# BOTANICAL INVESTIGATION

# OF

# NEW SOUTH WALES

# 1811-1880

## Volume II




L.A. Gilbert,
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## CHAPTER IV

## TIMBER TREES AND TIMBER MEN

"A True Wirerope and Ginblock Detie
Between The Years 1875 & 1879.

An old ceadergetters Camp 40 years ago
At the head of Terania Creek.
Where the mountains run high and low,
I'm camped beneath an old ceader tree
Where the vines and lawyercanes are thick.
I'm in my bunk with my old clay pipe
And I listen to the roar of the highwater falls
And I think of the wild days I've seen
And many a high flood I've seen out there
Those floods the ceader logs to Lismore do bring
And many a hard swim I've done.
Come out to the camp with me
From Gibber hut I now start
With my brush hook a long track I have cut
This track is rough as rough can be
And many the swag on my back
Out there I did hump.
And when my camp we have sighted
I will tread you to some soft beef, damper & black tea
And some fine ceader out there you will see
Out there where the turkeys & dingoes do ramble
By night & by day out where the Furns & bangalows grow
That's the camp where rats, ticks & leaches are out there
My team wants a spell I've turned them on gibber grass for a rest.
For 43 years I've roamed this wild bush,
Cutting new tracks and new roads out there
So I now lie down my brush hook & axe
I have hung up my saw
I now rest I cannot do no more.

Toiled and Composed By a true old bush man,
Henry Flick, September 21th 1919."1

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1. Henry Flick, born 14 Jan. 1856 on William Wilson's Station, Lismore. From original manuscript, RRHS.

CHAPTER IV.

TIMBER TREES AND TIMBER MEN.

"I draw for Smeckle's Mill, Bullocky O! Bullocky O!
And it's many a log I draw, Bullocky O!
I draw cedar, beech and pine, and never get on the wine,
I'm the king of the bullock drivers, don't you know, Bullocky O!"

William Duncan.[1]

"Necessity has no law".

When Phillip sailed into Botany Bay in January 1788, his expectations[2] concerning the timber resources of New South Wales were necessarily based upon the rather inconsistent views of Banks and Cook.[3] Reports from the pit-sawyers who were immediately set to work at Point Sutherland[4] could only have been disheartening, and when the expedition

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1 William Duncan (1833-1904), timber hauler. Verse from his great-great-granddaughter, Miss Cecilia Guinea of Murwillumbah 21 July 1967.

2 the various "plans" for settling N.S.W. (e.g. those of James Maria Matra, Sir George Young and Lord Sydney, HRNSW,I(2),pp. 1-19) were concerned more with the timber and flax resources of New Zealand than with those of N.S.W.

3 Cook had recorded : "The Woods do not produce any great variety of Trees, there are only 2 or 3 sorts that can be call'd Timber; the largest is the Gum Tree which growes all over the Countrey, the Wood of this Tree is too hard and ponderous for most common uses...in short most of the large Trees in this Countrey are of a hard and ponderous nature and could not be applied to many purposes." J.C.Beaglehole (Ed.): The Journals of Captain James Cook on his Voyages of Discovery, Camb., 1955, I,p.393. In 1770 Banks had recorded : "For the article of timber, there is certainly no want of trees of more than midling size and some in the valleys very large, but all of a very hard nature; our carpenters who cut them down for fire wood complaind much that their tools were damaged by them." J.C.Beaglehole (Ed.) : The Endeavour Journal of Joseph Banks, 1768-1771, Syd.,1962, II,p.114. In 1779, however, when giving evidence before a House of Commons Committee, Banks claimed that "there was an abundance of Timber and Fuel, sufficient for any Number of Buildings, which might be found necessary." (H. of C. Journal, xxxvii,p. 311 quoted in Beaglehole: Banks, II,p.113). It seems that, in retrospect, Banks's botanical enthusiasm caused him to paint an increasingly glowing account of N.S.W. and its resources. By 1785 he felt bound to tell the Committee that N.S.W. timber "appeared to me to be fit for all the purposes of House Building and Ship Building." (quoted in O.Rutter (Ed.): The First Fleet : the Record of the Foundation of Australia...Lond., 1937,p.40.)

4 in the vicinity of the grave of Forby Sutherland, the Endeavour seaman who died in 1770. See Collins: An Account, p.4 and J. Easty : Memorandum of the Transactions of a Voyage from England to Botany Bay, 1786-1793, Syd.,1965, p.92. The sawyers must have become quickly disgusted with the hard, gnarled Angophora, Eucalyptus, Banksia and Melaleuca trees of this area.

moved to Port Jackson, hopes for a ready supply of good lengths of easily-worked timber probably faded completely.[5]

Once the fellers, sawyers, ships' carpenters and hut-builders with varying degrees of skill, had done their best, Phillip felt constrained to report that

> The timber is well described in Captain Cook's voyage[6], but unfortunately it has one very bad quality, which puts us to great inconvenience; I mean the large gum-tree which splits and warps in such a manner when used green, and to which necessity obliged us, that a store-house boarded up with this wood is rendered useless. The timber which in

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5 the more swampy areas in the lower Tank Stream Valley would have supported such trees as Swamp Oak, Casuarina glauca; Swamp Mahogany, E. robusta, and Bangalay, E.botryoides. On the poorer sandy soils would have been Honeysuckles, Banksia serrata and B.integrifolia; Scribbly Gum, E.haemastoma; Snappy Gum, E.racemosa; Bloodwood, E.gummifera; Sydney Red Gum or Smooth-barked Apple, Angophora costata, and, close to the salt water, the Shade or Bastard Mahogany, E.umbra. The somewhat heavier and deeper soils would have supported some Blackbutt, E.pilularis; Forest Red Gum, E.tereticornis; Sydney Blue Gum, E.saligna; Red Mahogany, E.resinifera and Turpentine, Syncarpia glomulifera. Although some of the latter trees soon won favour, at the outset all of these would have presented a formidable challenge to axemen, splitters and sawyers. It was little wonder they quickly turned to the more tractable fibrous trunks of the Cabbage Tree Palm, Livistona australis. (see Chap.III, p.281 and Appendix VIII).

6 this was the 'official' voyage edited by John Hawkesworth : An Account of the Voyages...for making Discoveries in the Southern Hemisphere...Lond., 1773,III,p.101,at Botany Bay : "Wood indeed is every where plenty, but I saw only two kinds which might be considered as timber. These trees are as large, or larger than the English oak, and one of them has a not very different appearance: this is the same that yields the reddish gum...and the wood is heavy, hard, and dark-coloured...the other grows tall and straight, something like the pine; and the wood of this, which has some resemblance to the live oak of America, is also hard and heavy... mangroves also grow in great plenty..." Cook's general impression was (pp.218-219) : "Of trees there is no great variety. Of those that could be called timber, there are but two sorts; the largest is the gum tree, which grows all over the country...it has narrow leaves, not much unlike a willow; and the gum, or rather resin...is of a deep red, and resembles the sanguis draconis...The other timber tree is that which grows somewhat like our pines...The wood of both...is extremely hard and heavy..." Chief among Cook's Botany Bay "gum trees" would have been Sydney Red Gum, Angophora costata which yields a red kino, while the "pine" would have been Forest Oak, Casuarina torulosa and Swamp Oak, C.glauca. Cook also referred to "trees covered with a soft bark that is easily peeled off", used in the East Indies "for the caulking of ships". This was doubtless the Broad-leaved Tea Tree, Melaleuca quinquenervia, still found at Botany Bay. Banks also recorded this. Beaglehole : Banks, II,p.114.

> its growth resembles the fir-tree warps less[7], but we are already obliged to fetch it from some distance, and it will not float.[8]

Other observers were less restrained; they spoke not of the "inconvenience", but of the virtual impossibility of employing local timber to meet settlers' needs.[9] Even four years after the first settlement, it was still claimed that

> The trees with which the whole country abounds are found to be of little use -- not fit either for building houses or boats, though there are many boats built with them, but they will not last long; and like-wise houses, for necessity has no law. There are two kinds of oak, called the he and

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7 i.e. the She-oaks, e.g. Forest Oak and Swamp Oak.

8 Phillip to Sydney, 15 May 1788, HRNSW, I(2),pp.127-128. The early colonists constantly complained that the green hardwood logs would not "swim". The need to season timber was quickly appreciated, but impossible to meet.

9 the chief complaints were that the timber was hard and heavy, and that the trees, in modern timbermen's terms, were "dozey" or "pipey", i.e. decayed or hollow in the heart of trunk and limbs. Surgeon Arthur Bowes of the Lady Penrhyn : "...the trees (are) very large and in general hollow and the wood itself fit for no purposes of buildg. or any thing but the fire." (Bowes : MS Journal, 20 Jan.1788. ML. safe p.h.8); Watkin Tench : "The species of trees are few, and, I am concerned to add, the wood universally of so bad a grain, as almost to preclude a possibility of using it..."(Tench:Narrative,p.119, also p.103). There was great difficulty obtaining a mast for the Supply, "the trees being either rotten at the heart, or riven by the gum, which abounds in them." (Tench:Complete Account, p.164). Letter of an officer, perhaps Surgeon John White,18 Nov.1788 : "These gum-trees grow to an amazing size, but are scarce worth cutting down. The only tree fit for building or any other use is the fir-tree [i.e.Casuarina] and even that is bad." (HRNSW,I,(2),p.222). Note also the report that the trees "were either so very crooked, so rent, or so very rotten in the heart, that we could scarcely get one sound or serviceable in a dozen...The wood is so exceedingly heavy..." (Hunter: Journal, p.72); An officer's letter, 12 July 1788 : "There are three or four kinds of trees which are of little use except for burning; one only I can except, a species of fir, which may be of use in building,&c."(HRNSW,II,p.744.); Major Robert Ross : "It is very certain that the whole face...is covered with trees, but not one bit of timber have we yet found that is fit for any other purpose than to make the pot boil." (Ross to Nepean,16 Nov.1788,HRNSW, I(2), p.213).

> the she oak[10], but not to be compared with English oak, and a kind of pine[11] and mahogany[12], so heavy that scarce either of them will swim. Some distance up the country the trees grow very strait, and to a great heighth, though not one in a hundred are sound.[13]

The fact that "necessity has no law" ensured an immediate and and thorough empirical investigation of the timber resources of the bush — an investigation initially prompted by desperate need rather than by scientific enquiry.

The Needs of War.

Despite the almost unanimous condemnation of native timber, official interest, motivated by war or by threat of war, intensified.[14] It was inconceivable, especially in the light of Banks's evidence, that a

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10 In Tasmania these terms were applied respectively to the species now known as Black She-oak, Casuarina littoralis and Drooping She-oak, C.stricta. (J.D.Hooker : Flora Tasmaniae, Lond., 1860, I,p.348). Both these species could have been found near Port Jackson (the latter on the Narrabeen shales to the north) but it is more likely that such species as Forest Oak, C.torulosa and Swamp Oak, C.glauca are meant. These tend to be larger and more generally useful. Note the early use of the term "She-oak" which probably arose from a superficial resemblance of the timber to English Oak, rather than to the North American "Sheack". See Hooker : loc.cit. and Cox & Freeland : Timber Buildings, p.18, where the interesting point is made that American "sheac" was known as Beefwood, a name by which Casuarina timber was long known.

11 "Pine" often implied Casuarina, but here it seems that either Port Jackson Pine, Callitris rhomboidea or Mueller's Pine, C.muelleri is intended.

12 Red Mahogany, E.resinifera or the Large-fruited Red Mahogany, E.pellita.

13 Journal of George Thompson, May 1792. HRNSW,II,p.799. The decayed heart of many Eucalypts and Angophoras was a constant cause of complaint. See the Toongabbie settler's letter, 30 Nov.1792, HRNSW,II,p.807, and Collins : An Account, p.20.

