> thickly wooded (the trees...principally...the blue gum[253], mostly of large growth),...overgrown with vines of various descriptions[254]...The fern[255], the currajong[256], and the flax[257] flourish here in abundance; and the peppermint plant[258],...seems to surpass, both in odour and taste, the species that is generally produced in our gardens.

Away from the banks were noted,

> where the soil is not so good, the box[259], the white-gum[260], and the stringy-bark[261], but there was no swamp-oak[262], the tree so universal, on the rivers to the northward and eastward.

Grass, "in full seed,...fresh and luxuriant" was "frequently as high as their heads, and seldom lower than their waists."[263]

North of Sydney, the Hunter or Coal River, discovered in 1797[264] had long since been botanically explored by Robert Brown and William Paterson[265]. By 1830, other northern rivers had been discovered[266], and access to them was sought by land as well as by coastal sea-routes.

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253 Murray or River Red Gum, E.camaldulensis.

254 e.g. False Sarsaparilla, Hardenbergia violacea; Glycine clandestina; Native Raspberry, Rubus parvifolius; Australian Bindweed, Convolvulus erubescens.

255 Common Bracken, Pteridium esculentum.

256 Kurrajong, Brachychiton populneum.

257 Native Flax, Linum marginale.

258 Native Mints, Mentha diemenica, M.australis - probably the former which is more aromatic.

259 e.g. Bundy or Apple, E.elaeophora, But But or Apple, E.stuartiana, or White Box, E.albens.

260 Possibly E.rossii or E.viminalis.

261 e.g. Red Stringybark, E.macrorhyncha.

262 usually Casuarina glauca is thus implied, but probably here the River Oak, C.cunninghamiana.

263 probably a lush stand of Kangaroo Grass, Themeda australis.

264 by Lieut. John Shortland (1769-1810).

265 Thesis I, passim.

266 e.g.
- Tweed: 1823, disc. and named by Lieut. John Oxley.
- Richmond: 1828, disc. and named by Capt. Henry John Rous, HMS Rainbow.
- Clarence: 1830, disc. by escaped convict Richard Craig. This "Big River" was named the Clarence by Gov. Gipps, 1839.
- Bellinger: 1825, disc. by escapees from Moreton Bay. Explored by John Miles and two sawyers, 1841.
- Nambucca: 1817, disc. by convict William Smith, of a party which seized the vessel William Cossar.
- Macleay: 1817, disc. by Thomas Whyte of the Lady Nelson when seeking the Trial, seized by convicts.
- Hastings: 1818, disc. and named by Lieut. John Oxley.
- Manning: 1826, explored and named by Robert Dawson, Chief Agent of the Aust. Agric. Company.

Explorations to the north and north-west of Windsor made by William Parr[267] and Benjamin Singleton[268] in 1817-1818, were extended by the chief constable of Windsor, John Howe, who between 1818 and 1820, blazed tracks largely through dry sclerophyll forest to the Hunter River.

Allan Cunningham arrived in Sydney from his voyage with Lieut. P. P. King on 29 July 1818, and returned to his house at Parramatta. On 13 August, contrary to the Governor's expectations Cunningham called at Government House, Sydney, to pay his "humble respects". He then set about bringing correspondence and journal up to date, and in preparing specimens for shipment to England. As King was uncertain about the time of the next voyage, Cunningham "purposed...to occupy a few weeks in an excursion to the Five Islands"[269], and he accordingly asked the Governor "for a light Government cart, a horse, a spare pack saddle, etc."[270]—a sure test of the Vice-regal temper. Meanwhile, Cunningham explored the gorge country near Parramatta[271] while he waited for Macquarie's reply. Failing to receive one after eight days, the botanist called on the Governor at Parramatta, but he "was stated to be from home." Cunningham finally received an affirmative reply in person at a muster parade on 12 October, but there were further delays in the actual supply of the items requested, so that he did not leave Parramatta for Illawarra until 19 October.

The month's journey through Liverpool and Appin, down the Illawarra escarpment with its dense rainforests cut "by the little beaten steps of the Government sawyers"[272], around Tom Thumb Lagoon, Lake Illawarra and south to the Minnamurra River, was highly productive. Cunningham noted by name, and probably collected, no less than 150 species as well as others which were

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267 possibly the same William (or Thomas William) Parr who accompanied Oxley as collector of minerals on the Lachlan River expedition.

268 Singleton accompanied Howe to the Hunter Valley in 1820, when they passed near the site of the town named after him.

269 i.e. Illawarra. Cunningham Journal, 2 Oct. 1818, in Lee: Early Explorers, p.403.

