.

44 Marnie Bassett, *The Hentys* (2nd ed, Melbourne 1955 [1954]), p 402.

45 Robertson to La Trobe, 26 September 1853, in T F Bride [ed], *Letters from Victorian Pioneers*, p 167.

46 'Rolf Boldrewood' [T A Browne], *Old Melbourne Memories* (Melbourne 1896 [1884]), p 46.

wire grass' with which many huts in country areas were thatched.⁴⁷ In 1824 an unspecified local grass was used for thatching at the Redcliffe settlement, Moreton Bay,⁴⁸ soon to be abandoned in favour of the present site of Brisbane.

Cane grass, which was used in Queensland, grew in swamps and clay pans, in clumps from 2.5 to 3 metres high, and would be cut, carted and tied in place whilst it remained soft.⁴⁹ It was used at Fort Grey homestead in the south-west,⁵⁰ and at 'Mooraberrie', where it was found not far from the homestead, it was used to roof the verandah in 1906.⁵¹ It was similarly used in the Riverina, where it grew on the banks of a number of rivers and lakes, and where suitable bark for roofing was often unavailable. Some earlier buildings were made entirely of this material, as will be discussed below, whilst examples of thatching in it have survived to recent years.⁵² Another thatching material in the north of Australia was spinifex. It was used in the Withnell house at Roebourne, Western Australia, in 1864, and in the 1870s on some of the buildings at Cossack.⁵³ In western Queensland both spinifex and lignum were in common use.⁵⁴ At a later date thatch was more commonly made from wheat straw, as in western Victoria, or from other crops such as rye, as was the case in 1853 at 'Avonhead', Riccarton, New Zealand.⁵⁵

grass houses

Not just roofs but complete buildings were made from reeds and other thatching materials. Some early British dwellings in Natal in the 1820s, built of reeds, were said to have 'resembled a house roof placed on the ground, with one gable-end missing to provide an entrance',⁵⁶ and similar structures were found in Australia. The first illustration of a European building in what is now Victoria shows a sealer's hut in Westernport Bay in the gable form of a mia mia or simple tent. It was built out of rushes such as were long afterwards used for thatching on French and Phillip islands. The structure was seen by Captain Dumont D'Urville's party on their visit in 1826, and was subsequently published in his *Voyage de la Corvette l'Astrolabe*.⁵⁷

47 Charles Griffith, *The Present State and Prospect of the Port Phillip District of New South Wales* (Dublin 1845), p 55.

48 Lieutenant Miller to Lieutenant-Colonel Balfour, 25 April 1826, Tasmanian State Archives ref CSO 1/371/8476, quoted in J G Steel, *Brisbane Town in Convict Days 1824-1842* (St Lucia [Queensland] 1975), p 37.

49 A M Duncan-Kemp, *Our Sandhill Country* (2nd ed, Sydney 1934), pp 21-2.

50 E & D Baglin, *Australian Chimneys and Cookhouses* (Sydney 1979), pp 16-17.

51 A M Duncan-Kemp, *Our Sandhill Country* (2nd ed, Sydney 1934), pp 21-2.

52 Peter Freeman, *The Homestead: a Riverina Anthology* (Melbourne 1982), p 75. Freeman cites examples of cane grass roofing as 'Boondarra' homestead and the stables at 'Oxley' and 'Mossgiel', of which he illustrates the latter.

53 N E W Taylor, *A Saga of the North West: Yeera-Muk-A-Doo* (Fremantle 1987 [1980]), pp 41, 110.

54 Phil Barnett, *A Policeman's Progress* (Brisbane 1988), p 55.

55 Paul Pascoe, 'The Study of the Early Buildings in the Canterbury Settlement, &c', (thesis, apparently Wellington 1935 [copy in General Assembly Library, Wellington]), p 53.

56 Brian Kearney, *Architecture in Natal* (Cape Town 1973), p 1

57 *** Jules Dumont D'Urville, *Voyage de la Corvette l'Astrolabe: exécuté par ordre du Roi, pendant les années 1826, 1827, 1828, 1829, sous le commandement de M. J. Dumont D'Urville, capitaine de vaisseau* (13 vols, Paris 1830-1835), I ...

Such a hut resembles a tent, and in New Zealand Samuel Butler referred to the 'thatched tent' or V hut as 'a roof, in shape of course like the letter V, set down without any walls upon the ground - mine is 12 feet long by 8 feet broad [3.6 x 2.4 m].'⁵⁸ It was made with rafters of black bean, and thatched with raupo.⁵⁸ At Canterbury, as will appear, it is claimed that sails draped over poles, in the same inverted V shape, were later replaced with thatch. Some reed thatched huts of this shape were seen at the fishing village of Paynesville, Gippsland, in 1879, and Coral Dow also infers that they result from the practice of building a ti tree frame directly over a tent.⁵⁹ This may be rash, firstly because this is the simplest way to build a hut, regardless of any tent connection; secondly because the better tents themselves had side walls; and thirdly because this sort of structure was frequently used in cases where there is no reason to believe that a tent had preceded it. If a specific source is to be adduced it might equally well be the V-hut form commonly built in bark, and in fact we have seen that Janet Millett referred to both bark and thatch huts of this form.

