11.04 Floor Coverings

a oilcloth
b kamptulikon & boulinikon
c introduction of linoleum
d linoleum in Australia
e rubber
f magnesite and wood combinations
g soft floorcoverings

'Floorcloth' is a term for various waxed or painted fabrics designed for use as floor covering, and will here, by extension, be taken to include materials like linoleum, and even rubber sheeting. There is evidence for the existence of something that can be construed as a floorcloth, in the more limited sense, as far back as 1578, when a material known as waxcloth was in use, consisting of linen treated with gum arabic, white lead, water, tallow and wax.[1] However it is also asserted that no such materials were actually used on floors until the eighteenth century.[2] Then, however, oilcloth and painted floorcloths became quite widely known in the American colonies, and these were for the most part imported from Britain.[3]

a. oilcloth

Far and away the most important floorcloth available at the time of European settlement in Australia was the oilcloth invented by Nathan Smith in 1754,[4] and manufactured by him at Knightsbridge from 1763,[5] and later by Smith & Baber. It was a mixture of rosin, pitch, Spanish brown, beeswax and linseed oil, applied to canvas in a molten state and rolled in under pressure.[6] The base canvas was partly of hemp and partly of flax, normally spun in Scotland (especially at Dundee) with 16 or eighteen threads to the inch [6 or 7 to the centimetre] and in widths of 5.4 to 6 metres, as the cloth was required to be seamless.[7] This material was used not only for flooring but for portable buildings including Governor Phillip's first 'canvas' house; as a cladding material over boarding; and right through the nineteenth century as a substitute for leather in the upholstery of furniture.

The house brought out for Governor Arthur Phillip was said to be '45 feet long 17 ft. 6 ins Wide [13.5 x 5.25 m] 8 [2.4 m] under the Halls ... with five windows of a Side 3

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1 B W Parks, 'The History and Technology of Floorcloths', *APT Bulletin,* XXI, 3-4 (1989), p 45.
2 P H Simpson, 'Comfortable, Durable, and Decorative: Linoleum's Rise and Fall from Grace', *APT Bulletin*, XXX, 2-3 (1999), p 17.
3 P H Simpson, *Cheap, Quick, & Easy* (Knoxville [Tennessee] 1999), pp 75-6.
4 R B White, *Prefabrication: a History of its Development in Great Britain* (London 1965), p 20.
5 Simpson, 'Comfortable, Durable, and Decorative', p 17. Parks, similarly, gives the date of Smith's patent as 1763.
6 White, *Prefabrication,* p 20. See also 'A Day at a Floor-Cloth Factory', *Penny Magazine,* XI, 688 (27 August 1842), pp 337 ff.
7 Wyatt Papworth [ed], *Dictionary of Architecture* (London, 1848-1892), sv Floorcloth.

ft. 9 by 3 ft. [1.1 x 0.9 m]"[8] It is nevertheless difficult today to envisage just what it was like, but Phillip complained in his first despatch, 'the canvas house I am in [is] neither wind nor waterproof',[9] and by July a new government house was being built to replace it.[10] It remained standing behind the new building and is illustrated in early views, especially the anonymous and undated 'A View of Governor Philips House Sydney Cove Port Jackson taken from the NNW' in the Watling Collection at the British Museum.[11] The walls are shown divided into squarish panels framed in white and infilled in blue. It was reported that the house had been made at a cost of £130[12] by one Smith, of St George's Fields,[13] and there can be no doubt that this was Nathan Smith, and that the 'canvas' cladding was Smith's oilcloth.

The documentary sources were in modern times entirely misunderstood, to the extent that the house was recreated at 'Old Sydney Town', on the best expert advice, as a timber structure on the Manning system (which was invented about forty years later). I identified the manufacturer and the material in 1976,[14] but subsequent authors have been less than generous in their acknowledgments. One reason for the obscurity of the building has been the limited documentation available about such structures, and an even stronger reason has been the fact that only one survives today, and that one, which is in England, is not directly comparable to Phillip's house. It is an ornamental garden tent of oilcloth in the Chinese style, made in the late eighteenth century by the then firm of Smith & Baber.[15]

By 1798 the firm was Smith, Baber & Downing, and their billhead professed them to be makers of 'Trelliswork, Temples, Garden-Seats, Cover'd Ways, Portable Rooms and all kinds of temporary erections'.[16] The bill in question was for a mess room, and it was also at about this time that four portable houses of oilcloth, made in Knightsbridge, presumably by Smith & Baber, were sent with other portable buildings to the settlement of Freetown, Sierra Leone.[17] They were still at this time

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8 Navy Board, minute of 8 November 1786, Admiralty 106/2622, quoted in Alan Frost, *Arthur Phillip 1738-1814. His Voyaging* (Melbourne 1987), p 201.

9 G B Barton, *History of New South Wales from the Records*, I (Sydney 1889), p 292.

10 Daniel Southwell to his mother, 12 July 1788, ******** *Historical Records of New South Wales*, II, p 690.

11 Reproduced in Tim McCormick et al, *First Views of Australia 1788-1825* (Sydney 1987), p 52.

12 £130 was the official valuation as reported to the House of Commons in 1791: see Charles Long's 'Account of the expenses involved in transporting convicts to New South Wales', in *Extracts of letters from Arthur Phillip, Esq.* (London 1791), p 22. However, Captain (later Governor) P G King gave the cost as £125 in his journal for 29 January 1788: *Historical Records of New South Wales*, II, p 544. This figure, though presumably less accurate, has been widely reported.

13 'the frame and materials for the Governor's house, constructed by Smith in St. George's Fields ...', entry for 29 January 1788 in John White, *Journal of a Voyage to New South Wales* (Sydney 1962 [1790]), p 113.

14 Miles Lewis, quoted by Anne Bickford in *Kalori Quarterly Newsletter*, 3/76 (September-November 1976), pp 15-16.

15 *Country Life*, CXLIX (4 March 1971), pp 429-430.