270 ibid.

271 at "Curdunnee", probably near Hornsby or Galston, where he identified Cabbage Palm, Livistona australis; Tree Fern, Cyathea australis; Rock Lily, Dendrobium speciosum; Sun Orchid, Thelymitra ixioides; Native Sarsaparilla or Sweet Tea Plant, Smilax glyciphylla, and a couple of dozen other species.

272 Cunningham Journal, 21 Oct. 1818, Lee: op.cit., p.410. See photograph p.70.

described in terms of their apparent affinities, or by means of botanical descriptions.[273] Cunningham named the celebrated Illawarra Flame Tree, Sterculia acerifolia.[274] Depots were made at the farm of a settler at the top of the plateau, where the Government cart was left, and another at the farm of David Allan, Deputy Commissary-General, on the Illawarra Plain. Sometimes Cunningham and his servant lodged in "the palm-thatched hut" of a small settler[275], and in temporary shelters of the same material[276]. The Illawarra collecting area, which fascinated Cunningham, presented many difficulties. The most formidable of these were the tremendous escarpment, the dense rainforest, "the whole being strongly bound together with immense scandent and volubilous plants"[277], and the "dangerous woods to attempt a passage through" with a horse such as the thickets of Giant Stinging Tree, Dendrocnide excelsa. There were also fog and rain, ticks and leeches. To cap it all, the "Govt Horse,...lost all his shoes on ascend^{g} the steep Mountain from 5 Islands."[278] This horse had already baulked at swampy ground, so that Cunningham had to hire another, as he put it, "the Gov^{t} one, allow'd me, turning out bad."[279] One is tempted to wonder just what kind of steed Macquarie had approved for release to the botanist![280]

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273 George Bentham used and acknowledged 132 species from Cunningham's various Illawarra collections in compiling Flora Australiensis.

274 now Brachychiton acerifolium. Other plants recorded by Cunningham on his first Illawarra expedition included: Bauera rubioides; Sprengelia incarnata; Euphrasia speciosa; Giant or Gymea Lily, Doryanthes excelsa; Swamp Honeysuckle, Banksia robur, and a Bladderwort, Utricularia dichotoma var. uniflora, all at King's Falls, near Appin. In the rainforest were noted: Rough Tree Fern, Cyathea australis; Cabbage Palm, Livistona australis; Port Jackson or Rusty Fig, Ficus rubiginosa; Black or Native Plum, Planchonella australis; Bangalow Palm, Archontophoenix cunninghamiana; Giant Stinging Tree, Dendrocnide excelsa; Kurrajong, Hibiscus heterophyllus; Red Cedar, Toona australis, and Neolitsea dealbata. Epiphytic orchids (which Cunningham termed 'parasitical') included the Orange-blossom Orchid, Sarcochilus falcatus, the Dagger Orchid, Dendrobium pugioniforme and the Ironbark or White Feather Orchid, D.aemulum.

275 i.e. roofed with the leaves of the Cabbage Tree Palm or the Bangalow Palm, both still fairly plentiful in the area. Cunningham Journal, 22 Oct. 1818, Lee: Early Explorers p.412.

276 e.g. Cunningham Journal, 21 and 28 Oct. 1818, Lee: op.cit., pp.410,417.

277 e.g. such vines as Ripogonum album; Wonga Vine, Pandorea pandorana; Monkey Ropes, Parsonsia straminea and Marsdenia rostrata.

278 Cunningham's Accounts, Dec. 1817-Dec. 1818. Banks Papers, ANL, G026 (MF).

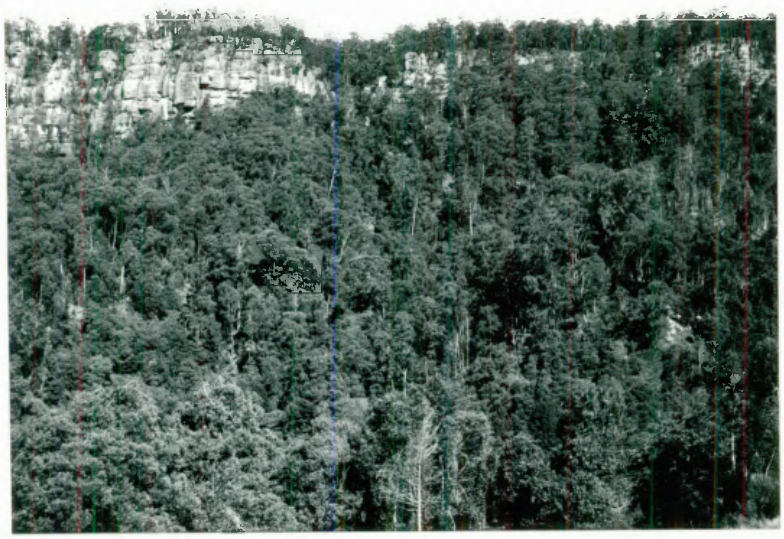
279 ibid.