David Burn referred to the first house of the settler in Van Diemen's Land as a 'brush hut or breakwind' made from the boughs of trees, but sometimes roughly thatched with long grass.⁶⁰ He also refers to a 'wigwam' constructed by travellers in the bush for a few nights' stay, based on a fallen tree trunk:

against this, long poles were reared, in a sloping position, to serve as rafters ... Gorse and brushwood were next interwoven with the fabric. Then came a thick layer of boughs and long grass, until one end and the canopy were tolerably secure against both wind and rain; the other extremity (being the almost invariable *lee* one) was left open for a door ...⁶¹

In contrast, a hut built by the bushranger Brady was more like the V-huts of the other colonies, consisting of a ridge pole running between the forks of two trees, rafters sloping against in at either side, and a thatching of reeds or grass (also serving as camouflage).⁶²

In Western Australia, apart from Janet Millet's reference, we have a later illustration showing the New Norcia settlement as it was in 1847, including a large thatched V-hut.⁶³ Many buildings which were not of the V-hut form also has both walls and roof made of thatching materials. The first church at Perth, built in 1829-30, was described as 'composed of reeds and wood',⁶⁴ and commonly known as the rush church: it was removed to the whaling station at Carnac Island before the court house was built on the site in 1837.⁶⁵ In

58 C P Murphy, 'The Fencible Cottage: Soldier Housing' (MArch, University of Auckland, 1975), p 63, quoting from P M Marling, *Samuel Butler at Mesopotamia* (Wellington 1960), p 17.

59 Coral Dow, 'Tea Tree and Reeds', citing a report in the *Illustrated Australian News*, 7 June 1879, pp 85, 90, the illustration from which is reproduced as the endpaper of this issue of the *Gippsland Historical Journal*.

60 Burn, *Picture of Van Diemen's Land*, p 112.

61 Burn, *Picture of Van Diemen's Land*, p 133.

62 Burn, *Picture of Van Diemen's Land*, p 142.

63 Battye Library 77606P, from Bishop Rosendo Salvador's *Memoirs*, reproduced in David Hutchison [ed], *A Town like No Other* (South Fremantle [Western Australia] 1995), p 45.

64 Barbara Chapman [ed], *The Colonial Eye* (Perth 1979), p 80, quoting 'The Diary of Mary Ann Friend', *Royal Western Australian Historical Society Journal*, I, part X, 1931, p 7.

65 John White, 'Building in Western Australia 1829-1850', in Margaret Pitt-Morison & John White [eds], *Western Towns and Buildings* (Nedlands [Western Australia] 1979), p 85.

December 1831 G F Moore with a party of twenty-one settlers crossed the Darling Scarp, and en route improvised shelters of blackboy (*Xanthorrhoea*).⁶⁶

In South Australia W H Leigh saw four or five huts 'built of bushes' at Kingscote, Kangaroo Island, in April 1837.⁶⁷ ⁶⁸ As we have seen, Dr Everard's hut at Holdfast Bay (Glenelg) in 1836 was thatched with reeds, and in the same place Governor Hindmarsh, after his arrival in December 1836, was forced to occupy a rush hut until the site of the settlement had been determined.⁶⁹ Robert and Mary Thomas built a rush hut to supplement their tents, and she referred to 'the principal surveyor [Light] as occupying another.'⁷⁰ In 1838, after Adelaide had been laid out, there were still 'a few reed huts' at Holdfast Bay.⁷¹ In Adelaide itself there were settlers' huts of which 'both the walls and the roof ...were composed of mud and grass, others of rushes and brushwood', and Stephen Hack wrote in the earliest days that almost all the settlers but himself were living in rush huts or tents.⁷² Indeed Robert Cock, a Scottish settler at Adelaide, occupied a house which was described as 'a sort of thatched roof'.⁷³ The [Anglican] Colonial Chaplain, C B Howard, built his own first church of rushes,⁷⁴ and the first Wesleyan Methodist services were held in 1837 in a small reed hut on the banks of the Torrens.⁷⁵

G S Kingston described better quality but nevertheless temporary dwellings 'built principally of reeds, both walls and roof, and when covered with an outer layer of hay about three inches [75 mm] thick, make a very warm, comfortable abode',⁷⁶ and in the German settlement of Klemzig outside Adelaide the humbler dwellings were said in 1839 to be of brushwood and thatch.⁷⁷ H B Hughes of 'Bundaleer' station had in 1843 a hut with a door made of reeds, and a thatched roof, probably of reeds, while his shearing shed was also thatched in reeds and thatched hurdles were put up as necessary to screen its walls.⁷⁸ At 'Anlaby' station there survived into the age of photography a building claimed to be one of the original 1838 huts. It was a timber-framed hip-roofed building with posts at less than a metre spacing. Between these ran light horizontal members at about 250 mm intervals, and vertically on the face of these ran light stems - perhaps reeds - over which was a coat of

66 J M R Cameron, 'The Colonization of Pre-Convict Western Australia' (PhD, University of Western Australia, 1975), p 205, citing Moore Diary, Western Australian Archives 236A, and Martin Doyle [ed], *Extracts from the Letters and Journals of George Fletcher Moore* (London 1835), p 95.