14 England was at war during most of the period from the days of Cook until midway through Macquarie's administration : War of American Independence, 1775-1783; Revolutionary War against the French Republic, 1793-1802; Napoleonic War, 1803-1814; War with USA, 1812-1814; Battle of Waterloo, 1815. The need for naval timber was therefore constant and urgent. The fact that "much of the oak, especially in the royal forest, was found to be diseased" added to the urgency of the situation, and the horticulturist William Forsyth was invited to carry out the measures he claimed would "cure" the trees. See R. Webber : The Early Horticulturists, Lond., 1968, pp.102 et seq.

land which appeared "to be one continued wood"[15] should not produce some timber of value to a leading maritime power. It is therefore almost certain that Phillip received positive instructions, subsequent to those originally issued, to send timber specimens to England for examination and for testing under conditions which might be expected to reveal more than the trial-and-error experiments in the Australian bush.[16] In any case Phillip took care that HMS Gorgon returned to England in December 1791 with "specimens of the timber of this country."[17] Seven months later, Philip Stephens, Principal Secretary for Marine Affairs, advised that the specimens had arrived, and that "trials will be made of their qualities."[18]

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15 Phillip to Sydney, 15 May 1788, HRNSW, I(2), p.127.

16 e.g. the letter from the Commissioners of the Navy, Nov.1790 and that from Secretary Stephens of the Admiralty, 10 Mar.1791, now both lost. See HRA, I,pp.214,251,302.

17 Phillip to Stephens, 16 Nov. and 16 Dec.1791, HRA, I,pp.304, 327.

18 Stephens to Phillip, 21 July 1792, HRA, I,p.368. It can only be assumed that most of these specimens were from trees close to Port Jackson, such as those listed in footnote No.5, supra.

There followed many more shipments of timbers[19] for testing, for use by cabinet makers and naval carpenters, and for collectors to treasure as antipodean novelties. In anticipation of imperial demands and local needs, Governor King startled the colonists with his conservation order of June 1803 :

> Timber in this colony includes she and swamp oaks, red, blue, and black-butted gums, stringy and iron barks, mahogany, box, honeysuckle, cedar, lightwood, turpentine, &c....[20]

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19 e.g. in March 1800, HMS Reliance, Capt.Henry Waterhouse, sailed with samples of cedar and "a piece of wood very common here...much admired in England" (probably Beefwood, Casuarina sp.), John Thompson to Capt. John Schanck, 8 Sept.1799, HRNSW,III,p.717, and IV, p.119. The Reliance itself had been repaired with NSW timber. HRNSW, IV,p.730. In May 1803, HMS Glatton, Capt. James Colnett, sailed with a hurriedly-loaded timber cargo in response to an urgent request from the Admiralty made as relations with France deteriorated. On the very day war with Napoleon resumed (18 May 1803) the Glatton sailed from Port Jackson with 162 pieces of timber 12 to 29 ft. long, 12" to 24" deep, and 12" to 17" wide, designated "Black Gum" (either Black-butted Gum, E.pilularis or Black-spotted Gum, E.maculata); "Mahogany" (Red Mahogany, E.resinifera or E.pellita); "Iron Bark" (e.g. E.paniculata, E.crebra, E.sideroxylon); "Stringy Bark" (e.g. E.eugenioides, E.capitellata, E.oblonga, E.globoidea, E.agglomerata); "Box" (e.g. E.moluccana, E.quadrangulata); 55 pieces of "Lignum Vitae or Dye Wood" (this is difficult to determine -- perhaps from large specimens of Acacia falcata, or from Zieria arborescens, or from Cudrania cochinchinensis); and 23 pieces of "plank of Beef Wood and Box" (i.e. Casuarina torulosa and/or C.glauca and/or C.cunninghamiana and the Box species abovementioned). HRA, IV,pp.253-258, 266. See also Syd.Gaz.,15 May 1803. In August 1803, the Cato and Bridgewater carried between them over 3,200 super.ft. of Casuarina timber, and during the remainder of the year a further 3,600 super.ft. (mainly Casuarina) were shipped from Port Jackson. HRA, IV, p.526. Over 400 pieces of timber were carried by HMS Calcutta in 1804 (King to Nepean, 1 Mar.1804, HRA, IV, p.556). Not all timber was exported in King's ships : Robert Campbell's Lady Barlow had 100 tons of Beefwood (Casuarina) on board when she was seized by the London Customs in July 1805 (HRNSW, VI,p.101) and another of his vessels, the Sydney, loaded for the Navy Commissioners a cargo of "Timbers and Knees" comprising "about 7,700 Solid Feet" of timber. (King to Camden, 17 July 1805, HRA, V,p.505). The Boyd, chartered to Simeon Lord, had Red Cedar and Red Mahogany in its cargo at the time of the New Zealand massacre in 1809. Maiden : Forest Flora NSW,I,p.69 : Syd.Gaz., 5 Nov.1809.

20 Note the developing vernacular nomenclature. The species would have been, respectively, Casuarina torulosa, C.glauca, E.tereticornis, E.saligna, E.pilularis, "stringy and iron barks" as above, similarly mahogany and box; Honeysuckle, Banksia serrata and B.integrifolia; Red Cedar, Toona australis; Lightwood, probably Coachwood, Ceratopetalum apetalum; Turpentine, Syncarpia glomulifera.

HARDWOODS OF THE SCLEROPHYLL FORESTS

BLUE GUM AND GREY GUM, E.saligna and E.punctata forming a tall sclerophyll forest near Wyong, 1905.

Photo: NSW Govt. Printer, No.2312.

King conceded that grantees and lessees had claim to the timber on their land

> excepting timber fit for naval or other public purposes, which those authorized by the Governor may mark, cut down, and remove in and from any situation, public or private.

Settlers might obtain "fuel from fallen woods" but they would be answerable to the law if they were found

> cutting down, barking, damaging or destroying any timber or trees fit, or likely to become fit, for ship-building, buildings, masts, or mechanical purposes

without permission.[21]

Both King and his predecessor, Governor Hunter, provided testimonies which greatly stimulated interest in colonial hardwoods, especially for naval purposes.[22] Their energetic promotion of native timbers reflected not only the fervent hope for an acceptable staple export[23], but also the speed with which some colonial artificers had come to grips with the new environment. While George Caley was distinguishing

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21 Proclamation of 21 June 1803, HRA, IV,p.363.

22 see Ex-Governor Hunter to Under-Sec.King, 22 Mar.1802, HRNSW,IV,pp.728-733. In this enthusiastic report, Hunter lauded the previously-condemned "crooked limbs of most of the gum-trees" as being "very fit for ship timbers or ribs, and...uncommonly durable." He also referred to Box (e.g. E.moluccana), Beefwood or She-oak (Casuarina spp.) etc. and to colonial timbers being useful for masts, planking, cogs, gun-carriages, etc. Lord Hobart relayed this information to Gov. King to stem the flow of exports likely to relieve "the burthen at present borne" by the Mother Country, where "the scarcity of Timber" was becoming a problem "for His Majesty's Dock Yards." HRA, III,pp.568, 571. HMS Calcutta thus returned to England fully laden with timber. In Dec. 1807, Ex-Governor King reported to the Commissioners of the Board of Revision on the suitability of certain timbers for such naval purposes as masts, keels, beams and planking. He mentioned Ironbark (e.g. E.paniculata et al.spp.); Stringybark (e.g. E.capitellata, E.eugenioides); Box (e.g. E.moluccana); Blue Gum (E.saligna) and "Blackbutted Blue Gum" (E.pilularis). HRNSW,VI,p.397.

23 "Still, if I except the ship timber, with which this part of the territory abounds, we possess no known staple whatever." King to Hobart, 7 Aug. 1803, HRA, IV,p.357.

"BLACK-BUTTED GUM".

GIANT BLACKBUTT, Eucalyptus pilularis, the celebrated "Bird Tree", 227 feet high, on Middle Brother Mountain, south of Kendall. First brought to scientific notice by the founder of the Linnean Society, James Edward Smith in 1797, Blackbutt has been admired since the earliest days of settlement. Although found in coastal forests north from Twofold Bay, it reaches its highest development in the high rainfall areas north of Port Macquarie and is said to be "the 'bread and butter' tree of the forest services."

Photo.:L.G., 7 June 1969.

botanical differences between "nearly 50 species of Eucalyptus"[24] in the vicinity of Port Jackson, officers of His Majesty's Portsmouth Yard were examining N.S.W. timbers which had been suggested, or already used, for naval purposes.[25] By the beginning of 1808, the Navy Commissioners, basing their findings on the cargo of HMS Calcutta, considered

> that the Species Known by the names of the
> Stringy Bark Box and
> Iron Bark Mahogany
> are of the most durable quality and may be most advantageously employed in the construction of His Majesty's Ships.[26]

The Calcutta had in fact been loaded with "timber and plank... as much as the ship could take", a cargo which Governor King hoped would "be found very useful in His Majesty's dockyards"[27]. Two of Calcutta's officers, Captain Daniel Woodriff and First Lieut. James Tuckey prepared, with the aid of local timber workers, accounts which are notable among the early detailed assessments of colonial

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24 Brown in Flinders : Voyage, II,p.547. It is interesting to note that the most recent work on the plants of this area lists a comparable number of Eucalypts--68 species. N.C.W.Beadle, O.D. Evans & R.C.Carolin : Handbook of the Vascular Plants of the Sydney District and Blue Mountains, Armidale,1962, pp.268-281.

25 HRNSW, VI, p.397.

26 Navy Commissioners to the Hon.Wm. Pole, 7 Jan.1808, HRA,VI, p.206. See previous lists for identifications of these timbers. Governor Bligh was to be instructed to establish stocks of these timbers "agreeably to the Drawings of the Frame Timbers of a 98, 74 and 38 Gunship." The Governor "should be directed to cause the pieces thus shaped to be piled in such a manner as will not only give them a degree of seasoning but at the same time ensure their preservation." HRA, loc.cit. Within three weeks of this recommendation being made, Bligh was deposed, and it fell to Lieut.-Col. Joseph Foveaux to advise Castlereagh on 6 Sept.1808, that "the present distress'd state of the Colony for labourers particularly Mechanics" made it "intirely impracticable to prepare a cargo" comprising "such a quantity of wood as might be considered an object in England." Foveaux did in fact have "Timber cut down, sawed, and conveyed to the Dock Yard at Sydney, to the value of upwards of Two Thousand Pounds..." HRA, VII, p.233.

27 King to Hobart, 1 Mar. 1804, HRA, IV, p.494.

PIT-SAWING

THE ABEL BROTHERS at their saw-pit in a Richmond River rainforest, c.1890. Jack Abel is holding the pit-saw; his brother Tom, died in 1953, aged 90.
Photo : RRHS, donated by Mrs. R.A.Wallace, Moleton, NSW.

OLD SAW-PIT SITE near Terranora Inlet, Tweed District. Here Mr. Bill Sullivan (b.1889) is explaining how the excavation appeared when he first saw it about 1900. The pit was last used about 1890.
Photo: L.G. on Sullivan's farm, near Terranora, June 1970.

timber.[28]

Notwithstanding the interest in the Eucalypts near Port Jackson, the most significant timber discovery had been made in the days of Phillip. Near the Nepean, were found trees

> about the size of large walnut-trees, which they resemble; they shed their leaves, and bear a small fruit which is said to be very wholesome.[29]

This was certainly Red Cedar, Toona australis, a tree which established a distinctive bush industry and which profoundly influenced the spread of settlement along the coast and the demand for colonial timber. It is likely that Phillip's specimens of 1791 included some of this "very light" timber, and it seems that Col.William Paterson sent Red Cedar samples to Banks three years later.[30] The first major export of Red

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28 Calcutta sailed on 16 Mar. 1804. Woodriff lost the ship to the French the next year. This particular cargo comprised about 600 logs, all marked with "a Broad Arrow and X" and designated "Mahogany", "Box", "Blue Gum", "Black-butted Gum" (identifications given previously); "White Gum" (perhaps E.haemastoma); "Black Gum" (probably "Black Spotted Gum", E.maculata, and certainly not at this stage the Black Gums of the moist areas of the central and southern highlands, E.stellulata and E.aggregata); "Stringy bark", "Red Gum" and "She oak" (identifications given previously); "Apple Tree", Angophora costata. Woodriff Papers, 1805-1849,ML.A3006,pp.12-18. See Appendix X for further notes on this important report which was apparently compiled largely from information supplied by "Mr. Moore". This was doubtless Thomas Moore, Superintendent of the Government Dockyard, Sydney, 1796-1809. James Tuckey's report, compiled 1803-1804, referred to the names, qualities and uses of 16 colonial timbers. Timber weights were also recorded. The unsigned draft (upon which Tuckey based "Observations on the various kinds of Timber found in New South Wales" in his An Account of a Voyage to Establish a Colony at Port Philip in Bass's Strait...in His Majesty's Ship Calcutta...Lond.,1805, pp.224-230) apparently went to Banks. See Banks (Brabourne) Papers, Vol.4. ML.A78-3,pp.288-295. See Appendix XI for this Timber Report.