280 Banks duly learned of the horse's shortcomings through accounts for 10/- for the hire of another horse, and 5/- to have the Government horse reshod.

ILLAWARRA - - "THE GARDEN OF NEW SOUTH WALES".

VIEW FROM NEAR MACQUARIE FALLS LOOKING TOWARDS THE SEA. Clearings in the valley indicate the many farms which suggested the name, 'The Garden of New South Wales'. Cabbage Tree Palms, Livistona australis, in the foreground.

Photo.: L. G., 25 May 1969.



ILLAWARRA ESCARPMENT NEAR MACQUARIE FALLS. Note the vertical sandstone cliffs, and the dark area of rainforest in the centre bounded by lighter areas of sclerophyll forest on either side. Such pockets of rainforest were eagerly sought as sources of Red Cedar and other commercial softwood timbers. The Illawarra area was long favoured as a botanical collecting ground.

Photo.: L. G., 25 May 1969.

Near the Minnamurra River, Cunningham noticed that aborigines "had their fresh water in baskets made of the leaf-sheaths of some palm, which they called Bangla" and one native was prevailed upon to indicate where "this doubtful tree existed."[281] Thus was found the Bangalow Palm, Archontophoenix cunninghamiana, which Cunningham recognised as Brown's Seaforthia elegans.[282] The problem of obtaining specimens was resolved by "the assistance of people on the farm with axes". Cunningham "caused several specimens 40-50 feet high to be fallen, laden with fruit."[283]

On 14 November, Cunningham and his servant, with the aid of the "Government horse" managed to transport the collections up the escarpment "about 10 miles north of the Five Islands", and on 19th they returned to Parramatta.

After further excursions, including one to Van Diemen's Land with Lieut. King in the Mermaid early in 1819, Cunningham again joined King when the Mermaid sailed north on 8 May 1819. Lieut. John Oxley, with Charles Fraser, sailed in consort in the Lady Nelson in order to make a more detailed survey of Port Macquarie and the Hastings River discovered the previous year. King and Oxley made a preliminary examination of the entrance to enable the two vessels to be warped into the port on 11 May, and they then proceeded with the examination of the Hastings,[284] and its embouchure. This task occupied them until 21st when the two vessels left the Port, the Mermaid for northern waters, and the Lady Nelson for Port Jackson.

The marine surveyors and botanists each examined the Hastings in their own way. King, Oxley and J. S. Roe[285] went up the river in the Mermaid's boat while Cunningham,

> rather than incommode Mr. Oxley & Mr. King's Party...and more especially as their object of surveying, could afford me but few opportunities of Landing,

took Fraser and a rowing party of four in the Lady Nelson's boat.[286]

King "landed to examine the trees which so thickly and beautifully cover both banks" near Rawdon Island, noting a tree

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281 Cunningham doubted whether so far from the tropics any palm other than the Cabbage Tree might be found.
282 actually Hooker was the author.
283 Cunningham Journal, 11 Nov. 1818, Lee: op.cit., p.425.
284 King: Narrative, I, pp.165-6.
285 John Septimus Roe (1797-1878), master's mate on the Mermaid.
286 Cunningham's Journal, 14 May 1819, ML. A1745, p.4.

> which the colonists have flattered with the name of rose-wood[287], and a ficus[288] of gigantic growth, both of which are very abundant.[289]

King also noted Red Cedar, Toona australis, "one of which...was found to be ten feet in diameter at the base"; Swamp Oak, Casuarina glauca; and Flooded Gum, E.grandis.

Cunningham and Fraser "ranged within the Deep recess" of the rainforests,

> where the permanent continued droping (sic) Humidity afford nourishment to a number of curious plants, only existing in such Gloomy solitudes.[290]

The scenery was reminiscent of Illawarra.[291] Cunningham's great waterstained journal provides a vivid picture of the virgin rainforests of the northern rivers as exemplified by the Hastings, just two years before settlement at Port Macquarie brought convict timber-cutters. The banks of the lower river were characterised by mangroves[292], but soon

> the waving Heads of the Palm Seaforthia[293] were observed over the loftiest thickets of climbing plants[294]; and Melia Azedarach[295], Cryptocarya glaucescens[296] (sassafrs) are now frequent, with the Corrijong or Hibiscus heterophyllus in all stages of its growth.[297]

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287 this was the Scentless or Bastard Rosewood, Synoum glandulosum, which King referred to as "Trichillia gladulosa." Cf. Benth.: Fl.Aust., I, p.384, "'Native Rosewood' of some colonists".