67 W H Leigh, *Travels and Adventures in South Australia 1836-1838* (London 1839 [facsimile 1982]), p 60.

68 H M Tolcher, *Innamincka* (Innamincka [South Australia] 1990), p 10.

69 E K Thomas [ed], *The Diary and Letters of Mary Thomas* (1836-1866) (Adelaide 1915), quoted in John Hale [ed], *Settlers* (London 1950), p 171.

70 Mary Thomas, quoted in Hope, *Voyage of the Africaine*, p 119.

71 J W Bull, *Early Experiences of Life in South Australia* (2nd ed, London 1884), p 52.

72 Stephens, *Land of Promise*, pp 108, 183. Morphett wrote to Samuel Dendy on 6 December 1837 of the passing of the temporary dwellings from the parklands: 'these are for the most part small, and built of reed, so that there will be no great sacrifice of labour and capital. George C Morphett, *Life and Letters of Sir John Morphett* (Adelaide 1936), p 67; also quoted by Stephens, *op cit*, p 109.

73 D Pike, *Paradise of Dissent* (Melbourne 1957), p 182.

74 Mary Thomas, quoted in Hope, *Voyage of the Africaine*, p 146.

75 Bull, *Life in South Australia*, p 109.

76 G S Kingston to G F Angas, 25 December 1837, Angas Papers, South Australian Archives [transcript kindly supplied by Don Langmead].

77 *South Australian*, 1 May 1839, quoted in Archer, *Building a Nation* (Sydney 1987), p 53.

78 Kerr, 'An Exelent Coliney', pp 144-5.

some sort of daub or plaster.⁷⁹ At Innamincka, in the north of South Australia, the hotel built in 1885 had a much more primitive outbuilding, a bath house made of the local polygonum bush.

At the Port Phillip settlement the most primitive dwellings built for European use were the 'hovels resembling thatched roofs' in which Backhouse discovered some settlers living in 1837,⁸⁰ and Captain Lonsdale's notes refer to the two-roomed thatch house of John Hyland and to the mud and thatch house of Thomas Manifold.⁸¹ Away from Melbourne W T Mollison was quite specific in stating that his party lived in 'reed mia-mias' on the Coliban in 1838,⁸² and at 'Dunmore' station in 1843 one hut was said to be made of 'plastered thatch'.⁸³ There is one reported instance of a rush door in the Port Phillip District, on a hut visited by Katharine Kirkland in 1839.⁸⁴

Most of the buildings at the Port Essington settlement in Northern Australia, and were walled as well as roofed in reeds.⁸⁵ There is not much evidence of such structures in New South Wales, but *Mann's Emigrant's Guide to Australia* of 1849 describes the settler engaged in corn growing in New South Wales as typically starting up in either a rush hut or a tent,⁸⁶ and an unidentified photograph from later in the century shows farm buildings of a conventional gable-roofed shape, but with the roof and walls both thatched.⁸⁷

thatched roofs

It is quite difficult to determine whether references to thatching mean properly constructed thatched roofs, as opposed to some of the more *ad hoc* methods discussed below, but some early views of Sydney show examples of true thatching, including one with the ladder-like structure on the roof which has been discussed in connection with bark roofing.⁸⁸ Evan Evans's rented farm near Dapto in 1852 had primitive buildings but 'very neat' thatching,⁸⁹ possibly deriving from his Devonshire background, and neat thatched roofing was to be seen on a selector's log panel homestead in the Darling River.⁹⁰ In Victoria a neat thatched roof with slender ledgers a little way down from the ridge can be seen in a photograph of what may be Samuel Anderson's house at the Bass River, Westernport, built some time

79 Mortlock Library, B 14910.

80 James Backhouse, *Narrative of a Visit to the Australian Colonies* (London 1843), p 501.

81 R V Billis & A S Kenyon, *Pastures New* (Melbourne 1930), pp 38-41.

82 W T Mollison to La Trobe, 22 August 1853, in Bride, *Letters from Victorian Pioneers*, p 257.

83 C H Macknight's Dunmore journals, LTL, vol I, quoted by Kerry Jordan, 1999.

84 Katharine Kirkland, *Life in the Bush* (London 1845), quoted in Hugh Anderson, *Flowers of the Field*., pp 181-2.

85 Spillett, *Forsaken Settlement*, p 90.

86 ****Mann's Emigrant's Guide to Australia*, p 27.

87 Photo, Mitchell Library, reproduced in D L Stone & D S Garden, *Settlers and Squatters* (Sydney 1978), pp 12-13.

88 Watercolour by Edward Dayes, 'Brickfield Hill and village on the High Road to Parramatta', 1796; also an engraving from it by J Heath entitled 'The Brickfield-hill or High road to Parramatta. August 11, 1796' (the latter published in Collins, *Account of the English Colony*), in Tim McCormick et al, *First Views of Australia 1788-1825* (Chippendale [New South Wales] 1987), pp 80-1.

89 Samuel Mossman & Thomas Banister, *Australia Visited and Revisited* (London 1853), p 272.

90 Photograph in the Mitchell Library, Sydney, reproduced in Stone & Garden, *Settlers and Squatters*, p 41.

after he settled in 1835.⁹¹ This is unsurprising, since Anderson as a pioneer wheat grower and would have had suitable straw to hand.