29 Phillip to Sydney, 13 Feb.1790. HRNSW,I(2),p.306. The dry oblong capsule fruits of Red Cedar are certainly not "very wholesome" but otherwise the description is apt enough. White Cedar, Melia azedarach var. australasica does have succulent drupaceous fruits, but they have been long associated with poisoning rather than with wholesomeness. Hurst : Poison Plants pp.214-217. Both trees would have been found along the Nepean-Hawkesbury, but despite the confusion it seems that Red Cedar was definitely noted by Phillip by February 1790.

30 Paterson to Banks, 12 Dec.1794 : "Mr. Laing, Surgeons Mate of the Corps will deliver this, he was with me on our journey towards the Bleu (sic) Mountains...Mr. L. has two specimens of a tree lately discovered on the Banks of the Hawkesbury which he will deliver with the drawings, the tree grows to a large size & is the lightest wood & most useful of any that has yet been found in the Colony."
Banks (Brabourne) Papers, Vol.18. ML. A81, p.284.

Cedar appears to have been made in January 1795 when Captain Edward McClellan sailed from Port Jackson for Bengal with a cargo of "mahogany"[31] and "sixty large logs of the tree which we had named the cedar"[32]. The development of the cedar industry will be considered later.

As the war with Napoleon intensified during the early part of Macquarie's administration, so did the interest in colonial timber. Shortly after landing from the Dromedary on the last day of 1809, the new Governor was advised by the captain of the escort ship, HMS Hindostan, that under direct instructions from the Admiralty[33], he was

> ready to receive on board any quantity of timbers that may be ready to ship for His Majesty's Service at home...[34]

The Dromedary also was loaded with timber specimens and fitted with pumps of local Ironbark.[35]

Thus when Macquarie arrived there were still some sanguine expectations that the Royal Navy might be well served by the sclerophyll forests of New South Wales, although many must have felt that the resources of the coniferous forests of Canada and the Baltic were not only much closer, but also thoroughly proven. But the point had not yet been appreciated that "of all the natural productions of Australia the native grass is, beyond all comparison, the most valuable...[36]

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31 Red or Forest Mahogany, E.resinifera, probably found more towards Parramatta than around Port Jackson.

32 Collins : An Account, p.412. McClellan had sailed his Experiment to the Hawkesbury to obtain the cedar. Gov. King later maintained that "coals, cedar, and other woods" taken to India and the Cape had met with "bad success" (!) King to Hobart, 9 May 1803, HRA, IV, p.84.

33 John Barrow to Capt. John Pascoe, II Feb. 1809. Letters to Gov. Macquarie, NSW Archives, 7/2736. p.16.

34 Capt. John Pascoe to Macquarie, 10 Jan. 1810, op.cit., p.15. The Hindostan (with Ex-Gov. Bligh) and Dromedary sailed in company with the Porpoise on 12 May 1810.

35 the timbers included Ironbark, Blue Gum, Stringybark, Spotted Gum, Blackbutt, Forest Mahogany and Red Cedar (identifications as before). Woodruff Papers, 1805-1849, ML. A3006, pp.12-18.

36 J. D. Lang : Cooksland in North-Eastern Australia...Lond., 1847, p.130. Others also appreciated this by the thirties and forties, e.g. Dawson : Present State, p.413 : "The main object of a settler's attention in Australia, should be the production of fine wool", and Sidney : Settle and Succeed, p.33 : "The strength of Australia is in her Pastures."

Bush Work in the Sclerophyll Forests

By Macquarie's time the chief sources of timber were the Hawkesbury and Hunter Rivers, Liverpool, the Lane Cove River Valley and the country between it and the Parramatta River[37], with Illawarra and the Hastings River[38] becoming important especially after 1820. In May 1810, Macquarie inspected the "Government Saw Pits at Lane Cove" and found "the Timber there getting scarce" so that the pits "must soon be removed to another place where Timber is more abundant".[39] These particular pits may indeed have been abandoned, but the Lane Cove district long remained an important and convenient source of Sydney's timber requirements. In 1828, Alexander Harris noted on a trip up the Lane Cove River that

> the whole bush in this part of the country was then thronged, as indeed it was also almost all round Sydney, with men who get their living by various kinds of bush work; some felling and squaring whole trees with the squaring axe for girders, &c., &c., to use in the colony or export, some splitting out of wood the slatelike shingles with which the houses are here covered in; some splitting posts, rails, paling, for fences; some sawing the various sorts of building stuff, and some cutting and splitting firewood for domestic purposes

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37 derived from shipping notices in the Sydney Gazette, the Bigge Enquiry evidence, Bigge : State of Colony, p.21, and JRAHS, 1916,pp.278 et.seq. Pennant Hills and Kissing Point were particularly productive areas.

38 Macquarie visited the Hastings in 1821 shortly after the establishment of Port Macquarie where he inspected logs of Red Cedar and Rosewood, "two of the largest logs" of which he proposed taking back to England "as specimens of the wood of Port Macquarie." Macquarie: Journals of Tours, pp.213-214. During his administration, Macquarie maintained an interest in timber trees and he often recorded them,e.g. Red Cedar and Rosewood on the Hunter, Jan. 1812 and on the Hastings, Nov. 1821; Bloodwood on the Blue Mts., May 1815; "white and blue gums and honey suckle" at Jervis Bay, Nov. 1811; Cypress Pine near Bathurst, May 1815, and timber trees at Illawarra in Jan. 1822 : "the black-butted gum, stringy bark, turpentine, mountain ash, fig, pepperment (sic), boxwood, sassafrass, and red cedar." (See Chapter II, p.169 for identifications Macquarie: Journals of Tours, pp.48, 87, 103, 108, 210, 213, 240.

39 Macquarie was told that "the Stringy Bark and Blue Gum Trees are the best and fittest for Buildings & Floorings." (probably E.capitellata and E.saligna). Macquarie's Diary, ML.A772, entry for 15 May 1810.

> at Sydney, or for the use of the various steam-engines that were already in operation on water and on land.[40]

Yet "wood fuel, so necessary an article of domestic comfort", had already begun

> to be very scarce. Nearly the whole of that supplied to Sydney is brought nine miles and upwards, and fetches an exhorbitant price.

In fact, only the scarcity of iron grates prevented "the old English coal fires" from becoming "a universal substitute."[41]

In 1838, Sydney was still "Principally supplied with timber from Lane Cove"[42], and "some local timber was still being used during the 1880s and 1890s by mills, especially at Eastwood"[43] in the vicinity of Terry's Creek, a tributary of the Lane Cove River. Although the close wet sclerophyll forests in certain areas north of the harbour provided a variety of trees[44], the two most favoured timber trees were Sydney Blue Gum, E.saligna and Blackbutt, E.pilularis. Of these, Blackbutt was probably the most abundant and the most used. Alexander Harris spoke admiringly of the same tree in the Illawarra in the 1820s :

> fine tall black butts, even as a gun-barrel, and as straight in the grain as a skein of thread...The slabs ran out beautifully; you could scarcely tell them from sawed stuff;

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40 Harris : Settlers and Convicts, pp.87-88. Harris emphasised this point of the ubiquitous and industrious bushworker. There were "many timber merchants" with "establishments up these rivers" and "there were sawyers, splitters, squarers, firewood getters scattered through the bush hereabouts in all directions." Harris had not previously been "aware how thickly the bush around Sydney was at that time peopled by sawyers and splitters." op.cit., p.86. The sawyers, chiefly "old hands", washed their clothes, sharpened their saws or searched for "good trees" on Sundays, maintaining that "no luck attends Sunday work." They dressed in "lace-up boots, duck trousers, check shirt, coloured silk handkerchief, and straw hat." op.cit., pp.87-88. The timber was ferried to Sydney in "snug little 2½ or 3 ton boats." See also Harris: Secrets, p.114 for a note on Joseph Fidden's timber camp, and his wharf at the head of navigation on the Lane Cove River.

41 Monitor, 16 July 1826. The Monitor did not go into the problem of coal transport.

42 Gipps to Glenelg, 18 Oct. 1838 NSW Gov.Desp. Vol.30, ML.A1219, p.537.

43 M.C.I.Levy : Wollumetta : a History of Ryde and its District, 1792-1945, Syd., 1947, p.54 (on the evidence of Ryde Municipal Council Minutes).

44 the most prized timber trees cut in these forests were Blackbutt, E. pilularis and Sydney Blue Gum, E.saligna (as mentioned above) and Red or Forest Mahogany, E.resinifera; White Mahogany, E.acmenioides; Stringybark, E.eugenioides and E.globoidea; Mountain, Spotted or Monkey Gum, E.cypellocarpa; Bloodwood, E.gummifera and Turpentine, Syncarpia glomulifera.

there was hardly a splinter on half a dozen of them.[45]

But the clean-splitting qualities of some timber trees still did not entirely compensate for their hardness. As Peter Cunningham pointed out in 1826 :

> Edge tools require to be particularly well tempered to withstand our hard woods. Our felling axes are long and narrow, to penetrate our iron woods more readily, and with one somewhat larger and narrower still, the mortices are cut in the posts.[46]

Splitters learned to select their trees

> by the straightness of their stem, its freedom from notches, and the smooth, straight-grained nature of the bark, the swirly bark always denoting a swirly fibre in the wood. Seldom more than three lengths, of seven feet each, can be got out of a single tree, the block being burst, quartered and then split up into rails, which is accomplished by splitting from the centre outwards, throwing the core away. Each block averages about fifteen rails. The wedges are long and thin, with an irregular indented groove up the middle, to make them draw and be retained better, from the hold the irregularities of the groove give.[47]

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45 Harris: Settlers and Convicts, p.29. In 1918, demolition of old building indicated that "the largest percentage of sawn timbers" in buildings constructed c.1845-1865, was Blackbutt. "Ironbark appears only to have been used for girders and story posts. These were prepared by the axemen, the sawyers evidently avoiding the ironbark as much as possible." The timbers, though well preserved, all had the same characteristics: "numerous gum-veins, shortness of grain, poor in texture, and signs of abnormal shrinkage...generally characteristic of inferior timber." G.H. Olding in Aust. Forestry Journal, April 1918, p.29. This would indicate unskilled or hasty selection and inadequate seasoning; with reliance being placed largely on the massiveness of the timber used in construction. In 1830, "repairs to Public Buildings, which are most numerous" were attributed "to the badness with which they have originally been constructed, hastily put together with Timber not sufficiently seasoned..."Charles Wilson, Office of Public Works, to Col.Sec., 1 July 1830. NSW Gov.Desp. Vol.18, 1830, ML.A1207, pp.651-652. Note also Captain George Barney's observation : "Timber must be obtained long befor it is wanted for use, for the purpose of seasoning, the improper application of unseasoned timber is exhibited in the early decay of the greater portion of the Buildings of this Colony, more particularly the Public Buildings..." Report of 2 Dec.1836, NSW Gov.Desp. 1837, ML.A1275, p.119. On the other hand, lintels of Blackbutt and Forest Mahogany removed from the Sydney Law Courts in 1921 were sound after 104 years, with "no trace of dry-rot or decay." Aust. Forestry Journal, April 1921, p.109.

46 Cunningham : Two Years, II, p.165.

47 op.cit., pp.165-166. Cf. Bennett: Wanderings, I, pp.169-170 : "When the bark of the 'stringy bark'...is waved, it is rejected by the stock-keepers, fencers, &c., as unserviceable, the timber being then found twisted, and not capable of being split into straight pieces for paling &c., but when the fibres of the bark run...parallel...the wood of the tree is also found to correspond, and...readily split into rails, posts..