288 Port Jackson or Rusty Fig, Ficus rubiginosa.

289 King: Narrative, I, pp.167-8.

290 Cunningham's Journal, 14 May 1819, ML. A1745, p.5.

291 Cunningham considered 75% of the plants to be in common. R. Heward: Biographical Sketch of the late Allan Cunningham, Lond., 1842, p.18.

292 Grey Mangrove, Avicennia marina var.resinifera and River Mangrove, Aegiceras corniculatum, which extended some distance upstream.

293 i.e. the Bangalow Palm, Archontophoenix cunninghamiana.

294 "climbing and volubilous plants of Extraordinary size, among whom I recognized Cissus antarctica [Water Vine or Native Grape], Jasminum gracile [prob. J.simplicifolium] Bignonia australis [i.e. Wonga Vine, Pandorea pandorana] and...Lyonsia straminea [Liana or Monkey Rope, Parsonsia straminea] in flower at a considerable height on the summits of the trees--over which the young shoots of Flagellaria indica [Supplejack], topp'd and spread themselves in every direction." Cunningham also noted other climbers: Ripogonum album and Ipomoea palmata.

295 White Cedar, Melia azedarach var. australasica.

296 Brown Beech or Native Laurel, C.glaucescens which Cunningham here confuses with Sassafras, Doryphora sassafras, which doubtless was also present.

297 Cunningham's Journal, 14 May 1819, ML. A1745, p.4.

Cunningham recorded that

> Our People...easily distinguish'd the Towering Heads of the Red Cedar and Rosewood in the lofty dense forests on the Banks...among others of like apparent Value and Importance, in point of stupendous bulk...[298]

Other noteworthy trees were the Rusty or Port Jackson Fig, Ficus rubiginosa seventy feet high, and "having a base within...very extraordinary spurs" and

> a spec^{s} of Eucalyptus apparently, remarkable for its clear white glossy smooth stem (& call'd at Hunter's River where it is abundant 'Flooded Gum' or as it ought perhaps to have been named 'Floating Gum' being the only sp^{s} of this genus known, whose...Timber swims in the green state).[299]

"It was gratifying" to Cunningham "to collect spec^{ms} of a new Palm, originally discovered by Mr. Fraser" the preceding year.[300]

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298 Red Cedar, Toona australis and Rosewood, "so call'd from its fragrance when cut" (A. Cunningham) named after Charles Fraser by Bentham, Dysoxylum fraseranum. Cunningham recorded Rosewood "80 feet high at least" with girths of 22-24 ft. Cunningham's Journal, 14 May 1819, ML. A1745, p.5.

299 Eucalyptus grandis also noted by King, who had doubts about its suitability for spars. Opinions still vary on the timber. Name generally attributed to the fact that is usually found on alluvial ground liable to be flooded. It is interesting that although vernacular names are notoriously variable some of them have been used for the same species for 150 years or more. This is the case especially with plants which have long had some commercial use. It is one of the least dense hardwoods weighing in its green state about 56 lb. to 62 lb. per cu. ft. In fresh water (about 62.3 lb. per cu. ft., depending on temperature, amount of suspended matter, etc. or in saltwater (about 64 lb. per cu. ft.) logs of Flooded Gum would float. This was especially important in the days of river transport. Cf. Freshly cut logs of Tallow-wood, E.microcorys, weighing about 77 lb. per cu. ft., would be impossible to float down a river. The buoyancy of Flooded Gum doubtless led to its early use for ship-building.

300 The Walking Stick Palm, Linospadix monostachyus. Other species noted and/or collected were Clerodendron floribundum; Cunjevoi 'Lily', Alocasia macrorrhizos, abundant on islands with Swamp Oak, Casuarina glauca; Palm Lily, Cordyline stricta; the climbing aroid, Pothos longipes; Black Plum, Diospyros australis; Santalum obtusifolium R.Br.; Elkhorn, Platycerium bifurcatum; Screwpine, Pandanus pedunculatus; Brown or Plum Pine, Podocarpus elatus, and the epiphytic fern, Arthropteris tenella. Cunningham, "during the Mermaid's voyages" believed he saw Norfolk Island Pine, Araucaria heterophylla "in the vicinity of Mount Warning", King: Narrative,II, p. 528. This would have been the Colonial or Hoop Pine, which Aiton named Araucaria cunninghamii.