In Perth, in March 1832, G F Moore complained that two of his men had spent nearly a month in 'Looking for thatch and putting it on two houses'.⁹² There were a number of examples of thatched roofing in Western Australia,⁹³ but only a limited amount is known of the materials used. From the 1840s on thatching of one sort or another seems to have been a common roofing material in Australind and nearby areas,⁹⁴ and it persisted in the colony even when it was being displaced by more industrial products in the east. A large thatched roof with a ledger near the ridge can be seen in a photograph of the original homestead at 'Alverstoke', Western Australia.⁹⁵ At the New Norcia mission the orphanage, apparently of 1860, had a hipped roof with ledgers along both sides of ridge, at the eaves, and down either side of each hip, these last splaying apart as they descended, and stitched across in zig-zag fashion across the hip.⁹⁶

J F Wollaston recorded cutting 'sedge' for his church at Picton, and also gave the name of his thatcher, perhaps the first of the craft to be so recorded in Australia - one Hymms, from Horseheath. After a considerable quantity of sedge had been cut it was found to be unsuitable 'except for gutters' because of its sharpness when handled, and Wollaston and his family began cutting eight hundred bundles of rushes. The roof was finally completed 'in a most superior manner'.⁹⁷

In South Australia there were many who still preferred a thatched roof even after seven years of settlement, when both thatch and canvas were being supplanted by shingles and slates.⁹⁸ In fact many early settlers roofed their dwellings with an 80 mm layer of hay.⁹⁹ 'Angmering House' at Enfield, begun in about 1840, appears in a late photograph with extensive and well thatched roofs,¹⁰⁰ and the German settlers brought their own tradition of thatching. G F Angas's view of the German village of Bethany shows a neatly thatched roof on almost every building. More primitive thatched structures were built on the mining fields, as in the case of 'Chipsall Villa' at Marble Bar in 1898, where a crude straw thatching is secure by lines of irregular ledgers running lengthwise, at right angles to the slope.¹⁰¹ Examples in the District of Tumby Bay, South Australia, have been broadly assigned to

91 Thomas Horton & Kenneth Morris, *The Andersons of Western Port* (Bass [Victoria] 1983), pp 44-5 & illustration, p 35.

92 G F Moore, *Diary of Ten Years Eventful Life of an Early Settler in Western Australia* (London 1884), quoted in John Hale [ed], *Settlers* (London 1950), p 163.

93 For example the cottages shown in a pencil sketch by Elizabeth Irwin, of the 1840s, Batty Library: reproduced in Chapman, *The Colonial Eye*, p 84.

94 Staples, *They Made their Destiny*, p 226.

95 Photograph in the Batty Library, Perth, reproduced in Stone & Garden, *Settlers and Squatters*, p 6.

96 Batty Library 74609P, reproduced in Hutchison, *A Town like No Other*, p 62. This is captioned as the first St Joseph's Orphanage, but the only reference to such a building in the text is, p 63, to the 'slab and clay' structure which replaced the original St Mary's Orphanage in 1860.

97 A Burton [ed], *Wollaston's Picton Journal* (Nedlands [Western Australia] 1975), pp 91-2, 93, 96.

98 J F Bennett, *Historical and Descriptive Account of South Australia &c* (London 1843), p 18.

99 Stephens, *Land of Promise*, p 109.

100 D I Stone & D S Garden, *Settlers and Squatters* (Sydney 1978), p 27.

101 Photo, Batty Library, Perth, reproduced in Susan Hunt, *Spinifex and Hessian* (Nedlands [Western Australia] 1986), p 30.

dates between 1884 and 1945.¹⁰² There were also 'neatly thatched roofs' on the first buildings at Palmerston [Darwin] - settled from South Australia in 1870,¹⁰³ and by the 1880s thatch had been used for roofing at the Elsey station in Central Australia.¹⁰⁴

Some of the first huts at Sydney had thatched roofs covered in clay, though the weight caused a number of them to fail during heavy rain.¹⁰⁵ The idea would have derived from a method quite common in Scotland, where, according to a description in 1834, 'a regular stratum of common straw thatch' was laid, 'then a strong mortar, well beat up, and mixed with cut straw, is laid over the thatch with a broad trowel'.¹⁰⁶ This is said to have been the practice mainly on the east side of Scotland.¹⁰⁷ It seems to have been taken up especially in Tasmania, for at Geelong, in Victoria, the roof of Foster Fyans's hut was specifically described as being constructed 'after the Van diemen's land fation [*sic*], grass covered outside with clay to prevent blowing off and taking fire'.¹⁰⁸

Apart from buildings actually made of thatch as already referred to, Lonsdale noted David Stead's hut in Melbourne as having a thatched roof,¹⁰⁹ but by the time of the 1846 census Melbourne's age of thatch and bark was over, and only forty-seven buildings were roofed in either material. At the end of 1849 it was prohibited (in the central area) under the *Melbourne Building Act*. In the suburbs and the country it persisted much longer. At the Clyde Company's station on the Leigh (later 'Golf Hill'), George Russell had a hut thatched in long grass in 1839.¹¹⁰ Rolf Boldrewood described thatched buildings at Port Fairy in 1840, and the thatching at Yambuk cattle station, which was placed over rafters consisting of stronger, slender ti-tree saplings.¹¹¹ At the nearby 'Dunmore' station in 1843 a building was roofed in locally gathered thatch bound in greenhide.¹¹² The Glenormiston head station was 'thatched with long Grass put on about one foot deep. It makes a very durable and pretty roof with projects abt. 3 feet from the side Walls.' In fact, according to Margaret Kiddle, the thatched roof was the most popular type among the squatters of the Western District, except that the store was often shingled as a precaution against fire.¹¹³

E and D Baglin illustrate the remaining building of the Fort Grey homestead in south-west Queensland, thatched neatly in cane grass,¹¹⁴ and at 'Mooraberrie', where it was found not far from the homestead, it was used to roof the verandah in 1906.¹¹⁵

102 Danvers Architects, *Heritage of the Eyre Peninsula* [South Australian Department of Environment and Planning] (no place, 1987), pp 315, 317.