The sawyers' method of work in the sclerophyll forests near Sydney in Macquarie's time has probably been best described by Walter Hibble. In 1916, he not only had access to an unidentified "old wood cutter's diary", but also knew old residents still able to recall having seen in the 1850s and 1860s the timber framework around eleven early Government saw-pits near the present Epping Railway Station.[48]

Once a stand of suitable trees was located, a saw-pit was excavated, "preferably in the dry bed of some little creek, and a framework of logs was built around it." Hibble's detailed description of the more permanent style of saw-pit can hardly be improved :

> The pit was generally about twenty or thirty feet long, five or six feet wide, and several feet deep. Heavy logs, supported by struts, were laid along each side, and these were notched into shorter logs at each end, which were called sills. Across the pit, resting on the side skids, were laid three heavy squared logs, called transoms, to support the log...to be sawn, and there were also the cross pieces at one end for the top sawyer to stand on, and one cross piece at the other end which was used to lever on.
>
> Leading up to the pit about its centre, and at right angles to it, were log skids along which the timber...to be cut was rolled into position[49]...The log having been got on to the transoms, it was necessary to fix it so that it would be immovable while the sawyers were at work upon it. This was effected by chocking it on each side in three places, and by driving large pieces of iron, called dogs, diagonally through it into the transoms on which it rested. The next thing was to line or mark the log. This was done with a piece of worsted that had been rubbed in charcoal, obtained by charring the bark of the native pear[50], which left a very clear black line. The end was then plumbed, and marked in continuance of the top line, and also the underneath part of the log as a guide to the bottom sawyer. One end of the log having been made to project some few feet over the end transom, the sawyers took their places[51] and if the log was a large one, an eight foot

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48 these could "still be traced" in 1916. "At Pennant Hills also there was a row of Government sawpits..." W. Hibble :"Early History of Ryde and Surrounding District", JRAHS, 1916, p.278.

49 this operation was facilitated when the pit was dug on the slope of a hill or in a creek-bed.

50 Woody Pear, Xylomenum pyriforme.

51 The sawyer who worked on top of the log was the "top-man" or "top-notcher" while below him worked the "pit-man" who sometimes wore a veil of cheese-cloth or similar material to protect his eyes from the deluge of sawdust. Old sawyers in the Tweed area still speak of fearful skin sores and rashes caused by sawdust irritation. Some of the more permanent pits were protected by "shingled covers". Town and Country Journal, 25 Mar. 1871.

> saw had to be used. As the work progressed it became necessary to move transoms, which was done by levering after drawing the dogs, and eventually the first cut was finished, and the log allowed to fall into halves. With large logs, the first cut took one day, and sometimes two or two and a half to effect, and...the work was laborious in the extreme.[52] One half of the log was then placed on the transoms (or sometimes in a second pit) on its round side, and again worked [sic, i.e. marked] or lined, and two cuts were put through it, dividing it into three portions, which were afterwards cut into flitches of whatever size was required and ultimately 'ripped' into boards.[53]

Such substantial pits were used only in heavily timbered areas where the sawyers would be employed for some time amid ample supplies of good timber. When sawyers were concerned with a particular sparsely-distributed species, such as Red Cedar, much more temporary structures were prepared to accommodate just a few logs.[54] These pits often had hardly any excavation at all especially if on a slope where a timber platform could be erected. Although there were variations in the types of saw-pit constructed, the principle of pit-sawing remained the same in the sclerophyll and brush forests of the coast and the river forests and woodlands of the interior from the time Phillip established his sawyers at Point Sutherland in 1788 until at least as late as 1930 when pit-sawyers were still working in the traditional way at Nowendoc.[55] Traces of old saw-pits may still be found in areas which once supported great forests.[56]

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52 some of the Blackbutts, for example, were alleged to be "thirty, forty and even fifty feet in circumference at the base" yielding perhaps 6000 super.ft. per tree. One survivor, a giant Blackbutt, about 150 ft. high and 30 ft. in circumference at the base, was still standing north of Ryde Railway Station in 1916. Hibble, in JRAHS, 1916, pp.282-283.

53 Hibble in JRAHS, 1916, pp.279-280. See also W.S. Campbell, in JRAHS, 1919, p.257.

54 Note Alexander Harris's remark : "...when good timber began to grow scarce...we found ourselves obliged to make a fresh pit to almost each tree we cut..." Harris : Settlers and Convicts, p.105, and again, p.44: "...the ground was so rough and thickly wooded that we had to build a fresh pit to almost every tree. These pits were merely scaffold side-strikes lodged on posts against trees, with long easy skids leading up to them for pitting the log. Sometimes six inches or even a foot of earth might be excavated; but to have dug regular ground pits would have been too tedious... Usually the pits were made very solid; but at other times I felt...not quite easy while working under a log of two or three tons weight lodged on side-strikes so small and limber that they sprang up and down two or three inches at every stroke of the saw."

55 see photograph and report in Aust. Forestry Jour., Mar. 1930, p.5. In 1958, the late Thomas Duck of Wauchope presented to the Hastings District Historical Society a pit-saw with which he had "cut a dairy" in 1918.

56 see photographs on pp.348,355, 374, 375, 397.

RED CEDAR

Red Cedar, Toona australis, the most highly valued tree of the coastal rainforests which were known to the cedar-cutters as "vine brushes" or "cedar brushes."

Photo.: L. G., in McPherson Range rainforest, May 1966.

Cedar furniture, all, except the modern corner cupboard, dating from the latter half of the nineteenth century. Some boards in the piece on the right bear the distinctive marks of the pit-saw.

Photo.: L. G., 151 Brown St., Armidale, May 1969.

PIT-SAWING

PIT-SAWING AT BULLI ABOUT 1900. Note the half log, flat side up, as in Hibble's description, also the iron "dog" holding the log in position, and the sawn planks in the foreground. This was a "scaffold-pit" with no excavation.

Photo: Mitchell Library.

Investigations, Official and Unofficial.

Although the Battle of Waterloo removed the threat of Napoleon in 1815, the long war had taken heavy toll of shipping, and fresh threats had to be anticipated. Accordingly, Mr. Commissioner John Thomas Bigge during his penetrating enquiry into the state of the Colony in 1819-1821, sought and obtained a wide range of practical information about colonial timber. Little of this information was published[57], but Bigge clearly demonstrated his customary thoroughness in obtaining it. He wished to know the names given to timber trees "chiefly in use", their source, prevalence, dimensions, strength, weight, durability, and the particular purposes, especially naval purposes, they had been found to answer in the Colony. Bigge attended particularly to the long-appreciated problems of (i) the optimum size of logs likely to be sound at heart; (ii) the process of seasoning to reduce shrinkage and rending; (iii) the best season to fell timber. To obtain such practical information, Bigge turned to the convict bush workers as well as to yard superintendents, naval experts, commandants and gentlemen settlers.[58] Their combined testimony reveals how assiduously the timber resources of the bush had been investigated by Macquarie's time.

Bigge quickly ascertained the timbers favoured by colonial builders and shipwrights : "Stringy Bark, Iron Bark, Blue Gum, Blackbutted Gum[59] and Mahogany", Spotted Gum and Red Cedar. Of these, Blue

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57 see Bigge's first and third Reports, passim.

58 e.g. Thomas Messling, transported for 14 years, serving in a carpenter's gang; Patrick Kelly, Irish carpenter and joiner, transported for 7 years, served in Pennant Hills timber gang and as overseer of the Lane Cove gang; Patrick Riley, carpenter; Thomas Moore (1762-1809) master boatbuilder, superintendent of Sydney Dockyards, 1796-1809, and later benefactor of Moore Theological College. In May 1803, Moore had supplied Gov. King with a report on colonial timber likely to be useful to the Navy. HRA, IV, p.265. Robert Elwes, HMS Coromandel; Major James T. Morisset (1780?-1852) Commandant at Newcastle; Archibald Bell, (1773-1837) former magistrate of Belmont, Richmond; Charles Throsby (1777-1828) surgeon, magistrate and pastoralist of Glenfield. See Bigge : Report, Appendix, ML. BT. Boxes 1, 5, 11, 21, 22, 25.

59 sometimes, as in Moore's evidence, written as "blackbudded Gum" but this may well have been Bonwick's interpretation of the original in making his transcripts.

Gum[60] was "considered the most useful wood in the Colony and most deceptive as to soundness." This, with Blackbutt, was prevalent around the Pennant Hills camp. Evidence from the Hunter River emphasised the value of Red Cedar, Toona australis, and Rosewood, Dysoxylum fraseranum, the latter "much used for making Furniture," and the "Blue and Flooded Gums" (i.e. E.saligna and E.grandis). Separation of the latter two closely related species effectively illustrates that some bushworkers appreciated the point made at the enquiry that

> The distinction between many trees particularly the Gums (in their native state) appears so very nice, that few persons I have met with, could precisely determine their difference -- And I have in some of my enquiries had the same tree pointed out to me as being a Black butted, a Blue and a flooded Gum.[61]

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60 Bigge : Report, Appendix. ML. BT. Box 21, pp. 4144-4149, evidence of Thomas Moore re timbers chiefly used at Sydney Dockyard. Moore considered these generally "durable and of great strength"; Gums and Stringybark suitable for masts, Ironbark for hulls, knees, etc.; trees more than 2 ft. diameter likely to be defective at the heart. Being evergreens, colonial hardwoods could be cut at any time, according to Moore, since they "have the sap continually up". This is the prevailing view to-day as far as Eucalypts are concerned. The matter was still being debated in 1904 when J.H. Maiden advocated a "closed season" for timber cutting to ensure that trees were not cut when "bringing forth new leaves", i.e. when the sap was 'up'. J.H. Maiden : Notes on the Commercial Timbers of New South Wales, Syd., 1904, p.5. Long adaptation to a capricious climate has developed in Eucalypts a much less rigid pattern of sap-flow than in the deciduous trees of the Northern Hemisphere to which the early settlers were accustomed. Eucalypts are therefore more rapidly responsive to climatic changes, and are apt to have periods of growth or comparative dormancy at any time, depending on the prevailing climatic and edaphic conditions. It is, of course, economically desirable to have continuous, rather than seasonal cutting, to maintain a steady flow through the mills to the market. Improvements in seasoning techniques (e.g. air-drying, kiln-drying, chemical and electrical seasoning) have enabled Australian hardwoods to be satisfactorily seasoned regardless of when the logs are cut. Such refinements in seasoning technique were unknown in Bigge's time, although some advocated simple seasoning by exposure to the weather while others preferred seasoning under water. Here, Blue Gum from near Port Jackson would have been E.saligna, or E.deanei from valleys inland from the coast. Both E.saligna and Flooded or Rose Gum, E.grandis grow in wet sclerophyll forests around the Hunter. Southern 'Blue Gums' could have included Eurabbie, E.bicostata and E.maideni on higher parts of the eastern slopes of the southern highlands. They could all well be confused in the field.

61 Robert Elwes to Bigge, 6 May 1820. Bigge : Report, Appendix, ML. BT. Box 22, p.4216.

This view would have been endorsed as readily by George Bentham forty years later as by field botanists and foresters to-day. Other timbers mentioned during the enquiry were the Mangrove, Avicennia marina var. resinifera, "Beef-wood, Honey Suckle, red & white, Tea Tree"[62] and "the Pine from Hunter's River"[63].

Despite the problems of shrinkage and "rending", hardness and weight, it was considered that colonial timber would "Convert into Beams, Planks and Timbers for framing Ships", but clearly

> some person acquainted with the qualities of the Wood... should be employed to examine the Forests and select only the most useful.[64]

There was the clearly recognised need for what we would call a wood technologist, but such specialised work was beyond the field botanists in the Colony at the time. There was also an appreciation of the heavy demand for timber in a rapidly developing Colony, not only "on account of the great consumption at Head Quarters", but also because of the demands of traders, builders and official export orders. Consequently it was realised that timber was still not being sufficiently seasoned before use[65], even if it were cut at the time of the year then deemed proper,

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62 Patrick Riley's evidence on Hunter R. timbers. Bigge : Report, appendix, ML. BT. Box 5, pp. 2272-2279. Hunter R. timbers "except Stringy Bark are of better quality...than near Sydney." Beef-wood (Casuarina spp.) used "for shingles"; "Cedar for fittings...our best cedar approaches near to the Honduras Mahogany"; "Honey Suckle, red & white" were Banksia serrata and B.integrifolia; Tea Tree probably included Melaleuca quinquenervia and M.linariifolia. Honeysuckle, Tea-tree and Mangrove were widely used for boats' knees and the latter for wheelwright's work as well.