16 John Fowler and John Cornforth, *English Decoration in the Eighteenth Century* (London 1974), p 216.

17 George Kubler, 'The Machine for Living in 18th-Century West Africa', *Journal of the American Society of Architectural Historians*, IV, 2 (April 1944). Mrs A M Falconbridge wrote home bitterly on 10 April 1792 that 'though the Directors had the goodness to send out a canvas house purposely for me, I have not the satisfaction of occupying it, our *men of might* having thought

being referred to as 'patent houses', which suggests that the idea of cladding houses in oilcloth was relatively recent in date. Smith & Baber had many rivals, and there are said to have been at least twenty floorcloth factories in England by the end of the century, and several in the United States by 1810.[18]

The supply must have been substantially reduced when two major manufacturers - Rolls and Goulston - who had once been partners and who still occupied adjoining premises in Old Kent Road, where burnt out in 1843.[19] Goulston is not heard of again, but by 1851 James & George Rolls were back in production.[20] There were now a number of other makers as well, and they showed their products at the Great Exhibition. John Hare & Co of Bristol exhibited designs imitating chintzes, mosaic pavement, inlaid wood, and encaustic tiling.[21] Harvey & Knight of Lambeth showed one imitating a Roman tessellated pavement found at Aldborough; Michael Nairn of Dundee showed imitations of chintz, granite inlaid pavement, inlaid marble &c; and Wells of London showed imitation Berlin wool work.[22] Even the original makers, Smith & Baber, exhibited a floorcloth, another imitation Roman tessellated pavement.[23] There were also many makers in continental Europe, including Prussia, Saxony, Hesse, Belgium and France.[24] Another British exhibitor in 1851 was R Y Barnes of London, who showed a highly decorative design, and at Dublin in 1853 showed another version of a Roman tessellated pavement, but he was unusual in that his designs were prepared for him by Clerget of Paris.[25] By 1862 oilcloth had succumbed to the onslaught of Kamptulicon and only one maker, William Nairn & Sons, had the spirit to exhibit at all.[26]

Oilcloth would have been much more common in Australia as a simple floor covering than as a material for cladding houses. William Bligh, Governor in 1806-7, and his daughter Mary Putland, ordered floorcloth for the main rooms of Government House, Sydney.[27] At Holdfast Bay, South Australia, in 1836, Dr C G Everard used oilcloth

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proper to appropriate it another way.' A M Falconbridge, *Two Voyages to Sierra Leone* (London 1794), p 134.

18 Simpson, 'Comfortable, Durable, and Decorative', pp 17-18, ref M W Jones, *The History and Manufacture of Floorcloth and Linoleum* [paper read before the Bristol section of the Society of Chemical Industry, 21 November 1918] (Bristol [1918]).

19 *Illustrated London News*, II, 38 (24 January 1843), p4 8.

20 London, Great Exhibition of the Works of Industry of all Nations, 1851, *Official Descriptive and Illustrated Catalogue* (3 vols, London 1851), II, p 570.

21 Great Exhibition, 1851, *Catalogue*, II, p 566. In 1862 Hare showed more designs, including a stunning recreation of the Roman mosaic pavement recently discovered at Cirencester: London, International Exhibition, 1862, *Art Journal Illustrated Catalogue* (London 1862, pp 47, 3252, 284.

22 Great Exhibition, 1851, *Catalogue*, II, pp 567, 569, 572.

23 Great Exhibition, 1851, *Catalogue*, II, p 371.

24 Great Exhibition, 1851, *Catalogue*, III, pp 1057, 1111, 1128, 1160, 1227 & 1239.

25 London, Great Exhibition of the Works of Industry of all Nations, 1851, *The Art Journal Illustrated Catalogue The Industry of All Nations 1851* (London 1851), p 214; Dublin, Exhibition of Art-Industry, *The Exhibition of Art-Industry in Dublin* 1853 (London 1853), p 17.

26 London, International Exhibition, 1862, *Art Journal Illustrated Catalogue* (London 1862), p 190.

27 Robert Irving, 'Georgian Australia', in Robert Irving [ed], *The History and Design of the Australian House* (Melbourne 1985), p 40.

to partly cover his earth floor.[28] In 1845 the Sydney cabinetmaker Andrew Lenehan stocked floorcloths manufactured by John Hare of Bristol,[29] and in 1849 Lark & Bennett offered oak, marble and chintz passage cloths in 3 ft, 4 ft 4 in, and 5 ft 6 in [0.9, 1.3, 1.5 m] widths, and in widths for rooms and lobbies of 12, 15, 18, 21 and 24 feet [3.6, 4.5, 5.4, 6.3, 7.2 m.[30] These also sound like Hare's products. In Victoria floorcloth was advertised in 1859 in widths from a half to eight yards [0.45 to 7.2 m] by W Hickinbotham & Son of the Carpet Warehouse in Collins Street East.[31] It is likely that some householders made their own painted floorcloths, as was the case in the United States during the nineteenth century.[32]

One use of oilcloth which may have been more common than surviving evidence would suggest is as a wall cladding over boards. The house 'Wood Cot Park' at Tarraville, Victoria, as built in 1854-5 with the sides of horizontal butt-jointed softwood boarding, over which it is claimed that oilcloth was stretched and tacked in place, painted, and lined to represent stone masonry.[33] However, inspection does not confirm this. The traces of fabric that remain appear to be common calico, and they are generally found in every second horizontal joint. There is not enough left to infer that it was treated to resemble masonry, and it is not even clear whether the cloth did cover the whole external surface. What does survive on the boards is a thick deposit of crocodiled paint, which might well be original. Oilcloth was certainly used, over boarding, for the roofing of prefabricated buildings. It is still exists, though overlaid with other materials, at Woodlands homestead, Tullamarine, a prefabricated house by Peter Thompson of about 1842-3. The other prominent London prefabricator, Manning of Holborn, commonly supplied tarpaulins as temporary roofs until local material could be obtained, but in 1852, when Samuel Vaughan brought to Victoria a 'rough house' and a panelled house made by Manning, they were supplied with boarding and with floorcloth to be laid over it.[34] Fur British makers exhibited floorcloth at Sydney in 1879, including the now eighty year old firm of James Rolls & Sons. But the material was largely superseded, and the fact that three of the four manufacturers were also making linoleum was an indicator of things to come.[35]

b. kamptulikon

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28 Charles Everard to his sister, 29 May 1838, SA Archives A290B3, quoted in Penelope Hope, *The Voyage of the Africaine* (South Yarra [Victoria] 1968), p, and in *Proceedings of the Royal Geographical Society of Australasia (South Australian Branch),* V, 77, quoted in Colin Kerr, *'An Exelent Coliney'* (Adelaide 1978), p 68.

29 *Sydney Morning Herald,* 1 July 1845, p 3, quoted in Ian Evans, *The Australian Home* (Sydney 1983), p 102; also 24 December 1849, p 3.