103 Harriet Daly, *Digging, Squatting, and Pioneering Life in the Northern Territory of South Australia* (London 1887), p 48.

104 Daly, *Digging, Squatting, and Pioneering*, pp 340-1.

105 David Collins [ed Maria Collins & James Collier], *An Account of the English Colony in New South Wales* (Christchurch 1910 [1798 & 1802; 1804]), p 23.

106 George Smith, *Essay on the Construction of Cottages suited for the Dwellings of the Labouring Classes &c* (Glasgow 1834), p 19.

107 Alexander Fenton & Bruce Walker, *The Rural Architecture of Scotland* (Edinburgh 1981), p 67.

108 James Riley to his mother, 16 December 1839, quoted P L Brown, 'The Young James Riley' *Victorian Historical Magazine*, XXXI, 44 (May 1961), p 182.

109 R V Billis and A S Kenyon, *Pastures New* (Melbourne 1930), p 41.

110 William Russell to his relatives, 28 August 1839, in P L Brown [ed], *Clyde Company Papers. II* (London 1952), p 244.

111 'Rolf Boldrewood' [T A Browne], *Old Melbourne Memories* (Melbourne 1896 [1884]), pp 45, 223.

112 C H Macknight's Dunmore journals, LTL, vol I, quoted by Kerry Jordan, 1999.

113 Kiddle, *Men of Yesterday*, p 55, quoting Niel Black's journal.

114 E & D Baglin, *Australian Chimneys and Cookhouses* (Sydney 1979), pp 16-17.

The forms of thatching varied not only with the material, but with the racial origin of the thatchers. At Arthur's Seat (notwithstanding the use of *xanthorrhoea* on some of the McCraes' buildings), on at least one¹¹⁶

A council was held as to the right roofing material and thatch being decided upon a quantity of fresh wheaten straw the result of the first crop from our paddock was brought in drays to the spot. Our tutor charged himself with the laying of it in the manner practised in the Isle of Skye of which he was a native. This may be described as making the straw into wisps or bunches of uniform size and interweaving them in and out between the battens. This being done the entire roof was thickly overlaid with swamp-rushes well secured by pegs and cords, finally over all were laid horizontally & parallel with the walls and roof tree on either side two long peeled saplings which strongly pegged down afforded completeness to the shelter.

From the 1850s thatching was perpetuated in Victoria mainly in the settlements established by German emigrants from South Australia.¹¹⁷ It seems likely that wheat straw was the usual material, though the *Leader* in 1874 described selectors' houses on the Western Plains as having excellent roofs of thatch, 'a superior grass for the purpose growing plentifully in the district'.¹¹⁸ Thatch was similarly used by the Germans who settled in the late 1860s at Walla Walla, New South Wales, where Father Klemke's slab house had a thatched roof.¹¹⁹

Nor were the sources solely European. The huge thatched roof of a plantation house at Ingham, as photographed in the 1880s,¹²⁰ seems likely to have been inspired by Fiji. Another giant pyramidal thatched roof appears on a building at 'Newcastle Waters' in the Northern Territory,¹²¹ and there the material seems to have been associated with the Chinese settlers. In 1889 one Denny contrasted the galvanised iron homestead of the European settler with the 'grass-thatched Chinese mansion'.¹²² Even in the twentieth century the meat house and woolshed at Old Andado homestead, both of which survive, were roofed in thatch.¹²³

thatched barns

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- 115 A M Duncan-Kemp, *Our Sandhill Country* (2nd ed, Sydney 1934), pp 21-2.
 116 Brenda Niall, *Georgiana* (Melbourne 1994), p 178, quoting G G McCrae, 'Experiences not Exploits', vol 2.
 117 Kiddle, *Men of Yesterday*, p 147.
 118 *Leader*, 28 January 1874, quoted in Y S Palmer, *The Track of the Years* (3rd ed, St Arnaud [Victoria] 1980 [Melbourne 1955]), pp 238-9.
 119 Wegener [ed], *History of the Klemke Family*, p 37 quoted in Peter Freeman, *The Homestead: a Riverina Anthology* (Melbourne 1982), p 75.
 120 Photograph in the Fryer Library, reproduced in John Archer, *Building a Nation* (Sydney 1987), p 105.
 121 Unsources photograph in the set *Punkahs and Pith Helmets* [Northern Territory Department of Education] (Winellie [Northern Territory] 1983 [1982], no 6.
 122 *Australasian Builder & Contractor's News*, 20 April 1889, p 364.
 123 Photographs provided by Dr Angela Hass, 1998.