63 almost certainly Brown or Plum Pine, Podocarpus elatus, which was advocated for joinery and flooring, but considered too brittle for shipbuilding. Bigge: op.cit., ML. BT. Box 5, pp.2272-2277 (Riley's evidence) and BT. Box 1, p.527 (Messling's evidence). Brown Pine apparently grew plentifully on the Williams River and was used for decking, if not for heavy structural work. R.T. Baker & H.G. Smith : A Research on the Pines of Australia, Syd., 1910, p.437.

64 Bigge : op.cit., ML. BT. Box 22, pp.4215-4216. (Elwes's evidence).

65 Bigge : op.cit., ML. BT. Box 5, p.2278 (Riley's evidence); also BT. Box 22, p.4216 (Elwes's evidence); BT. Box 5, p.2275 (Riley's evidence : Timber shrinks because of "being cut at Improper Seasons & not going through the Proper Process of Exposure to weather."); BT. Box 1, p.527 (Messling's evidence : 2" Cedar planks should "be kept a Twelvemonth" before use).

namely during winter.[66]

One written submission to the Bigge Enquiry is especially valuable for assessing the extent to which the timber resources had been investigated by that time. This was a "List of the Prevailing Timber Trees of New South Wales" comprising the names and notes on the uses of over thirty species.[67] The inclusion of some botanical names, ecological notes and references to the Blue Mountains, "the Interior" and to "the sources of the Hastings" suggest that the report was compiled by Charles Fraser, whom Bigge regarded highly.[68] It was a hopeful report, suggesting great prospects for colonial timbers, but Bigge remained cautious and unconvinced.

Those who, in Wentworth's words,

> endured the ennui of yawning over the three hundred and eighty-eight folio pages of that nauseous oleo -- that chaotic and discordant jumble, which Mr. Bigge called his report,[69]

would have noticed that the Commissioner had reduced the mass of evidence concerning the timber resources of the Colony to a few clear, unenthusiastic statements :

> The species of wood that are denominated stringey bark, iron bark, blue gum, and cedar, are those which have been lately imported into England, their value, especially that of stringey bark, is very questionable, and yet remains to be proved. The beef wood is the only timber of an ornamental kind...and although it is plentiful, yet it is very inferior to the ornamental woods of Brazil and the West Indies. All

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66 not all agreed with Thomas Moore that evergreen trees could be cut at any season (BT. Box 5, p.2076; Box 22, p.4149). "Mechanics whose practical experience...must give them some knowledge of its qualities" were positive "that the Timber felled in June, July and August was generally found superior to that cut at any other season." (BT. Box 22, pp.4216-4217, Elwes's evidence, quoting Major Morisset). The period May to July was also advocated (BT. Box 5, p.2276, Riley's evidence). It could have been that the Hunter River cutters were thinking of Cedar which, being deciduous, may well be cut best during its dormant period.

67 as this important Report has not been published (Bigge: Report, Appendix, ML. BT. Box 25, pp.5465-5469) it is given, with some annotation in Appendix XII.

68 on the other hand the mention of Port Bowen suggests Allan Cunningham's association with the report, although he was away with Capt. P.P. King in the Mermaid during most of the time of the enquiry.

69 Wentworth : Statistical Account, I, p.162.

> the species...mentioned are both hard and heavy, and although they will long continue in general use in the colony, where these objections have ceased to be of much importance, yet as articles of export, I should fear the event of any competition between them and the woods of other parts of the world, unless the disadvantages of an expensive freight are counterbalanced by an entire exemption from duty.[70]

Mr. Bigge appreciated the dichotomy. There was a local demand for timber, and local resources to meet it; beyond this, there was Britain's need for timber and the markets of the world to meet it. Of course the local timbers were proving satisfactory for work at the local level, for necessity still had no law, but what hope would timbers from N.S.W. have in competing on world markets unless they had some obviously outstanding qualities to compensate for the long haul to Europe? From the merchants' viewpoint, the payment of a duty in addition to high transport costs was too much, and it certainly was a curious way in which to encourage colonial

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70 Bigge : State of Colony (1822), p.160. Cf. the third Report, Bigge : Agriculture and Trade (1823), p.53 : "The wood of New South Wales has been used in the construction of colonial vessels, and four species of it, namely, the iron bark, black butted gum, stringy bark, and cedar, are found to be very useful, both for naval and domestic purposes. The peculiar qualities of these woods are, hardness, heaviness and durability. From recent importations into England...of very well selected logs of the stringy bark, this species is found to start in working, and ship-builders have expressed their apprehensions of using it either in building or repairs. The largest trees in New South Wales are generally unsound, but they are still useful for domestic purposes and for fencing."

export, as Bigge implied.[71] He also felt that other controls were hardly justified in the light of the evidence as he interpreted it. Thus after his return to England, Bigge was happy to support the request of a landholder seeking

> an exemption from the ordinary reservation...made in Grants of Land in New South Wales of all Timber...in favour of the Crown and...deemed fit for Naval Purposes.

Bigge believed

> that if Naval Timber should be required, or if it should be deemed fit for naval Purposes (of which...the naval authorities in England entertain great Doubts) the extensive Forests of New South Wales, will always or at least for several Centuries supply naval Timber in abundance; and as the reservation of such Timber on Granted Land as well as that which in future may grow there, operates as a Discouragement to The Introduction & cultivation of European & other Trees, that are of much greater value than the Indigenous ones, I cannot but recommend...that an exemption be conceded.[72]

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71 Macquarie had seen duties levied within the Colony as a hindrance to development, and in 1821 was "pleased to notify, Order and direct, that from and after the first day of April...the duty on timber, the growth of this Colony, whether for home use or Exportation, shall cease to be levied, until...His Majesty's Pleasure shall be known..." NSW CSIL, 31 Mar. 1821, NSW Archives, 4/1748. In Jan. 1824, Robert Campbell, Alexander Berry, Edward Wollstonecraft, Hannibal Macarthur and other "Merchants, Traders and Settlers" sent a memorial to Gov. Brisbane begging to be relieved of the "Duty of £3 16s Pr. Ton...levied upon that description of wood called Cedar...on its arrival at home." They were under the impression that local timbers were "admitted to Entry Duty Free"; there was "no other export, with the exception of wool"; Honduras Mahogany sold for twice as much as N.S.W. Cedar, yet both "pay the same Duty". Brisbane sought Bathurst's "powerful intercession" on the memorialists' behalf. NSW Gov.Desp. 1823-1824, Vol.5, ML. A1194, pp.395-401; HRA,XI, pp.204-206. In 1827, Gov. Darling felt bound to comment on an attack by the Monitor, 16 Mar. 1827, upon the so-called "Cedar Duty". Darling maintained that some form of timber royalty was necessary to bring law and order to areas where the cedar-cutting "banditti" worked. The royalty of ½d. per foot for cedar cut on Crown land was not considered exhorbitant when the return could be 4/- ft. HRA,XIII, p.181. Some relief came for the exporters of timber for by 1829, Blue Gum and Cedar were "duty free, if 8 inches square, until 1st January 1833". If less than 8" square, the duty was 10/- per ton. In this way comparatively heavy timbers were admitted freely. See Walter Buchanan : Prices Current of New South Wales and Van Diemen's Land Produce &c., Lond., 1829, p.1. Note also Cunningham : Two Years, II, pp.75-76 :"By freeing our timbers from the restrictive duties heaped upon them by Governor Macquarie, they soon became available to our mercantile body as articles of dead weight in making up cargoes for England..."

72 J.T. Bigge to Robert Wilmot, M.P., 3 Feb. 1823. Bigge: Report, Appendix, ML. DT. Box 28, pp.7021-7023.

PIT-SAWING

PIT-SAWING CEDAR, c.1890. This is a "scaffold-pit" with, apparently, some excavation. Note the half log, supported by an iron "dog", flat side upwards, and the thick, sawn planks ready for market. The top-man is Alex. Johnstone of Bandywallah, near Berry.

Photo: Mitchell Library.

Clearly the Commissioner believed that much more had to be learned about N.S.W. timbers before any enthusiastic encouragement reminiscent of that of Governor Hunter could be given to promoting the export of colonial hardwood across the world. When the old Dromedary, which had brought Macquarie to the Colony, conveyed the Commissioner from it on 14 February 1821, she also carried the Governor's botanical gifts for some of "the Royal and Illustrious personages" of Europe[73], and, interestingly, a cargo of N.S.W. hardwood logs and spars of New Zealand Kauri Pine (Agathis australis).[74] Another passenger was the Purveyor of the Navy Board, R. Mart, who had been instructed to make an independent investigation of the timber resources of Van Diemen's Land and New South Wales.[75]

Mart made a conscientious investigation by "enquiry and personal inspection", and he attempted accurate identification of the trees by using both vernacular and botanical names, although the latter were often tentative or incomplete. In Van Diemen's Land the stringybark (probably Messmate or Messmate Stringybark, E.obliqua) impressed him most.[76] In N.S.W. Mart found good stringybark (e.g. E.eugenioides and E.globoidea) around Liverpool, and Blue Gum, E.saligna and Blackbutt, E.pilularis, at Lane Cove.[77] He also reported briefly on three rainforest timbers from the Hunter River, namely Red Cedar, Toona australis; Rosewood, Dysoxylum

73 see Chapter II, pp.59,61.

74 Macquarie gave "several letters" from the Navy Board to Dromedary's captain, R. Skinner, who gathered from these "that the Blue Gum, Iron Bark, and Stringy Bark are the most preferable Timber for Ship Building." The Board therefore sought "to have a Log of each species... Thirty or Forty feet long, and 12 or 14 Inches square." Skinner further recommended "that in addition...a Log of Box Wood, Black Gum, Beef Wood and Mahogany, or two or three Logs of each should be sent." Macquarie agreed and advised Major Druitt of the Engineer's Dept. accordingly. Skinner to Macquarie, 2 Jan. 1821 and Macquarie's endorsement of 4 Jan. 1821. NSW OSIL, 1821. NSW Archives 4/1748, pp.45-47.

75 Mart received his instructions of 21 July 1819 directly from the Navy Commissioners. See Field : Geog.Memoirs, pp.315,321.

76 E.obliqua was the species upon which L'Héritier founded the Genus Eucalyptus in 1788 from specimens collected at Adventure Bay by David Nelson during Cook's third voyage in 1777. It is still the principal timber import from Tasmania under the name of 'Tasmanian Oak'. Mart also considered Huon Pine, Dacrydium franklinii to be "of most excellent quality" but more difficult of access. Field : op.cit., p.317. Other hardwoods examined included Blue Gum (probably E.globulus and Beefwood, Casuarina.

77 the "flooded gum" he "found at Iron Cove on the Parramatta River" was probably E.saligna. Mart also examined Box (E.moluccana,)Iron Bark (e.g. E.paniculata, E.sideroxylon), Mahogany (E.resinifera) and Beefwood (Casuarina spp.)

fraseranum and "Hunter's River pine", Podocarpus elatus. Despite his approval of some timbers, the Navy Purveyor's general conclusions were no more encouraging than those of the Commissioner of Enquiry. Mart felt that

> all the woods growing in New Holland are much given to the heart-rot and shakes...[78]

For those who sought something more than an 'official' report, there was no dearth of other information, purporting to be based on either personal experience or the testimony of "gentlemen in the Colony." William Charles Wentworth naturally enough praised the timbers about which Mr. Bigge had been so diffident. Wentworth considered that most of the

> different varieties of the genus eucalyptus...are very durable, and well adapted to all common domestic purposes, and to ship-building.