30 *Sydney Morning Herald,* 14 January 1850, p 1.

31 C B Mayes, *The Victorian Contractor's and Builder's Price-Book* (Melbourne 1859), p xxiv.

32 Parks, 'History and Technology of Floorcloths', p 48.

33 Historic Buildings Council, Victoria, file 83/3521.

34 Journal of Samuel Bradford Vaughan, in the possession of Mrs W J Kendall, Toorak.

35 Sydney International Exhibition 1879, *Official Catalogue of the British Section* (London 1879), pp 141-3.

The first improvement on traditional oilcloth was 'Kamptulikon',[36] invented by Elijah Galloway in 1843,[37] and based upon rubber ['caoutchouc'], gutta percha and cork dust. The basis for the invention was the development of the gutta percha industry, using the sap of various Malayan trees.[38] A later account describes 'genuine' as consisting only of caoutchouc and powdered cork. Old corks and cork waste were cleaned and strewn uniformly onto thin strips of caoutchouc, then rolled and kneaded into a homogeneous mixture. Finally it was formed into 'plates' of 2-5 mm thickness and coated in linseed oil or in oil paint.[39]

Galloway must have transferred his rights, and patents relating to kamptulikon were taken out by Gough and Boyce before 1848 and Tayler before 1859,[40] though Walter & Gough advertised in 1851 as 'patentees and sole manufacturers'.[41] Gough & Boyce were selling kamptulikon in the early 1860s,[42] but their patents must have expired by about 1862. There was now competition not only from Tayler (now Tayler, Harry & Co), but from F G Trestrail & Co[43] and Croggon & Co, and it was reported that the material was used in 'nearly all' public buildings, hospitals, railway offices, hotels, &c.[44] Tayler Harry again showed examples at Paris in 1867, when it was reported that although they were not the original inventors, they were mainly responsible for widespread adoption of the material.[45] Croggon & Co of London and Liverpool advertised their kamptulikon in Australia in a thin grade at four shillings per square yard plain and 4 s 6 d printed, and a thicker grade at five shillings and 5 s 6 d. It was claimed to be[46]

> impervious to wet, Indestructible by Damp, soft to the tread, and warm to the feet; well adapted for the Aisles of Churches, Public Offices, Rooms, Shops, &c., as well for its comfort as extreme durability.

Thomas Hardy, however, recorded the reverse opinion: 'Kamptulicon though a nice soft material for floors of aisles + passages, shd not be used where damp may get

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36 Not 'Kamptulican', as persistently rendered by Simpson, *Cheap, Quick and Easy*, pp 78-9, and 'Comfortable, Durable, and Decorative, p 18.

37 Elijah Galloway received a patent in that year for 'certain combinations of materials to be used as a substitute for canvas, and other surfaces employed as grounds for painting, and some of which combinations are applicable to other purposes': *Builder*, II, 57 (9 March 1844), p 117. This appears to be the relevant patent, though White, *Prefabrication*, p 20, dates the invention to 1844.

38 *Builder*, IV, 115 (4 April 1846); VI, 291 (2 September 1848), p 428; VII, 350 (20 October 1849), p 502; Charles Tomlinson, *Cyclopaedia of Useful Arts and Manufactures* (London, no date [in parts c 1851-1853]), sv Gutta Percha; Papworth, *Dictionary of Architecture*, sv Gutta Percha; Nikolaus Pevsner, *High Victorian Design* (London 1951), pp 40-41.

39 Raimund Hoffer [translated W T Brannt], *A Practical Treatise on Caoutchouc and Gutta Percha*, (Philadelphia 1883), pp 121-2.

40 Papworth, *Dictionary of Architecture*, sv Kamptulikon.

41 *Builder*, IX, 435 (7 June 1851), p 370.

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

43 London Exhibition 1862, *Art Journal Catalogue*, pp 64, 114.

44 London Exhibition 1862, *Art Journal Catalogue*, pp 64.

45 Paris, Exposition Universelle 1867 [S C Hall, ed], *The Illustrated Catalogue of the Universal Exhibition published with the Art Journal* (London 1868), p 199.

46 C B Mayes, *The Australian Builders' Price-Book* (2nd ed, Melbourne 1862), p 148.

underneath or upon its surface.' This was not a complaint about the durability of the material itself, but about its effect on a timber floor beneath it. There was no material equal to oilcloth, in Hardy's opinion, for durability and for protection of the floor.[47]

It was an increase in the price of rubber which provided the opportunity for a substitute material. In 1865 John B Wood patented 'Boulinikon', which was made of pulped hide, cotton, rags and chopped hair.[48] This material was shown at the Sydney International Exhibition n 1879, and Thomas Tyson of Melbourne was appointed Australian agent. It was described as:

> a thick and soft but very solid fabric, composed of animal and vegetable substances, hair and wool, including the skins of buffaloes reduced to the condition of fibre, the cloth thus formed being coloured not merely on the surface, but by a process of saturation, the ground colouring consisting of a suitable pigment mixed with a vegetable oxide. By such means is produced a material elastic to the tread like a carpet, and impervious to damp. It is warm and comfortable. In addition to these qualities, it has that of non-combustibility to a very great extent.

It was claimed to have met with a steadily increasing demand,[49] but in reality achieved only limited acceptance in Australia. Linoleum was to be far more important.

c. introduction of linoleum

In 1849 Nicles and Rochelder independently discovered that sulphuric chloride would cause oil to solidify, and ten years later Perra reported an effective process of mixing and rolling out the ingredients in a thin layer.[50] From this it was but a step to the patent which Frederick Walton took out in 1860 for what he called *linoleum.*[51] The other factor necessary for the development of linoleum was the availability of canvas in great widths, which followed upon the introduction of the fly shuttle and the establishment of major factories such as that of Michael Nairn near Kirkcaldy.[52]

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47 Hardy, Thomas [introduced C J P Beatty], *The Architectural Notebook of Thomas Hardy* (Dorchester [Dorset] 1966), p 88, apparently quoting one W Parslow. Hardy (or Parslow) was probably influenced by a recent report in the *Builder* about a floor which had decayed while covered in kamptulikon: Papworth, *Dictionary of Architecture*, sv Kamptulikon, ref *Builder*, 1865, p 787.

48 Papworth, *Dictionary of Architecture*, sv Linoleum.

49 Sydney Exhibition 1879, *Catalogue of British Section*, p 140.

50 *Australasian Builder & Contractor's News*, 12 October 1889, p 343..