It is necessary to distinguish the traditional European and other thatching, regularly laid and trimmed, from the more primitive specimens which more commonly survive today. The most primitive form of early thatching was that described by Robert Dawson at Port Stephens, New South Wales, where, when a store was built for the Australian Agricultural Company in 1826, 'bearers were thrown across the building, and a stack of grass built on them, protected by a thatch of the same materials, like a common hay-stack.¹²⁴ This was meant to be a temporary measure until a more durable roof could be built, but it was far from unique.

S T Gill's illustration of shearing in the vicinity of Adelaide, in about 1840-42, shows the shearers working under a lightweight skillion structure of rough poles carrying a very low pitched roof of scanty thatch - clearly a shelter from the sun, rather than a watertight roof.¹²⁵ Low pitched thatched barns of a neater character, commonly with slab walls and naturally forked posts to take the beams, were common in the Barossa Valley of South Australia, and were especially associated with German settlement.¹²⁶ Such barns occur elsewhere in South Australia,¹²⁷ and very widely in the Wimmera area of Victoria, which is a Germanised area largely settled from South Australia. They extend less prolifically into the central goldfields of Victoria, and further east, and even into New South Wales.¹²⁸ In later examples wheat straw is heaped almost at random on a low pitched roof, and held down with wire netting.

These buildings can be compared with the barns of Ukrainian settlers in western North Dakota in the early twentieth century. The roofs are comparably low-pitched, though the structure below differs in that the poles are not naturally forked trunks and the sides are neither open nor clad in slabs, but are of other materials, including lathing. Straw roofed animal shelters are also found in Anglo-American areas of south-western North Dakota, and in other parts of the Western United States,¹²⁹ where it is not clear that there is any specifically Ukrainian or German connection. The most relevant British connection is in the method of roofing known as 'rope thatch' because the straw is held in place by a coarse network of ropes (made out of heather or straw) which are tied at the eave or else hand over the eave with stones tied on as weights.¹³⁰ Some of the Australian examples approach this character. Rope thatch is also found in Scotland, and even thatch held down by wire weighed with stones,¹³¹ a method relevant to both bark and thatch roofs in late nineteenth century Australia.

124 Robert Dawson, *The Present State of Australia* (London 1830), pp 27-8.

125 This is 'November' in Gill's series of the months and seasons, NLA.

126 Gordon Young et al, *The Barossa Survey* (2 vols, Adelaide 1977), I, p 107, where the Schulz barn at Bethany is instanced, and II, p 154, for a drawing of the Polst barn at Light Pass, by H Wirthensohn.

127 D H Berry & S H Gilbert, *Pioneer Building Techniques in South Australia* (Adelaide 1981), p 9, illustrate a thatched shed at 'Stone Hut', Leura; Danvers Architects, *Heritage of the South East* (Adelaide 1984), no page, sv Tatiara, illustrate the thatched shearing shed at Clayton Farm near Bordertown.

128 Unidentified photograph in Stone & Garden, *Settlers and Squatters*, pp 30-31.

129 Christopher Martin, 'Skeleton of Settlement', in Thomas Carter & B L Herman, *Perspectives in Vernacular Architecture, III* (Columbia [Missouri] 1989), p 95.

130 C F Innocent, *The Development of English Building Construction* (Cambridge 1916), pp 201-5.

131 Alexander Fenton & Bruce Walker, *The Rural Architecture of Scotland* (Edinburgh 1981), pp 54-5, 58.

The late John Nattrass studied a group of thatched barns in the Wimmera, and found nearly all of them to have been built in the period after the *Selection Act* of 1869 and before the arrival of the railway in 1879. The tradition had however continued, and people still living could recall helping to build such structures. Few of the selectors who built the early examples had German names. The sheds had no common plan, but might be made of three or more rows of columns, spaced according to the timbers available, and made typically of grey box or bull oak, occasionally of white gum, with the centre columns sometimes of grey box, which came in greater lengths. The columns were nearly always cut with a natural fork at the top to carry a beam, and the beams were commonly of whole or split bull oak or of Murray pine from which the smaller branches were stripped. The roof pitch was always less than 30°, to avoid the straw sliding off, and most typically 17¹/₂°, which was still adequate to shed rain. The substrate varied somewhat, and the straw was placed on in its original sheaves, and held down with wire netting which was weighted by tying on a log to hang just over the edge of the eave.¹³²

At Killalpaninna in Central Australia there survives the framework of quite a large structure of this sort,¹³³ presumably built by the Lutheran missionaries who occupied the site until 1914, and therefore with explicit German associations. In northern Queensland Bell finds that thatch disappears from mainstream buildings in about 1870, but in areas of lush coastal grass it continues in use into the early twentieth century in the buildings of Chinese farmers, on Aboriginal missions, and for Kanaka accommodation on sugar plantations.¹³⁴

rush or brush walling

Reeds and similar materials were used for walling and for panels of various sorts in a number of cultures. The first house in Natal in 1825 even had a reed door,¹³⁵ and in 1839 the soldiers' huts for the British garrison had reed walls seven feet [2.1 m] high.¹³⁶ Furze was used in the British isles in a similar manner, and Loudon describes the construction of a cart shed with walls of¹³⁷

frames filled in with studwork, into which branches of furze are thickly wattled, a species of covering which lasts several years, and is easily renewed. Where furze is not abundant, common spray may be used.