Furthermore,

> in many places the finer kinds of timber also, as cedar, mahogany, pine, a species of the rose-wood and several sorts of dye-woods, are found in abundance.[79]

In 1826, James Atkinson of Oldbury, Berrima, while not making "the smallest pretension" to "botanical and other scientific knowledge"[80] felt abound to point out that despite "prejudice...in favour of English oak and other kinds that have been in use for many ages", experience had "fully demonstrated that there are several kinds very useful and durable." Proof of this was provided by the success of timber exports to London, although

> none has as yet...found its way into our naval yards, sharing...the fate of teek (sic) and other woods, confessedly superior to English oak.[81]

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78 Mart's Report in Field : Geog.Memoirs, p.321. "Shakes" are empty gaps seen in the cross-section of a log, due to the separation of adjacent layers of wood.

79 Wentworth : Statistical Account, I, p.4.

80 Atkinson was unfair to himself here. His ecological and other natural history observations seem to be among the most astute of any of the settlers.

81 Atkinson : State of Agriculture, pp.12-13. Atkinson rightly pointed to the prejudice against the comparatively untried, recent discoveries in the minds of naval architects, who were the last to be convinced about such innovations as the steam engine, the screw propeller and the use of iron and steel.

Atkinson listed "the most common woods of the Colony, and the uses to which they are applied," a total of twenty-six species.[82] The squire of Oldbury tempered his optimism with an enlightened realism where native timbers were concerned, warning that care must be taken when seasoning lest "a quick contraction of the vascular system of the timber" should cause warping and shrinkage.[83] Atkinson shrewdly attributed earlier rejections of colonial timber to the fact that squared logs had been "sent home". These naturally included many with decayed hearts, but the

> late exportations have all been made in sawn plank of various thicknesses; none but the prime wood has thus been sent to market, and the prices obtained have shown the plan to be judicious.[84]

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82 Atkinson gave vernacular names only, with notes on ecology, distribution and colonial uses. The trees included : Rosewood, Dysoxylum fraseranum; Red Cedar, Toona australis; "Coal River Pine", Podocarpus elatus; "Moreton Bay Pine", Araucaria cunninghamii; "Blue Gum...perhaps the most generally useful of all the Australian woods". By this time, "Blue Gum"could have included E.saligna, E.deanei, E.grandis, E. bicostata and E.maideni depending on whether the source of supply was near Port Jackson, or on the Hunter, Hastings or Shoalhaven, etc. "Black-butted Gum", E.pilularis; Spotted Gum, E.maculata (and perhaps E.nowraensis from the south) "found in abundance about Shoal Haven and Jervis's Bay"; "Red Gum", E.tereticornis, or perhaps, being "full of gum veins", Bloodwood, E.gummifera; Ironbark, e.g. E.paniculata, E.fibrosa, etc.; Box, E.moluccana; Stringybark, e.g. E.eugenioides, E.capitellata ("perhaps the most useful to the Colonists of any in the country"); "Woolly Gum", E.longifolia; Mahogany, E.resinifera and E.pellita; Turpentine, Syncarpia glomulifera; Forest Oak, Casuarina torulosa : Swamp Oak, C.glauca; Red Honeysuckle, Banksia serrata; White Honeysuckle, B.integrifolia; Sassafras, Doryphora sassafras; "Lightwood" or Coachwood, Ceratopetalum apetalum. The uses mentioned by Atkinson are given in Appendix VIII. Atkinson : State of Agriculture, pp.13-17.

83 Atkinson : op.cit., p.18. Atkinson advocated sawing timber immediately after felling "and then to immerse the board, &c. in water for at least six months" before being allowed to dry gradually.

84 ibid. By the late 1820s Blue Gum was fetching about 1½d super. ft. in London, but the demand for Red Cedar was much higher, selling for 2¾d to 5d per ft. At that time Spanish or Honduras Mahogany sold at 16¾d.or more per ft., and it was claimed in 1829 that NSW Cedar had "lately got much into use as a substitute for Mahogany, for Linings, &c." Some of the best cedar plank was "twenty-two inches and upwards in breadth" thus giving an indication of the dimensions of the trees from which the pit-sawn planks were derived. See Buchanan : Prices Current (1829) pp.1-2; Sydney General Trade List...from the Custom-House Books, 1828; Sydney Mercantile Prices Current, 1828.

Atkinson's contemporary, Peter Cunningham did not commit himself beyond alluding to the vernacular names of some trees, their hardness, their tendency to be rotten at heart, and to the exaggerated reports of their "contractility".[85] As a surgeon he was more interested in what the bush promised to supply for the needs of the sick.

Lieut. William Breton's travels in the early 1830s led him to conclude that "the principal trees in the colony" consisted of eighteen species, all, except for the rope-producing "Currajong", Hibiscus heterophyllus, providing timber for builders and fencers, shipwrights, wheelwrights, coachbuilders, gun-makers, shinglers and cabinet-makers.[86] J.O. Balfour, whose colonial experience included "six years as a settler in the Bathurst district", added such interesting species as Blackwood, Acacia melanoxylon; Tulip Wood, Harpullia pendula; White Cypress Callitris hugelii[87]; the "beef tree", Grevillea striata and "the gigantic pine of the northern districts", Araucaria cunninghamii to the more conventional list of Blue Gum[88], Stringybark, Ironbark, Cedar and She-oak.[89]

85 Cunningham : Two Years, I, pp.186 et seq.

86 Breton, whose handwriting apparently led the printer to set type for "Encalyptus", provided, with various degrees of accuracy, some botanical names. His timber species, with their modern nomenclature, were typical of lists of the time : Ironbark, e.g. E.paniculata, E.fibrosa, E.sideroxylon, etc.; Blue Gum, E.saligna et al. spp., but given as E.piperita ; Blackbutt, E.pilularis; Grey Gum, E.punctata; Stringybark, e.g. E.eugenioides, E.capitellata et al. spp.; Box, e.g. E.moluccana; Mountain Ash, "two kinds" probably E.sieberi and E. oreades from the Blue Mts., or less likely E.delegatensis from the southern mountains; "Sallow, for gig-shafts", possibly one of the mallee-like Sally Gums, e.g. E.pauciflora, E.mooreï or Sally Wattle, e.g. Acacia glaucescens: Forest and Swamp Oaks, Casuarina torulosa and C.glauca; Red Cedar, Toona australis; White Cedar, Melia azedarach var. australasica; Sassafras, Doryphora sassafras; Turpentine, Syncarpia glomulifera; Woody Pear, Xylomelum pyriforme : Smooth-barked Apple, Angophora costata. Breton : Excursions, pp.279-280. See Appendix VIII for specific uses.

87 this important species is now becoming generally known as Callitris columellaris "inland form", despite disagreement among taxonomists. However, as an earlier part of this study had already been printed with the name C.hugelii (according to the revisions by Mrs. Joy Thompson (née Garden) in Contrib. Nat. Herb. NSW, Vol.2, No.5, 1957, p.368 and Contrib. Nat. Herb. NSW, Flora Series, 1-18, 1961, pp.54-55) this name has been used throughout for the sake of uniformity. See also S.T. Blake in Proc.Roy.Soc.Qld., 1959, pp.34-37 and H. Eichler : Supplement to J.M. Black's Flora of South Australia, Adel., 1965, p.35.

88 Balfour's "Blue Gum" clearly included the Yarrah or Blue Gum of the early explorers, River Red Gum, E.camaldulensis, the inland equivalent of the ubiquitous "Blue Gums" of the coast.

89 Balfour : Sketch, pp.36-40.

Another Bathurst settler, George Suttor[90], one of Banks's protégés, when in London in 1843, addressed the Linnean Society on the "Forest Trees of Australia", their colonial names and uses.[91]

The timber specimens which Suttor's friend, Allan Cunningham had sent to England in 1829 (six years after the appearance of Bigge's last Report) created considerable interest, probably because they had been selected by a professional botanist of repute, and were accompanied by botanical classifications[92] and by notes on their colonial uses. The "botanical gentlemen in the employment of his Majesty"[93] carefully described the overt properties of these timbers and calculated their specific gravities no doubt to indicate such qualities as buoyancy[94]. Not only specimens followed in the wake of Mr. Bigge, but also strong recommendations from Banks's "more Scientific Governor", who urged that

> it would be a matter of infinite importance to the Colony if its woods, particularly the Blue Gum Eucalyptus Capitillatis, could be brought into public notice according to their merits...I understand from good judges that this Wood has all the properties of the Teak Wood...Could this

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90 George Suttor (1774-1859), first came to Sydney in 1800. He returned to England in 1810 with George Caley on the Hindostan to give evidence for Bligh. Two years later he was back in N.S.W. He established himself near Bathurst in 1822.

91 George Suttor : "Notes on the Forest Trees of Australia" read 20 June 1843, Papers of Linnean Soc. of London, ML. FM4/2700. Suttor referred to the "very numerous" species of Eucalyptus, "many of them ...as yet undescribed, and without specific names, either from the Colonists or from the Botanists who have visited the Colony." He pointed out that vernacular names often alluded to properties of the bark or wood, and that from such trees as Blue, Blackbutted, Red, White, Yellow, Spotted and Flooded Gums and Mountain Ash, the colonists were able to make houses, ships and agricultural implements.

92 not all of these were accurate by present standards, e.g. the Blue Gum designated E.piperita was certainly E.saligna.

93 Mudie : The Picture (1829), p.143.

94 op.cit., pp.143-149. N.S.W. timbers sent were, in modern terms, Blue Gum, E.saligna; Blackbutt, E.pilularis; Box, E.moluccana; Stringybark, e.g. E.eugenioides et al. spp.; Forest or Red Mahogany, E.resinifera or E.pellita; Smooth-barked Apple, Angophora costata; Turpentine, Syncarpia glomulifera; Beefwood or Forest Oak, Casuarina torulosa; "Large-leaved light wood", or Coachwood, Ceratopetalum apetalum; "Narrow-leaved light wood or Christmas Bush, Ceratopetalum gummiferum; Ironbark, e.g. E.paniculata et al. spp.; White Honeysuckle, Banksia integrifolia; "Pear-tree", Xylomelum pyriforme; "Red Gum", E.tereticornis; "Blood-tree" or Bloodwood, E.gummifera; Red Cedar, Toona australis. In addition there were specimens from Moreton Bay including Hoop Pine, Araucaria cunninghamii and Teak, Flindersia australis and probably Long Jack or Yellow Wood, F. xanthoxyla. Housebuilding, fencing, shipbuilding, cabinet work and firewood were the chief uses mentioned.

> happily succeed, no Vessel need want a return Cargo, as experts are all we require now.[95]

Reports of the discovery of new timbers or of new uses for known timbers, also created interest with the Colony itself. For example, in 1829

> a tree called Mountain Ash has...been lately proved to afford a timber for staves incomparably superior to that heretofore employed. It has been made up into casks, which have been subjected to a variety of tests, such as brine, boiled oil...etc....the result has afforded the strongest ground for hoping we shall fully equal the casks of Europe.[96]

A little later there was a report of

> several parties of sawyers...engaged at Currajong cutting up a species of wood, which it is expected will answer the purpose, and be much cheaper than cedar.[97]

Experience with native timbers and the exploration of forests far richer than those around Sydney Town fostered the growing confidence. But the fact remained that "necessity has no law" and even unpromising timbers were applied to the most unlikely uses.[98]

International and intercolonial trade depended upon shipping, and local timbers, if not received enthusiastically in His Majesty's shipyards in England, were used successfully enough in the local shipyards. More than one visitor during the nineteenth century noted a vigorous shipbuilding industry[99], and one who became a resident noted with some pride in 1860 :

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95 Brisbane to Under Sec. R.W. Horton, 12 Aug. 1824, HRA, XI, p.339. To demonstrate the worth of Blue Gum, Brisbane referred to the durability of "a Vessel...built for these 20 Years..." This was Henry Hable's King George, launched in April, 1805. The name Eucalyptus Capitillatis, may have been incorrectly transferred from J.E. Smith's Eucalyptus capitellata now applied only to Brown Stringybark. Clearly E.saligna was the tree in question.