51 British patent no 209 to Frederick Walton, 1860, cited by B W P Snyder, 'Linoleum', in T C Jester [ed], Twentieth-Century Building Materials (Washington [DC] 1995), p 215.

52 Simpson, *Cheap, Quick, & Easy*, p 76.

In December 1863 Walton took out a further patent[53] dealing mainly with the way of applying coloured patterns to it. Oxidised linseed oil of the finest quality was reduced to the consistency of dough and mixed mechanically with ground or powdered cork, then rolled onto stout canvas under heat and pressure. The canvas was waterproofed, and the colour was printed on the opposite surface. The pattern was more lasting than for other floorcloths because the colours were more readily absorbed. Sheets were made one or two yards [0.9 to 1.8 m] wide and 22 yards [19.2 m] long, and passage cloths in widths from 22½ to 45 inches [0.57 to 1.14 m] by 24 yard [21.6 m] long.[54] Manufacture was begun by Walton, Taylor & Company in a factory in Staines in 1865, and next year the company's name was changed to the Linoleum Manufacturing Company. In 1872 the American Linoleum Manufacturing Company was set up by Walton in association with Joseph Wilde & Company, Walton remaining for two years to oversee the construction of the factory and its associated township of Linoleumville, on Staten Island.[55] Walton's own patent expired in 1873, and other manufacturers such as Michael Nairn & Co had entered the field by 1879, adopting a standard breadth of six feet [1.8 m].[56] Nairn had established his canvas weaving factory at Kirkcaldy in 1828, and by the 1840s was supplying 7.2 metre wide canvas to more than twenty English floorcloth manufacturers. In 1847 he had established a floorcloth factory of his own,[57] and so was poised to enter the linoleum business as soon as Walton's exclusive rights lapsed.

The painted patterns, though more durable than those of oilcloth, were not nearly so effective as the integral patterns that followed. The earliest improvement was to add differently coloured pellets of linoleum mixture before passing the linoleum cement through the calendar, resulting in a granitic effect.[58] In 1879 Walton patented his 'Granite Linoleum'.[59] By partially mixing the granules in before calendaring a marbled effect was achieved, and blending larger quantities of different colours gave a streaky effect in the lengthwise direction of the sheet, known as jaspé.[60] In 1880 C F Leake developed a form of 'moulded' or inlaid linoleum by forcing the coloured granules through a slotted tray or stencil, though the resultant colours overlapped and blurred at the edges. It was put into production by the Linoleum Manufacturing Company in 1882, and by others in the next few years. In 1884 Walton in turn took out a patent on 'straight-line inlay' in which a far sharper design was produced by cutting sheets of the soft dough in different colours, assembling the pattern, and re-heating and re-calendaring it to fuse into a single sheet. By 1890 he was able to patent a continuous inlaying machine to replace the hand process, and in 1895 the

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53 This is apparently Great Britain, patent no 3210 to F Walton, 19 December 1863, though the abridgment refers only to 'A composition for use in the manufacture of floorcloths and coverings and similar fabrics and slabs for pavements [?] consists of oxidised oil, resin, kauri-gum, and colouring-matter, mixed together in a steam-heated pan, cast into cakes, and afterwards combined with cork dust or sawdust.'

54 Papworth, *Dictionary of Architecture*, sv Linoleum.

55 Snyder, 'Linoleum', p 215; Simpson, 'Comfortable, Durable, and Decorative', p 20. Townrow gives 1875 as the date of the American Linoleum Manufacturing Co.

56 Papworth, *Dictionary of Architecture*, sv Linoleum.

57 Simpson, 'Comfortable, Durable, and Decorative', p 18, ref Augustus Muir, *Nairns of Kirkcaldy: a Short History* (Cambridge 1956), pp 13, 33.

58 Snyder, 'Linoleum', pp 216-7.

59 Simpson, *Cheap, Quick, & Easy*, p 87.

60 Snyder, 'Linoleum', pp 216-7.

Greenwich Inlaying Linoleum Company began production. Only in 1904, however, did Walton feel that he had perfected the system.[61]

Another material, 'Corticine', sometimes referred to as 'cork carpet', rather resembled linoleum in that it was made from polymerised oil and cork dust, but was the subject of a separate patent in 1872. A Corticine Floorcloth Company was operating in Bristol from about 1884 to 1908, but the material was made by other companies as well.[62] The material is sometimes referred to in Australia, as in 1895 when the passages in old Government House, Brisbane, were to be covered in 'A quality Cork carpet approved brand.'[63]

In 1894, according to Karen Townrow, Walton patented his 'shower-bath and smacker' process, which involved the pre-heating and oxidising of the oil, and reduced the length of the manufacture to five or six days.[64] Further refinements were used to produce coloured, printed and inlaid linoleums. Meanwhile Jas Williamson & Son Ltd switched in about 1880 specialising in printed linoleum, and the Greenwich Inlaid Linoleum Co was established in 1895 to buy and exploit Walton's patents for inlaid mosaic linoleum. Other manufacturers included the Tayside Floorcloth Co Ltd from 1891; Barry, Ostlere & Shepherd Ltd from 1899; and the Dundee Linoleum Co Ltd from 1901.[65]

In 1886 Michael Nairn & Company of Kirkcaldy established an American branch at Kearny, New Jersey, which subsequently became associated with the Dominion Oilcloth and Linoleum Company of Montreal and the Congoleum Company of the United States. In the same year the first American-made linoleum calendar was installed by the George W Blabon Company of Pennsylvania.[66] Next, Armstrong Cork began to manufacture linoleum as a means to use up waste cork from their other activities.[67] Companies were also established in a number of other countries, until in 1905 there were twenty-seven factories in the United States and fifty in Europe. During the twentieth century the number of manufacturers was reduced in Britain, from thirteen in 1927 to nine in 1956.[68]

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61 Simpson, *Cheap, Quick, & Easy*, p 45; see also Snyder, 'Linoleum', pp 216-7.

62 Simpson, *Cheap, Quick, & Easy*, p 79; see also Simpson, 'Comfortable, Durable, and Decorative', p 18.

63 'Government House Linoleum. Addenda to Specification' (Brisbane, typescript page with contract signatures of 3 December 1895), p 1.