In New Zealand the Maoris used a form of rush walling which was taken up by European settlers, and which may well be the source of the brush wall in Central Australia, and of the modern ti-tree fence. The Maori *whare* prior to European contact was typically thatched with overlapping bundles of *raupo* rushes, while the walls had bundles of the same material

132 ** John Nattrass, 'Straw thatched farm buildings of the Wimmera' (BArch, University of Melbourne), n p.

133 Howard Pearce, *Homesteads of the Stony Desert* (Adelaide 1978), between pp 64, 65.

134 Peter Bell, *Timber and Iron* (St Lucia [Queensland] 1984), p 114.

135 Brian Kearney, *Architecture in Natal* (Cape Town 1973), p 1.

136 Kearney, *Architecture in Natal*, p 4.

137 J C Loudon, *Encyclopædia of Cottage, Farm and Villa Architecture* (London 1846 [1833]), § 899, p 450.

sewn onto a framework of manuka,¹³⁸ and in some cases the appearance is very similar to the later brush walls of Australia.¹³⁹ This type, however, was not universal, for Ensign Jean Roux in 1792 described a form he saw at the Bay of Islands:

The sides were stakes set at a short distance from one another and strengthened by switches which were interlaced across them. They were coated in the outside with a layer of moss thick enough to prevent water and wind from getting in and this layer was held up by a well-constructed little lattice. The interior was woven with a matting of sword grass ...¹⁴⁰

An illustration of a Maori fishing village in the 1830s by J S Polack shows buildings of at least two sorts - one with a gable roof overlaid with some sort of grid, suggestive either of rope thatch or of a mesh of saplings, and the other of a complete half-barrel shape apparently made entirely of a grass-like material.¹⁴¹

For European settlers in New Zealand reed or grass buildings were erected as a temporary expedient until a more substantial dwelling, commonly of sods, could be built. At the third mission station, at Paihia in the Bay of Islands, the Rev H Williams and his family shared in 1823¹⁴²

... a rush house with four compartments, ten feet each by fifteen. Half we occupy, half, the carpenter, his wife and three children ...

Our hut, though made of rushes, is hung about with green stuff brought for the inside of the tent, the top is covered with the white stuff or outside of the tent and is surprisingly comfortable.

Such a dwelling would commonly be built for the settlers by the Maoris and would last for about three years, the rushes being known as *raupo*, while the other materials used by Williams were doubtless a green baize tent lining and a canvas or calico fly. Otherwise the walls might be of *raupo* and the roof of nikau palm.¹⁴³ Even twenty years after the occupation of Paihia it was said that at Nelson ¹⁴⁴

... the labouring classes generally make mud houses, but the greater part of them make a toi-toi (grass) house, when they first land: and when they fix upon where they intend to live, they make a good mud house.

138 Peter Shaw, *New Zealand Architecture* (Auckland 1991), p 11.

139 A good example is a whare at Rahotu Redoubt, Taranaki, of about 1860, in an illustration in the Parihaka Library, Alexander Turnbull Library, reproduced in Shaw, *New Zealand Architecture*, p 15. Another is a raupo whare at New Plymouth, as illustrated in about 1860, in the Alexander Turnbull Library, reproduced in Jeremy Salmond, *Old New Zealand Houses 1880-1940* (Auckland ****), p 30.

140 Quoted in Shaw, *New Zealand Architecture*, p 10.

141 Alexander Turnbull Library, Wellington, F150857, reproduced in William Toomath, *Built in New Zealand* (Auckland 1996), p 7.

142 S Northcote-Bade, *Colonial Furniture of New Zealand* (Wellington 1971), p 17, quoting the Williams family letters.

143 T W Leys, *Brett's Colonists' Guide* (Auckland 1883), p 16.

144 *Illustrated London News*, III, 82 (25 November 1843), p 340.

As late as 1866, when the Danish Bishop Monrad and his sons settled near Palmerston, they built a 'thatched clay hut' to occupy while completing the permanent wooden farmhouse.¹⁴⁵ Samuel Butler's hut at 'Mesopotamia', already referred to, not only had raupo thatch on the roof, but an end wall clad in raupo, and even a door clad in it, apparently over a beech frame.¹⁴⁶

A late emanation of the thatched tradition, found in both Central, South and Western Australia, is the brush or thatched wall, in which straw or light brushwood is held vertically between wires to create a screen. Though it must be a modern development to the extent that it depends upon galvanized wire, it relates to the use of brushwood in the first years of Adelaide.

The brush wall is certainly part of a longer tradition which used other materials, and it is widespread especially in parts of the world where suitable products are at hand, such as Brittany, where screens of reeds were used to clad farm buildings,¹⁴⁷ and in more recent times Argentina, where such walls were made of hay strung onto wire, and then plastered over.¹⁴⁸ Coral Dow has discussed the wide range of uses to which ti tree was put in Gippsland in the late nineteenth century. These include windbreak fences, about 1.2 metres high, used by campers at Seaspray. The same people laid ti tree as flooring, topping it with rushes. *Melaleuca* [ti tree] - was used for surfacing roads and paths, and for jetties, fences and fishing net racks.¹⁴⁹ Shortages of building materials after World War I gave rise to a renewed interest in brush construction, and the Coorabie Branch of the Agricultural Bureau of South Australia was recommended to consider straw and brush buildings. Red mallee could be used for the uprights, ti tree for the end walls, and wire netting, brushwood then straw thatch, for a roof with excellent insulation properties.¹⁵⁰