96 Syd.Gaz., 28 May 1829. The tree would have been E.oreades or E. sieberi. Either or both of these were being pit-sawn near Blackheath by 1834 to provide timber for "shafts of gigs". Bennett : Wanderings, I, p.105. E.oreades is also known as White Ash, a timber advocated for cooper's work by J.H. Maiden as late as 1904 (Maiden : Commercial Timbers, p.33, See also Nilson : Timber Trees (1884) p.75, under E.virgata.

97 SMH, 12 Dec. 1831. There is no way of telling what this timber was -- there is just the possibility that the sawyers were cutting Mountain Cedar Wattle, Acacia elata, which in some rather soft gullies attains perhaps 60 ft. and has a pale, rather soft timber.

98 for a sample of the wide range of 19th century timber uses, see Appendix VIII.

99 Martin : Austral-asia, p.250. It was also noted that "the vessels built in Australia are found very serviceable, and the colonial youth being fond of the sea, a fine maritime population is arising."

> it has been stated in New South Wales, that a vessel built of Iron-bark, Box, Banksia, and Tea-tree timber, and planked and lined with Flooded Gum, Blue Gum or Black Butt, and tree-nailed with Iron-Bark, will attain the highest class given at Lloyd's. All these trees are found within twenty miles' range of Sydney.[100]

By this time however, there had been vast technological changes. In the year the First Fleet sailed from England, the celebrated ironmaster, John Wilkinson, built a successful iron barge and in the last year of Macquarie's administration, the Aaron Manby, the first iron steamer, was built at the Horsley Iron Works near Birmingham.[101] By the time Charles Sturt was planning his whaleboat voyage down the Murrumbidgee, John Laird[102] was beginning to substitute iron for wood in sailing ships, contrary to many prevailing views on the principles of flotation, and when Mr. Bigge died in London in December 1843, the world's first ocean-going iron-hulled screw steamer and the largest ship afloat, had been in the water for five months.[103] It still took Russian shells in the Crimean War to convince the Admiralty that H.M. Dockyards would not be relying so much in future upon the "wooden walls of England" to absorb so effectively, if rather painfully, the solid shot hurled by enemies. Timber, whether English Oak, Burmese Teak -- or Australian "Blue Gum" -- would not be in such demand, although cabin panelling of such timbers as Red Cedar would continue to be considered rather tasteful. By the eighties, the iron hulls which had proved lighter than wood, were being superseded by steel hulls which were lighter than iron. But Australian timber exporters had long since realised that assessing timber according to its fitness for "Naval Purposes" however imperially laudable, was not commercially realistic.

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100 Bennett : Gatherings, p.359. Bennett noted that between 1842 and 1856, some 350 vessels, averaging 40 to 45 tons were built in N.S.W. and registered in Sydney. Identifications of the timbers are as in previous lists. If Bennett were mistaken about the range of these timbers, the Flooded Gum was probably E.grandis from the North Coast, otherwise, E.saligna and perhaps E.deanei.

101 it was assembled on the Thames.

102 John Laird began building iron sailing ships in 1829. By Sept. 1842, Wm. Laird & Sons, Birkenhead, had 44 iron vessels under construction. Charles E. Gibson : The Story of the Ship, Lond., 1958, pp.176,182.

103 Isambard K. Brunel's Great Britain, 3270 tons, the first iron-hulled Atlantic liner, was launched on 19 July 1843. After demonstrating the superiority of iron construction over timber by being stranded for a long time and salvaged in good condition, she served as an emigrant ship to Australia, 1852-1875. In July 1970 she was returned to Bristol after being towed back to England from the Falkland Islands. SMH, 4 July 1970.

Red Cedar and the Assault on the Rainforests.

Notwithstanding Mr. Bigge's diffidence, the fact was that between 1820 and 1832, N.S.W. timber ranked third after wool and whaling as an export income earner[104], despite lean periods such as those described by Governor Darling in 1828 :

> The Exports of Blue Gum and Timber of a similar description have lately been almost discontinued, in consequence of the low price obtained for them in England.[105]

Darling did add, however, that "the Export of Cedar" had increased[106], and here is a significant point. Reference has already been made to the export of Red Cedar in the Experiment (1795) and the Reliance (1800), but notable among the earliest timber exports was "beefwood" or She-oak, with shipments going to India, China, Mauritius and the Cape as well as to England, where it seems likely that by 1799, Mr. Evan Nepean, Secretary to the Admiralty, had a She-oak table considered "extremely beautiful".[107] In the early years of the nineteenth century cargoes of She-oak and Red Cedar frequently left Port Jackson, sometimes in the same ship, but despite the admiration for She-oak still held in 1805[108], its export

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104 R.M. Hartwell in JRAHS, 1956, p.58. This trade was largely due to the efforts of Alexander Berry and his brother-in-law Edward Wollstonecraft.

105 Darling to Huskisson, 10 April 1828, HRA, XIV, p.135. In April 1827, Berry "heard from his London agent that blue gum was unsaleable..." JRAHS, loc.cit. Here again this "Blue Gum" would have embraced probably several species as mentioned earlier.

106 HRA, loc.cit. See graph of N.S.W. cedar export on p.390 . Of a total timber export income of £12,472 in 1827, Red Cedar was responsible for £10,000.

107 John Thompson to Capt. John Schanck, 8 Sept., 1799, HRNSW, III, p.718. Evidence concerning timber preferences of the time suggests that the "wood very common here -- and...much admired in England" was She-oak of various kinds,e.g. Casuarina torulosa, C.glauca, C. cunninghamiana. The ornamental appearance of She-oak and its quality of splitting cleanly along the medullary rays were quickly appreciated. Note the request Surgeon Dennis Considen made of Surgeon D'Arcy Wentworth, 9 Oct. 1806 : "Pray...Send a junk of the Beef Wood and I'll Cheerfully defray whatever Expenses you may be at on my acct. by the Bye Bring or send Beef Wood on your own account, Wool Skins oil &c which will meet a good market here." Wentworth Papers, 1785-1826, ML. MSS 3, p.171.

108 Syd. Gaz., 24 Feb. 1805. Seal skins were being shipped in cases of She-oak, a "beautiful species of wood" which "we voluptuously apply... to the ordinary purposes of shingling and paling, and but seldom introduce...within doors, though beautifully adapted to the cabinet, and every other article of useful and ornamental furniture."

soon declined.[109] Despite some renewed interest at the end of the century,[110] She-oak has now long been more renowned as an efficient firewood than as a cabinet wood.

Although "Blue Gum, Pine, and other timber"[111] continued to be exported from N.S.W. throughout the nineteenth century, it was Red Cedar, Toona australis[112], which quickly and completely dominated the timber trade both within the Colony and beyond it. If Mr. Bigge had had doubts about the qualities and usefulness of colonial timbers generally, especially the Eucalypts, the colonists themselves -- timber-cutters, sawyers, shippers and merchants, shipwrights, builders, carpenters, joiners furniture-makers and coachbuilders -- had no doubts about Red Cedar, and many overseas craftsmen agreed. This wood seemed to have universal application being light, easily-worked, strong, durable, ornamental,

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109 Labourers were still employed "Getting Beef wood" for H. M. Lumber Yard at Parramatta in 1810. Richard Rouse : Records of Parramatta Lumber Yard, 1805-1821. ML. FM4/2119. Cargoes for London, China and India are recorded during 1805, 1806 and 1807, but apart from 2 logs of Beefwood exported in 1817, it was rarely mentioned once the cedar trade became established. See J. S. Cumpston : Shipping Arrivals and Departures, Sydney, 1788-1825, Canberra, 1963, passim.

110 see the plea made by G.S. Perrin. Victorian Conservator of Forests to the Royal Victorian Institute of Architects : "...a wood which has been treated with scant courtesy...Many thousands of tons of this beautiful decorative wood are annually consumed for firewood alone. In the furniture and cabinetmakers' shops the wood is conspicuous by its absence; yet it is tough, fissile, and easily worked, and has a magnificent grain, which should commend it to all lovers of the beautiful in decorative art..." J. Mann : Australian Timber...Melb., 1900, p.4.

111 this was the "non-Cedar" category of timber used in the official N.S.W. Statistical Returns, until after 1877, probably because Cedar was hardly worth keeping separate, all species were lumped together as "Timber".

112 Bentham considered the "Red Cedar" of the colonists to be identical with the Toon Tree of India, Cedrela toona. The insistence by Von Mueller and De Candolle that the trees were distinct, led to various synonyms. See Mueller : Fragmenta, I, p.4 and Benth. : Fl. Aust., I, p.387. There was no wrangle over the vernacular name.

readily polishable[113], and surprisingly similar to Honduras Mahogany.[114] Thus of all the vascular plants indigenous to New South Wales, Red Cedar made the most significant impact of any single species upon colonial development,[115] not only in motivating the wider spread of

113 Red Cedar is popularly regarded as a "softwood", having a density of about 28 lb. per cu. ft. Being soft, one of its disadvantages is that a polished surface is easily damaged. The term "softwood", is however, properly restricted to "non-pored" timbers, i.e. to the Gymnosperms with their comparatively simple structure lacking large tubular vessels for conducting solutions from roots to leaves. N.S.W. examples are comparatively few, but include Brown Pine, Podocarpus elatus, White and Black Cypress, Callitris hugelii and C.endlicheri, Hoop Pine, Araucaria cunninghamii. The "pored" timbers or "hardwoods" include all the Eucalypts, and all the brushwoods (i.e. rainforest timbers) except the Pines. Thus Red Cedar, Toona australis; White Beech, Gmelina leichhardtii; Coachwood, Ceratopetalum apetalum; Silky Oak, Grevillea robusta; Sassafras, Doryphora sassafras; Rosewood, Dysoxylum fraseranum and other brushwoods generally considered to be "soft", "semi-soft", or at least softer than many Eucalypts, are technically hardwoods. Red Cedar is classed as a "ring-pored" timber because of the concentration of vessels in the growth-rings. The majority of Australian "pored" timbers are "diffuse-pored", with the vessels fairly evenly distributed throughout the wood. The terms "hardwood" and "softwood" can therefore be misleading especially since some "non-pored" or "softwood" timbers are in fact harder than the softer "hardwoods". See N.K. Wallis : Australian Timber Handbook, Syd., 1956, pp.156-165; I.H. Boas : The Commercial Timbers of Australia...Melb., 1947, pp.143 et seq.

114 There was wide agreement over this, e.g. Bigge : Report, Appendix. ML. BT. Box 5, p.2275, Patrick Riley's evidence, 1820 : "Our best cedar approaches near to the Honduras Mahogany."; also Cunningham : Two Years (1827) I, p.188; Mudie : The Picture (1829), p.147; Balfour : Sketch (1845) p.37 : "It requires a practised eye, and minute inspection, to distinguish between this wood when polished and mahogany ...I never knew the difference between a cedar and mahogany sideboard in an upholsterer's shop, until I asked their respective prices"; Byrne : Wanderings (1848), p.217 : "many logs are...for beauty and closeness of grain equal to the best mahogany"; Townsend : Rambles (1849), p.33; Hughes : Australian Colonies (1852), p.74 : "beautiful in colour as Spanish mahogany, though inferior in solidity and closeness of grain"; Lang : Historical Account (1852) II, p.80 (also in Lang : Cooksland (1847) p.135); Mossman & Bannister : Australia Visited (1853), p.292, where Clarence Cedar is described as "equal in beauty of grain to the finest mahogany"; Charles Moore in Catalogue of the Natural and Industrial Products of N.S.W. forwarded to the Paris Universal Exhibition, Syd., 1867, Appendix p.43. Honduras or Spanish Mahogany, Swietenia mahogani still has various trade names according to the alleged place of origin, e.g. Cuban, Guatemalan, Mexican, etc. It is also claimed that Bangalay or Bastard Mahogany, Eucalyptus botryoides, Forest or Red Mahogany, E.resinifera, and other timbers were "extensively imported into France as genuine mahogany" (Nelson's Encyclopedia, Chicago, 1940, Vol.9).