64 See also Simpson, *Cheap, Quick, & Easy*, p 87.

65 Karen Townrow, 'Lovely Linoleum', *Australian Society for Historical Archaeology Inc Research Bulletin*, X, 3 (Spring 1990), unpaginated, cites especially M W Jones, *The History and Manufacture of Floorcloth and Linoleum: a paper read before the Bristol Section of the Society of Chemical Industry at the University* (1918: reprint in the British Museum, Science Museum Library); Australia: Department of Trade and Customs, *Tariff Board's Report and Recommendation of Plain Linoleum* (Canberra 1927); Great Britain: Monopolies and Restrictive Practices Commission, *Report on the Supply of Linoleum* (London 1956); M Drummond, 'Liberating Linoleum', *Historic Environment*, III, 3 (1984), pp 31-47.

66 Snyder, 'Linoleum', p 215.

67 A M Carlisle, 'Historic Linoleum: Analysis, Cleaning Systems, Recommendations for Preservation', *APT Bulletin*, XXVIII, 2-3 (1997), p 37.

68 Townrow, 'Lovely Linoleum'.

d. linoleum in Australia

Walton's linoleum was imported to Australia almost from its inception, and rapidly displaced traditional oilcloth (at least for flooring purposes). At the Centennial Exhibition of 1888-9 linoleums were shown by W D Harry & Co of London; Hendry, Whyte & Strachan of Kirkcaldy; the Kirkcaldy Linoleum Company, of Kirkcaldy and London; the Linoleum Cie Française Limited, of Paris; the Linoleum Manufacturing Co Limited, of London; M Nairn & Co, of the Scottish Floor-Cloth and Linoleum Works, Kirkcaldy; Ridley, Whitley & Co, of London; and the Staines Linoleum Manufacturing Co, of Staines.[69] Corticine seems to have reached Australia soon after this time, for a 'quality Cork carpet approved brand' was specified to be laid in 1895 in the passages of Government House, Brisbane,[70] and 'cork linoleum' was laid in the Land Administration Building, Brisbane, in 1905.[71]

Local manufacture began with the Australia Linoleum Co, which was established at Auburn, New South Wales, at a date not determined, but taken over by the Linoleum Manufacturing Company of Australia and then by the Michael Nairn Group in 1927. It produced only plain linoleum, and had to compete with British manufacturers like Nairns, and the Staines Linoleum Co Ltd, which sent 40% of their exports to Australia, of which only 7% were plain (with 78% printed and 15% inlaid). By 1937, when the Auburn factory was in the hands of Nairns, it produced a full range of types - nine 'linotex' marbles, six 'A' quality marbles, nine 'C' quality jaspé, nine 4th quality jaspé, twenty plain linotex, seventy-two no 2 quality printed pattern (parquetry, floral, art deco, &c), and seventy-six no 3 quality printed (a similar range, including some singularly repellent designs, plus a few striated and a few chequerboard tile patterns). The range is so large that one might surmise that the more elaborate patterns were imported from the parent company. However, each page bears a Nairn's Australia brand and the words 'Made in Australia'.[72]

Linoleum was laid on the floor of Scott's base camp at Cape Evans, near Ross Island on the Antarctic continent,[73] and fragments have been found from the hut at Macquarie Island used in by the sealers and penguin cullers, apparently from the period 1892-1919. In 1927 the Myer department store chain held between 350 and 400 different linoleum designs in stock. After the 1940s linoleum began to lose ground to Congoleum, sheet vinyl, felt-base and rubber, as well as cheaper forms of carpet.[74] Congoleum came in the form of 'art squares' which imitated carpets and

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69 Centennial International Exhibition 1888-1889, *Official Record* (Melbourne 1890), pp 395, 440, 733, 962.

70 'Government House Linoleums. Addenda to Specification. 31 December 1895.'

71 *Brisbane Courier*, 26 August 1905, quoted in Allom Lovell Marquis-Kyle, *The Treasury Buildings Group Conservation Study* (3 vols, Brisbane 1992), I, p 99.

72 Michael Nairn & Company [Aust.] Pty. Ltd., *Nairn's Australian Made Linoleum 1937-1938* (Auburn [NSW] no date [1937]), passim.

73 Townrow, 'Lovely Linoleum', no page, citing L Bickel, *The Last Antarctic Heroes* (1989).

74 Townrow, op cit.

Persian rugs.[75] Congoleum was a United States company associated with the American Nairn Corporation,[76] as referred to above.

Vinyl tiles had first been produced in the United States in 1931, but not manufactured in significant quantities until after World War II.[77] In Australia lino tiles were similarly made by Michael Nairn & Co,[78] but by the later 1950s other apparently imported products were in use, notably Nylex 'Super-Vinyl' tiles, advertised in 1958 in seventeen colours.[79] In the 1950s Hudson & West of Sydney advertised as the sole distributors in Australia of Altro Flooring, another PVC and Altro Safety Flooring, in which aluminium oxide grains were incorporated into the PVC. These materials originated with the Adamitic Company of London.[80] Imperial Chemical Industries [ICI] were selling vinyl tiles by 1959.[81]

e. rubber

Barnet Glass, who emigrated to Melbourne and established a rubber factory in 1876, seems to have been little involved in building-related products, and after the business was converted to a proprietary company in 1900 it concentrated on motor car tyres, and later on sporting goods, hoses, and waterproof clothing.[82] Rubber never had anything like a comparable market. Henry Perdriau of Sydney is said to have entered the rubber industry in 1881,[83] importing bulk rubber and cutting it up for railway carriage buffers, but when a cable error resulted in an excess quantity arriving he set up a rubber depot in Balmain and a store at the corner of Erskine and Clarence Streets, and then began manufacturing in 1885. By 1888 Perdriau & Co had agencies many large English, German and American rubber firms, and a large intercolonial trade.[84] Perdriau & Co advertised mats, and tubes and hoses of various sorts, but not floor covering as such.[85] In the 1920s the Dunlop Rubber Co also advertised rubber 'matting',[86] but this was apparently a product which could be laid as a continuous

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75 *Australian Home Builder*, June 1924, reproduced in Graeme Butler, *The Californian Bungalow in Australia* (Port Melbourne 1992), p 186.

76 Carlisle, 'Historic Linoleum, p 37.

77 K A Konrad & P D Kofoed, Vinyl Tile', in T C Jester [ed], *Twentieth-Century Building Materials* (Washington [DC] 1995), p 241. See also Simpson, *Cheap, Quick, & Easy*, p 93.