Domestic brush fencing was developed further during the Depression of the late 1920s. 'Broom brush' is said to have been harvested from Kangaroo Island and mainland South Australia, and later from western Victoria. It was hand packed between long running wires held tightly together with transverse hook wires in a manner which, Bridget Jolly has suggested, might have been influenced by the method of manufacturing Solomit strawboard. In the early 1970s a New Zealander living at Kaniva, Victoria, made a hydraulic ram press for the purpose, similar to those used for Solomit, and this was developed into the manufacturing system which is in use today.¹⁵¹

145 E D Woodhouse, *Colonial Houses of Palmerston North* (Wellington 1975), p 10.

146 C P Murphy, 'The Fencible Cottage: Soldier Housing' (MArch, University of Auckland, 1975), p 63, quoting from P M Marling, *Samuel Butler at Mesopotamia* (Wellington 1960), p 17.

147 G I Meirion-Jones, *The Vernacular Architecture of Brittany* (Edinburgh 1982), p 161.

148 As in the 'paredes de chorizo', where wires are run horizontally between posts; bundles of hay referred to as *chorizos* (sausages) are looped over them and their tails twisted; further chorizos of hay mixed with mud are laid over these; and the surface is finally plastered over: information supplied by Sr Carlos Moreno.

149 Coral Dow, 'Ti Tree and Reeds', *Gippsland Heritage Journal*, 21 (March 1997), p 7, quoting (in relation to Seaspray) the *Gippsland Times*, 7 February 1887.

150 Caroline Guerin, *One Hundred Years on the Land* (Adelaide 1988), p 81, quoted in Bridget Jolly, 'Solomit in Australia and its European Context' (PhD submission, University of Adelaide, 1998), p 8.

151 Jolly, 'Solomit', p 286.

Cane grass and wire seem to have been used at an early date in the Western Riverina, where, according to Freeman, sheafs of the grass were collected from the banks of creeks and waterholes, bound tightly with fencing wire, and used within a timber structure to form both walls and roof. Two such buildings were put up at 'Boondarra' in the 1860s.¹⁵² Houses completely of grass or similar materials were most common in Queensland. 'Roseberth' homestead in the west of the state has walls of cane grass bound with wire, but some buildings in the north-east derive from indigenous traditions in the Pacific and do not rely upon galvanized wire. For example at Pioneer Mill in 1889 there were 'four large grass houses for Kanakas, one for Chinese and another for Malays', and there was also a Kanaka hospital with walls and roof of grass.¹⁵³ In 1911 there were 256 dwellings in Queensland made of bushes, rushes or spinifex, all but ten of them in the north of the state.¹⁵⁴

cane

A photograph of the Residency in Darwin in 1898 shows the verandah with its balustrade filled with what appear to be vertical canes, and with shutters above.¹⁵⁵ Another, showing the house of the photographer himself, Dr Foelsche, reveals a verandah enclosed to full height with vertical canes, interrupted at intervals by a few horizontals in basketwork fashion. Awnings over openings consist of frames filled in a similar manner.¹⁵⁶ This construction may have come from the South Seas, for especially in Tahiti walls of vertical cane, usually with single horizontal pieces at mid-height, seem to have been common.¹⁵⁷

Other buildings illustrated in 1915 at Darwin, and at Point Charles across the bay, have wall panels of what appears similarly to be a fine bamboo running vertically and bound with wire.¹⁵⁸ This would seem to be unusual, but not unique in the Northern Territory. A house on the Edith River, believed to date from the 1920s, contains two small rooms divided from the main space by partitions of vertical bamboo. The unusual plan will be discussed below, and the building is believed to have been one of group formerly in the area. Even as late as the 1930s an insectary and entomologist's hut in the Territory was built with split bamboo walls.¹⁵⁹

152 Peter Freeman, *The Homestead: a Riverina Anthology* (Melbourne 1982), p 156.

153 R Connolly, *John Drysdale and the Burdekin* (Sydney 1964), p 79, quoted in Ray Sumner, *Settlers and Habitat in Northern Queensland* (Townsville [Queensland] 1974), p 13.

154 Sumner, *Settlers and Habitat*, p 13.

155 'Private Theatricals', P H M Foelsche Collection, National Library of Australia.

156 'Dr Foelsche's House, Pastor Leabrook and Gig', Darwin, ?c 1898. National Library of Australia, from *Punkahs and Pith Helmets* [Northern Territory Department of Education] (Winellie [Northern Territory] 1983 [1982], no 7).

157 Arthur Baessler, *Neue Südsee-Bilder* (Berlin 1900), pl 2 facing p 12; pl 3 facing p 16; pl 6 facing p 24; pl 40 facing p 40.

158 E J Brady, *Australia Unlimited* (Melbourne, no date [c 1915]), p 540: the photographs show what might equally be reeds or split cane, but a reference to 'latticed bamboo verandahs, p 542, suggests this as the probable material.

159 'The Buffalo Fly Laboratory in North Australia', *Journal of the CSIR*, V, 1 (February 1932), pp 256-7, quoted in Jolly, 'Solomit', p 10, and illustration reproduced, p 11.