115 the fodder plants of course made the greatest overall impact, but there were many species of these. See Appendix VIII.

settlement[116], but also in mobilising a considerable work-force in forest, lumber-yard, joinery, shipyard and building development. In the "pre-wool" days, when hopes were held for staple industries based upon such commodities as coal, whale-oil, sealskins, trepang and island sandalwood, it was Red Cedar which came closest of all bush products in terms of supply, demand and value, to providing the Colony with some essential export income.

The cedar industry developed where it began in the 1790s in rainforest pockets along the Hawkesbury and Nepean. There is no doubt that "the quantity of useful timber...indiscriminately cut down upon the banks of the Hawkesbury" and wasted by 1795, included Red Cedar[117], and Governor King was disturbed to learn in 1802 "that some of the Settlers at the Hawkesbury are making a traffic of the Cedar growing on or about that River." This was to stop, and "Cedar logs or planks" cut without permission would henceforth "be seized for the purposes of Government" together with "the Boats or Carts containing them."[118] The traffic naturally enough continued, and in 1819 Mr. Bigge was told that Red Cedar had been "wantonly destroyed at the settlement of the Hawkesbury."[119]

Cedar was found on the Hunter[120] soon after the river was discovered in 1797 by Lieut. John Shortland, for by early 1801 a vessel was "there loading with coal and cedar."[121] Once a penal settlement

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116 the N.S.W. range of Red Cedar extended from the vicinity of Ulladulla about 150 miles south of Sydney, northwards along the coast and eastern escarpment of the Great Dividing Range to the Tweed River. The rainforests between the Bellinger and the Richmond Rivers won the reputation for the best cedar, but an enormous amount of fine cedar was cut in the 'Big Scrub' north of the Richmond. See Maiden in Ag.Gaz.NSW, 1893, p.603 and Maiden : Forest Flora NSW, I, p.59.

117 John Hunter : Govt. and Gen. Order, 8 Dec. 1795. HRNSW, II, p.341. The "King's mark" was now to be "put on all such timber" from Crown land, and grantees were reminded that land was granted subject to the reservation of all timber "deemed fit for naval purposes". This was apparently the earliest regulation aimed at conservation.

118 P.G. King : Govt. and Gen. Order, 2 Apr. 1802, HRNSW, IV, pp.736-737.

119 Bigge : Report, Appendix. ML. BT. Box 5, p.2042, evidence of Archibald Bell.

120 probably by those permitted to go to the Hunter for coal.

121 King to Banks, Apr. 1801, HRNSW, IV, p.355. Col. Wm. Paterson, a competent amateur botanist, took sawyers with him on his exploration of the Hunter in June and July 1801. The tributary named the Paterson by Gov. King was at first known as "the Cedar Arm". HRNSW, IV, pp.416, 450. In 1810, Macquarie's instructions to Lieut. John Purcell, Commandant at Newcastle, bade him caution "the inhabitants... against cutting down or burning cedar or honeysuckle without... permission, these woods being required by Government for other purposes than fuel..." HRNSW, VII, p.426.

was established in 1804 the Hunter cedar trade became more vigorous[122] owing partly to Government enterprise, and partly to private individuals possessing Government permits.[123]

The Hawkesbury and the Hunter remained the sources of supply until small vessels visited the Shoalhaven for cedar early in Macquarie's administration.[124] When the Governor stopped these excursions for the sake of inter-racial peace[125], attention soon turned to the Illawarra rainforests, through which a pass to the coastal plain was discovered in 1815. By 1819 it was clear to Macquarie that there had been

> several Persons, both Free Men and Convicts...for some Time past illegally residing in the Districts of Appin and Illawarra, and there cutting down, sawing, and clandestinely transmitting from thence large Quantities of Cedar and other Timber, the Property of the Crown.

As this was

> in direct Violation of the Colonial Regulations, to the Prejudice of the Revenue, and to the manifest Encouragement of Desertion from the Public Service,

and leading to "the Destruction of the Government Cattle" in the vicinity, anyone after Monday, 23 August 1819

> found in Possession of, cutting, sawing, or removing Cedar or other Timber, either in Logs, Planks, or Boards, from the said Districts

would be prosecuted.[126]

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122 for some early Hunter timber statistics, see Bigge : Report, Appendix. ML. BT. Box 25, pp.5442-5448. Unspecified timber in the log was exported to Sydney, 1805-1819, with "Cedar Plank" being first mentioned in 1807. "Pine" (probably Podocarpus elatus) and "Gum" (e.g. E.grandis) were also exported to Sydney. In 1816 30,876 ft. and in 1819 22,865 ft. of Cedar were among the timber exports. All these referred to cargoes of Government Vessels only.

123 notable among these were Simeon Lord, James Underwood, Henry Kable, Isaac Nichols, Joseph Underwood and Thomas Raby (Reibey). Some of their cedar activities were well established before 1804. Stringent regulations and a scale of fees (including "King's Dues for Orphans") concerning the Hunter cedar traffic were published in Syd.Gaz., 25 Mar. 1804. Further information, concerning charges for Hunter cedar ("Three Half-Pence each superficial Foot in the Log) was published in Syd.Gaz., 5 May 1804.

124 The Speedwell brought Shoalhaven cedar to Sydney in Dec. 1811. Cumpston : Shipping Arrivals, p.78.

125 Syd.Gaz., 3 Dec. 1814. Between 1812 and 1814, many thousands of super. feet of Shoalhaven cedar, chiefly in the log, were brought to Sydney. Cumpston : Shipping Arrivals, pp.78-95.

126 Govt. and Gen. Order, 14 Aug. 1819. ML. A339, p.77.

Barron Field's description of his visit to Illawarra in October 1823, reflected a more realistic policy under Governor Brisbane :

> At the foot of this range of mountains is scattered the red cedar tree, of which the colonists make their furniture, and with which they fit up the insides of their houses...The procuring of this timber occupies many sawyers and boatmen from Port Jackson. The cedar planks, as they are formed by sawyers at the pit, are carried on men's backs up to the mountain summit, whence carts...convey the planks to all parts of the colony, or they are carted to the shores of Illawarra, and navigated to Port Jackson in large open boats. The government has not...secured any portion of these cedar grounds to itself, simply compelling each person to take out a permit...which must specify the number of feet required, and without which protection, the horse and cart, or boat, and the cedar, are liable to seizure by any constable.[127]

At this time there were "nearly a hundred pair of sawyers" in the area, according to one estimate[128], and each pair had

> its one or two labourers or axe-men, whose business was to save the sawyers' time by falling the trees, cross-cutting them into logs, building scaffold-pits, making roads and bridges, and helping at any heavy lifts.[129]

There must have been many a "heavy lift". In sawyers' clearings at Illawarra "there were plenty of stumps ten feet in diameter", and many cedar trunks

> were of such large diameter that the logs had to be halved by splitting before they could be sawed with

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127 Field : Geog. Memoirs, pp.462-463. Cedar was cut into logs 8 to 12 feet long, which were then sawn into planks 1" to 2" thick. Carters bought the plank for £1-2-0 per 100 super. ft. Of this, 6/- per 100 ft. was spent on cartage from the pit to the carter, leaving 8/- each for the pair of sawyers. Carters then received £2-5-0 to £2-10-0 per 100 super. ft. per load of about 300 ft. delivered at Parramatta, along a route then said to be "upwards of 60 miles".

128 Harris : Settlers and Convicts, p.31.

129 ibid.

the whip-saw.[130]

Sent to report on the Illawarra cedar forests in 1826, John Oxley found "about forty pair of sawyers" working at saw-pits within about 1,600 acres of forest near the Minnamurra River. The cedar was hauled to "a tolerable good boat Harbour called 'Kiarmi' from whence Nine Tenths of the Cedar brought to Sydney is shipped."[131] By this time, however, the exploitation of the "cedar brushes" had extended to the Hastings River in the north[132] and south again to the Shoalhaven, where Alexander Berry and Edward Wollstonecraft obtained a grant in 1822. In 1828, the Rev. Thomas Kendall[133] took up a grant at Ulladulla, at the southern limit of Red Cedar's occurence.

Although cedar-cutters were working in the Kangaroo Valley by the 1830s, the rapid diminution of supplies from most of the long-established sources, causes merchants, shippers and cutters to look northward beyond the Hunter. By 1827 it was known that the Manning River banks supported

> large quantities of magnificent cedar trees...from thirty to sixty feet, with a diameter of from four to six feet[134]

and the cutters arrived in force the following year. By the early forties, the cedar-cutters had penetrated the rainforest valleys of all the coastal rivers from the Shoalhaven to the Tweed.[135]

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130 Harris : Secrets, p.151, and p.186 for "pit or whip sawing." Cf. the giant trees found on the Hastings R. in 1819 by Allan Cunningham : "Our People measured the extraordinary Bases of some Rosewood and Cedar, that appeared coeval with the Country, they were upwards of 8 feet diameter, furnishing immense logs of fine clean Timber." Cunningham : MS. Journal, 16 May 1819, ML. A1745, p.7.

131 Oxley's Report to Alex. McLeay, 8 Dec. 1826. ML. AO 15 (2)/2.

132 explored by Oxley, Fraser and Cunningham in 1818 and 1819, and settled at Port Macquarie in 1821.

133 Thomas Kendall (1778-1832) was an Anglican lay missionary and clergyman, farmer and timber merchant. He was drowned when the schooner Brisbane, laden with cedar and cheese, capsized near the Shoalhaven River in August 1832. His grandson, the poet Henry Kendall (1839-1882), was Inspector of Forests, 1881-1882.

134 Dangar : Index and Directory, p.96.

135 see Appendix XIII for the expansion of settlement due to the occurrence of Red Cedar. See also the cedar-cutter's licence of 1843 on p.371.

THE ILLAWARRA CEDAR BRUSH

THE ILLAWARRA ESCARPMENT up which men carried cedar plank on their backs during the 1820s. Note within the lush green rainforest canopy the colour variation which made such forests more attractive to early observers than the prevalent sclerophyll forests.

Photo.: L.G., near Bulli Pass, 16 Jan. 1965.

DENSE CANOPY of the Illawarra rainforest as it appeared from the top of the escarpment near Bulli Pass in 1965 before bushfires devastated the area. Note the Cabbage-tree Palms, Livistona australis, centre-right; the coral-red of the three Illawarra Flame Trees, Brachychiton acerifolium, towards the top of the photograph, and tree-ferns in the lower right corner. G.F. Angas maintained that "the blossoms of the flame-tree... may be seen like fiery-red patches in the forest, by vessels passing... several miles from the shore." Angas : Australia, (1855), p.120.

Photo.: L.G.., 16 Jan. 1965.

# License to cut Timber, including Cedar on the vacant Crown Lands of the Colony.

No. 101

WHEREAS (1) G. McC. Bowen Esq. P.M. & A.R. McDonald Esq. J.P. Berrima have recommended that James Crichton whose personal description is more particularly given on the other side, shall obtain a License for cutting Cedar and other Timber on the vacant Crown Lands in the County of Camden, known as the District of Berrima.

, and whereas the stipulated Fee of Two Pounds has been paid for such License, for the period of half a year ; I do hereby authorise and License the said James Crichton to employ himself in cutting, sawing, splitting, and removing Cedar, and other Timber, upon and from the vacant Lands in the District of Berrima until the thirtieth day of June next, provided this License be not previously cancelled, under the Act of the Governor and Council, 2 VICTORIA, No. 27.

(2)

Given under my hand, at Sydney this 14th day of January, One thousand eight hundred and forty-three.

Colonial Treasurer.

(1) The Magistrates in Petty Sessions, or Magistrate or Commissioner of Crown Lands acting singly as the case may be.

(2) Colonial Treasurer or Sub-Collector, as the case may be.

# ENDORSEMENT.

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## DESCRIPTION OF THE THE PERSON HEREBY LICENSED.

Christian Name ..... James

Surname ..... Crichton

Condition ..... Settler

For whom employed .....

Age .....

Height .....

Hair ..... Black

Eyes ..... Blue

Complexion ..... Ruddy

*If a Prisoner, the following particulars to be added.*

Ship .....

Date of Arrival .....

Sentence .....

To whom assigned .....

CEDAR CUTTER'S LICENCE

ML. Aust.Papers, A666,pp.55-56