78 Michael Nairn & Co (Aust) Pty Ltd, *The Care of your Nairn Linoleum Floor (or Linoleum Tile)* (Auburn [New South Wales], no date), no page.

79 *Australian Home Beautiful*, November 1958, p 105, quoted by Peter Cuffley, *Australian Houses of the Forties and Fifties* (Knoxfield [Victoria] 1993), p 86.

80 F W Ware & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1954), § 28/19.

81 *Architecture in Australia*, September 1959, p 19.

82 Pratt, *National Handbook*, pp 290-291.

83 Ambrose Pratt [ed], *The National Handbook of Australia's Industries* (Melbourne 1934), p 290.

84 G P Walsh, 'Henry Perdriau (1845-1935) ... and Stephen Perdriau (1858-1931)', in G C Bolton et al [eds], *Australian Dictionary of Biography*, XI (Melbourne 1988), p 200.

85 Charles Mayes, *The Australian Builders' Price-Book* (5th ed, Melbourne 1886), advertisements, p xxxiii.

86 *Every Man's Home*, II (October 1922), p 45; Royal Victorian Institute of Architects, *International Architectural Exhibition June 7th to 11th, 1927* (Melbourne 1927), p 6.

wall-to-wall surface, as in the main office of the Trustee, Executor and Agency Co, Perth.[87]↑

The failure to promote rubber as a floor covering was consistent with the situation overseas. Rubber tiles one to two inches [25-50 mm] thick were reportedly used in English hotel courtyards in the 1870s to dampen the sound of traffic, but not for internal floors. In 1894 the United States architect Frank Furness patented a rather elaborate system of interlocking rubber floor tiles, which actually came into use, but sheet rubber flooring reached America only after its introduction in Britain, when introduced by Goodyear in the 1920s.[88]

By 1928 the Dunlop and Perdriau companies in Australia were amalgamated,[89] and also acquired the Barnet Glass Company, entrenching what was not a monopoly, but certainly an overwhelming predominance in the rubber market in Australia. The amalgamated company, or at least the companies in the process of amalgamation, must be assumed to be responsible for a double page colour spread advertising the merits of sheet rubber flooring, but not even giving the supplier's name or address, published ostensibly in 1927.[90] In 1933 Dunlop Perdriau supplied a thousand square yards [840 sq m] of rubber flooring for the new Shell Building, Melbourne.[91] By 1938 rubber flooring was available, apparently from Dunlop Perdriau, in a wide variety of colours and patterns, including 'special carpet patterns', in thicknesses of 1/8 inch [3 mm] and 3/16 inch [4.5 mm].[92]

Apart from the product of Dunlop-Perdriau, there was 'Paraflor' rubber 'carpeting', which came in a variety of colours, plain or marbled, and had no canvas backing, so that it could be used either way up. This was being sold by the North British Rubber Co (Australasia) of Melbourne by 1925,[93] and soon the company had another office in Sydney, and agencies in all states and in New Zealand.[94] By 1937 'North British rubber carpeting' was being marketed by Römcke Pty Ltd of Melbourne,[95] and in 1939 Römcke also sold Rubber Terrazzo, 'the new jointless floor' for baths, showers, lobbies, factories, &c.[96] There was at least one other businesses, the Colonial Rubber Company, which may or may not have produced flooring, but in 1919 it was bought out by James Hardie & Co,[97] and in 1960 taken over by H C Sleigh.[98]

Rubber flooring was used the third stage of the Treasury Building, Brisbane, of 1922-8,[99] and at Parliament House, Canberra in 1927.[100] At the Australia Hotel,

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87 *Australian Home Builder,* 16 February 1925, p 61.
88 S C Park, 'Rubber Tile', in T C Jester [ed], *Twentieth-Century Building Materials* (Washington [DC] 1995), p 215.
89 G P Walsh, 'Henry Perdriau', p 200.
90 *Australian Homes* (Melbourne 1927), pp 78-9.
91 Royal Victorian Institute of Architects, *Journal,* XXXI, 4 (July 1933), advertisement p ix.
92 C E Mayes, *The Australian Builders & Contractors' Price Book* (8th ed, Sydney 1938), p 247.
93 *Australian Home Builder,* 15 September 1925, p 69.
94 *Bulletin of the University of Melbourne Architectural Atelier* (Melbourne 1929), p 37.
95 *Bulletin of the Melbourne University Architectural Atelier* (Melbourne 1937), p 3.
96 W H Hallam, *Building Costs* (1st ed, Melbourne 1939), p 51.
97 *The Story of James Hardie & Coy. Pty Ltd 1888 to 1966* (Sydney, no date [1966]), p 17.
98 *Story of James Hardie,* p 5.
99 Allom Lovell Marquis-Kyle, *The Treasury Buildings Group,* p 81.

Melbourne, in 1938-9, the floor of the foyer was finished in specially made 'Runnymede' rubber with decorative insets designed in Melbourne. It was regarded as notable that it had been possible to send the designs to England by airmail and to have the whole of the flooring landed in Melbourne three months later. An illustration shows one of the decorative insets immediately in front of the steps to the crush lobby, a disc containing a map of Australia against a quartered background. There was also rubber flooring in the public bar and saloon bar, while in the casino lounge bar there are conflicting references to the floor as being either of rubber or of 'Custom-craft' linoleum.[101]

The sources of these materials are unclear, but shortly after World War II Clark Rubber of Melbourne was importing Runnymede rubber flooring.[102] This connection seems to have been soon reversed, for Clarks now advertised as agents for Kenworth Modern Rubber Flooring and St Albans Solid and Airtred Rubber Flooring.[103] 'Paraflor' was being imported from the North British Rubber Co of Edinburgh, and now marketed by Römcke Pty Ltd.[104] Dunlop Rubber Australia Ltd were still advertising extensively in their own right,[105] and 'Kenworth Key-Tone Rubber Flooring' was distributed by Consumer Products International, of Melbourne.[106] By 1954 Kenworth were manufacturing their own products at Tottenham, Victoria, and distributing them in all states. Their advertisements illustrated the 'Roto Cure' machine, which produced eighty-four inch [2.1 m] wide sheets.[107]

f. magnesite and wood combinations

Magnesium oxychloride compositions, often referred to simply as 'composition' flooring, were produced by the chemical reaction of calcined magnesite [powdered magnesium oxide] with magnesium chloride solution. Fillers such as wood flour, sawdust or silica were added, as well as pigments. The material was sensitive to moisture, and it was essential that the sub-floor be damp-proof.[108] In 1868 the French chemist Sorel discovered that when calcined magnesia was made into a thick paste with magnesium chloride, it set quickly into a solid mass. It was some time before the discovery was put to commercial use, but when it was, the mixture was extended by the use of aggregate such as wood flour, pumice, slate dust, fine granulated cork, asbestos, and various other fibres and pulps.[109]

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100 *Federal Capital Pioneer Magazine*, 7 January 1927, p 16.

101 *Hotel Australia Melbourne, 1939* (Melbourne 1939); 'Hotel Australia, Collins Street', *Journal of the RVIA*, XXXVII, 7 (September 1939), pp 191-201.

102 *Australian Home Beautiful*, XXVII, 7 (July 1948), p 10.

103 F W Ware & W L Richardson [eds], *Ramsay's Architectural and Engineering Catalogue* (Melbourne 1949), § 28/6.

104 *Ramsay's Catalogue* [1949], § 28/1; [1954], § 28/11.

105 *Ramsay's Catalogue* [1949], § 28/2; [1954], § 28/7.

106 *Ramsay's Catalogue* [1949], § 28/3.

107 *Ramsay's Catalogue* [1954], § 28/9.

108 C E Mayes, *The Australian Builders & Contractors' Price Book* (8th ed, Sydney 1914), p 237.

109 H B Newbold, *Modern Practical Building* (2nd ed, 4 vols, London, 1946), I, p 354. See also S G B Stubbs, *The Building Encyclopedia* (4 vols, London, no date [c 1955]), III, p 1000.

Other compositions mixed sawdust or similar materials without magnesite. At the Hamburg Hospital, of 1889 (according to Professor H B Allen of Melbourne), the ward roof was nearly flat and 'worked with a special wood-cement', over which was a 50 mm layer of gravel as protection from heat and cold.[110] In England wood fibre, cork dust or other material was mixed with an 'indurating liquid', laid in a thickness of about 20 mm, and could be oiled or wax polished. 'Stonwod', 'Terrano' and 'Acop' were brands of this sort.[111] Some such material was tried out in Sydney in about 1887, with apparent success, and two years later the Melbourne City Surveyor reported favourably upon it and felt that, provided an adequate supply of cork could be maintained, it would be extensively used for Melbourne footpaths. If there was enough demand for it large scale works would be established in Melbourne.[112]

The Patent Cork Pavement Company Ltd was indeed formed in Melbourne in 1890, to acquire the residual patent rights of John Augustus Parker of Sydney for 'an improved composition for paving or covering roads and ways floors and other surfaces'.[113] This may be the origin of Aegypto Jointless Sanitary Flooring, which was being advertised in 1908 by the Patent Asphaltum Co of N.S.W.,[114] and which in 1910 was proposed for the floor of the Foy & Gibson subway under Smith Street, in the Melbourne suburb of Collingwood.[115] By 1914 Mayes lists a large range of similar and competing products, and classifies Aegypto amongst a group of magnesite compositions. These probably should be compared with American products like 'Karbolith' and 'Terrazzolith', the former being an allegedly fireproof flooring, and described as:[116]

> a composition of chemicals, some of which are of a fibrous and cellular nature: these furnish the conditions that produce a slightly elastic but hard and tough body. The cement bond employed is the very best known to science ...

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110 H B Allen, *Final General Report on Hospital Construction and Management* (Melbourne 1891), p 9.

111 H L Sutcliffe, *Modern House Construction* (6 vols, London 1909), I, p 164.

112 *Australasian Builder & Contractor's News*, 23 March 1889, p 271.

113 Parker, described a gentleman of Sydney, seems to have been an assayer at the Sydney Mint until 1887. His letters patent in Victoria and New Zealand dated from 1886, New South Wales in 1887, Queensland in 1888, and Canada in 1890. He was one of the partners in the new company, together with Charles Parker Willan and Thomas [?], both solicitors of Melbourne, and William Knox, a Melbourne accountant. It was to acquire the patent rights in the United Kingdom, France, New Zealand, Queensland and South Australia. Information from Frank Strahan, then Melbourne University Archivist, 1973, based upon a file held by the University Archives.

114 Mayes, *Australian Builders Price Book* (7th ed, Sydney 1908), advertisement p iv. There is also a reference in the text p 159, to Arkilite tiles - presumably those identified simply as 'concrete tiles' in the advertisement.

115 Information 2004 from Steve Faergo, who has seen the architectural drawings by William Pitt at the Melbourne University Archives. Here it is apparently referred to as 'Egypto'. If the material was in fact used it must have been subsequently replaced, for the present floor appears to be some sort of cement tile.

116 *Karbolith Flooring Sanitary Base and Wainscoting. Manufactured by American Safety Tread Co.* [brochure, Avery Library, Ross category 9, no 2] (Boston, no date, unpaginated).

'Terrazzolith' was a chemically purified magnesia containing less than 0.5% of lime, mixed with long-fibred asbestos and wood pulp, and coloured with metallic oxides. It was flexible, and did not crack.[117]

Magnesite compositions had the advantages of adhering well to wood and iron, having a resilience almost like linoleum, a hard wearing surface, and being made in various colours by which 'most artistic effects can be produced'. They contained sawdust and were generally laid on site in a jointless floor or wall finish, and in a range of colours including cream, greens, blues, reds and browns. It was also possible to produce terrazzo effects.[118] They included Egypto (as the company now spelled it),[119] Emco,[120] Fama, Masseroid, Lignite and Linwod.[121] Another product, 'Permasite', is not mentioned by Mayes, but was laid in 1913 in the Malvern and Prahran Tramways shed and offices in suburban Melbourne.[122]

Somewhat similar to these products was an English material, 'Novocrete', reported in Australia in 1925 but not known to have come into use here. It was described as a 'combination of cement and mineralised sawdust', and claimed to be fire-resistant, sound insulating, non-absorbent, light and practically impervious to moisture. It could be laid on in the plastic state as flooring or paving, formed into slabs, blocks or tiles, and used for insulation and for soundproof partitions. It could also be sawn, screwed, nailed, polished and coloured.[123] '"Linotol" Polychrome Jointless Flooring was available by 1936 from Modern Plastic Products Pty Ltd of Melbourne, the sole manufacturers and contractors for Australia, and had already been used at the Metropolitan Gas Company showroom in St Kilda, Melbourne.[124] The material was said to be a 'cellulose fibre-cork plastic' laid in situ, without joints,[125] though this description differs from that of the English Linotol, made by Springhill Products Ltd, and said to be a composition of magnesite reinforced with asbestos fibre.[126] After World War II there was a competing product, 'Lignoleo' jointless flooring, which was a wood pulp composition which could be laid plastic, 20 mm thick.[127]

g. soft floorcoverings

Whilst soft furnishing in general will not be dealt with here, it is worth touching briefly upon some aspects of soft floor covering, and briefly referring to practices in carpeting. Indian matting (apparently coir - the fibre of the coconut husk) is one

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117 W Verrall, *The Modern Plasterer*, (2 vols, London, nd [c 1930]), II, p 200.
118 C E Mayes, *The Australian Builders & Contractors' Price Book* (8th ed, Sydney 1914), p 237.
119 By the Patent Asphaltum Co of New South Wales, Sydney. Mayes, *Australian Builders Price Book* 1914), advertisement p 4.
120 By Elliott MacLean & Co, Sydney. Mayes, *Australian Builders Price Book* 1914), advertisement p 6.
121 By C P Curlewis & Co, Sydney. Mayes, *Australian Builders Price Book* 1914), advertisement p 38.
122 *The Architectural Students Annual* (Melbourne 1913), p xxvi.
123 *Australian Home Beautiful*, 15 July 1925, p 53.
124 *Journal of the Royal Victorian Institute of Architects*, XXXIV, 4 (September 1936), p xxv.
125 Wentworth & Richardson, *Ramsay's Catalogue* [1949], § 28/10.
126 William Kinniburgh, *Dictionary of Building Materials* (London 1966), p 157.
127 Wentworth & Richardson, *Ramsay's Catalogue* [1949], § 28/9.

which may have been more common in Australia than in Britain, because of intercolonial connections. It was being advertised in Hobart in 1835,[128] and was used for flooring, as at Dr Everard's house at Holdfast Bay, South Australia, in 1836, where it was laid over the earth floor in conjunction with the oilcloth referred to above.[129] It was similarly recommended to the Victorian settler as a material to cover the consolidated earth floor of a tent,[130] and it was used on the floor of Annie Drysdale's cottage, on her Boronggoop run, in 1841.[131] According to Broadbent both China and India matting were imported in considerable quantities by the 1830s. Samuel Lyons of Sydney sold plain matting in lengths of up to twelve yards [10.8 m], and striped and checked matting were also available.[132]

Indian matting was also employed, as we have seen, as a hanging to use for evaporative cooling on the Indian model, a function which could not have derived from any British precedent. At the Centennial Exhibition of 1888-9 Cook [or Cooke] Sons & Co of London showed coconut carpets and mats, which were highly commended for their quality, design and variety, and gained a silver medal.[133] There were also Chinese bamboo mats. These were used both to cover the floor and to line the bedroom walls of Albert and May Wright's house at Nulalbin, of 1871.[134]

Carpets generally were not laid wall-to-wall until well into the twentieth century, but left with a border of parquetry, or of polished or painted boards, depending upon the quality of the work.. In the best work it was set into a slight recess so as to finish flush with the surrounding boarding. Commonly the pieces was woven or made up to incorporate a decorative border around the edge. In an example of 1888 the costs were: carpet 5s 9d a yard for the carpet and 6d for making and laying. Paper felt was supplied at one shilling a yard,. but it is unclear whether it was used beneath the carpet, as the quanties differ.[135]

At the Great Exhibition of 1851 the Patent Woollen Cloth Company of London showed its Royal Victoria Felt Carpeting, which was claimed to have been in use for several years,[136] and for which it was awarded a medal. It was made of woollen felt, and it may have had competitors, for in a contemporary advertisement the company warns against 'parties who are selling an inferior description of goods as Felted Carpet'.[137] In Australia, however, there is no report of any such a material until 1937, when a new unsealed felt product for flooring was launched as Marbled Feltex - The

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128 *Tasmanian and Austral-Asiatic Review*, 31 July 1835, reproduced in James Broadbent, 'A Survey of Colonial Imports', in Broadbent [ed] *India, China, Australia: Trade and Society 1788-1850* (Sydney 2003), p 106.

129 Kerr, *'An Exelent Coliney'*, p 68.

130 'Rusticus' [W S Chauncey], *How to Settle in Victoria* (Melbourne 1855), p 23.

131 'Annie Drysdale diary, 9 August 1841, in P L Brown [ed], *Clyde Company Papers. III.* (London 1958), p 79.

132 Broadbent, 'Survey of Colonial Imports', p 159.

133 Centennial Exhibition, *Official Record*, pp 732, 733, 962.

134 Judith Wright, *The Generations of Men* (Melbourne 1959), p 73.

135 Invoice from Cullis Hill & Co, Melbourne, to John Beswicke, 30 May 1888, in the possession of Ken Bethell.

136 Great Exhibition, 1851, *Catalogue*, I, advertisements p 583; II, p 572.

137 *Builder*, XI, 532 [16 April 1853), p 254.

New Artistic Floor Covering', in a range of colours including burgundy, rust red, brown, green, dark blue, mid blue, dark grey, fawn and rose pink.[138]

By the time of World War I a number of manufacturers in the world were making a form of roofing felt which was given a surface rather like linoleum and sealed on the underside, with names like Floortex, Feltoleum and Fibarlin.[139] A related material was Congoleum. Though these products are found in Australia, the only local maker appears to have been Michael Nairn & Co of Auburn, New South Wales, also advertised Nairn Felt.[140] In the 1950s Hudson & West of Sydney advertised as the sole distributors in Australia of Vynoleum, a PVC on a backing of jute felt,[141] and it was presumably about the same time that a similar flooring called 'Rostella' appeared on the Australian market. This also consisted of a thin layer of pvc (in a variety of colours and patterns) on a bonded felt base and it came in a 52 inch [1.3 m] width. The Australian agents were E J Hart Pty Ltd of Sydney.[142] For a rather flimsy-looking material it proved to be surprisingly durable.

138 *Australian Home Beautiful*, March 1936, quoted by Peter Cuffley, *Australian Houses of the '20s & '30s* (Fitzroy [Victoria] 1989), pp 4, 203.
139 Simpson, *Cheap, Quick, & Easy*, p 91.
140 Nairn, *Care of Your Floor*, no page.
141 *Ramsay's Catalogue* [1954], § 28/19.
142 Nairn, *Care of Your Floor*, no page.