It was found that

> the Ferns & other Cryptogamous inhabitants of the Forests, grow here in all imaginary Luxuriance—they did not appear to differ from those collected at the Five Islands,[301]

and many of the orchids were familiar for the same reason.

Altogether, Cunningham and Fraser must have reaped a substantial harvest during their long excursion up the Hastings. By 19 May, the botanists had their plants and seeds "upon Deck to Dry"[302] and further collections and observations were made while the survey was being completed. As the Mermaid left the Port, Cunningham reported to Banks on the new palm, the interesting climbing aroid, Pothos, and timber trees considered to have some value.[303]

Cunningham returned to Port Jackson in the Mermaid[304] on 12 January 1820, and just six months later[305] he rejoined the cutter on her third northern survey voyage. King nursed the battered, leaking vessel back to Port Jackson on 9 December 1820, and Cunningham brought yet another collectic ashore only to learn that King George III had died on 20 January[306] and Sir Joseph Banks had died five months after.[307] Bereft of his "excellent and invaluable friend" Banks, and the King who had been such an energetic patron of Kew, and relying upon the capricious favours of an unfriendly Governor, Cunningham must have felt both depressed and insecure.[308] Almost certainly Aiton must have assured him that his work for Kew was to continue, for he joined Lieut. King on a fourth northern voyage, this time in the Bathurst,[309] which sailed from Port Jackson on 26 May 1821.[310] Banks had

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301 Cunningham's Journal, 14 May 1819, ML. A1745, p.5.
302 op.cit., p.8.
303 Cunningham to Banks 21 May 1819. Dawson: Banks Letters, p.247.
304 The cutter "was completely overrun" with rats and cockroaches, which must have made the safe stowing of plants and seeds almost impossible. King: Narrative, I, p.345.
305 13 July 1820, having been forced back after sailing on 14 June. King: op.cit., I, pp.348, 350.
306 News reached Macquarie on 15 July 1820. HRA, X, pp.208, 337.
307 19 June 1820.
308 and even more so had he been aware of Banks's letter of 8 Feb., 1820 to Sir Wm. Blagden the physician, lamenting that the death of George III and the indisposition of George IV, had brought scientific affairs to a standstill. Dawson: Banks Letters, p.103.
309 The Mermaid was declared unseaworthy after the last voyage. The Bathurst was a teak-built 170 ton brig. King: Narrative, II, p.2.
310 King: op.cit., II, p.4.

considered botanical investigation of the north very important, and no doub Cunningham recalled his old patron's enthusiasm for this project.[311] Yet just eight weeks before his death, Banks had not only commended Cunningham "for having...volunteered to go with Captain King to the north coast", but continued:

> I trust and hope, however, you will not be called away any more, but will be able to attend to the inland excursions made from Sydney.[312]

Of this curious change in attitude Cunningham was as yet unaware. Banks's final hope was zealously fulfilled once Cunningham completed his last voyag to the far north. This took Cunningham not only once more to the northern coasts but also to Mauritius where he learned that Sir Thomas Brisbane, Banks's "more Scientific Governor," had succeeded Macquarie. The Bathurst[313] returned to Sydney on 25 April 1822, some nine weeks after the vessel which had first brought Cunningham to the colony, had conveyed Macquarie from it. If Lieut. King had not possessed much botanical knowledge before his five voyages with Cunningham, he certainly acquired sufficient to enabl him to annotate a volume of De Candolle's Prodromus.[314]

After another collecting trip to Illawarra in August, Cunningham, who had so often accompanied expeditions under the leadership of others, applied to the new Governor for assistance to conduct an expedition of his own. Although Oxley and King had been as friendly and co-operative as men in their position could have been, Cunningham must have long felt the desire to command his own expedition on a route which would be determined as much

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311 Banks to Cunningham, c. 1817, "I have sent to you an order to join Lieut. Phillips (i.e. Phillip Parker King) in a voyage of discovery on the W & NW Coasts of New Holland in which it is very much wished that he may anticipate the French who are fitting out a Ship for the same purposes this will give you an opportunity of collecting Plants which could by no other means be obtained & of enriching the Royal Botanic Gardens at Kew with Plants which otherwise would have been added to the Royal Gardens at Paris & have tended to Render their collection superior to ours." ANL, Banks Papers, G026 (MF).

312 Banks's last letter to Cunningham, 14 April 1820 in Heward: Biog. Sketch, p.36.

313 The Surry, which sailed 15 Feb. 1822, well-laden with Australian natura history specimens which Macquarie proposed to distribute among his friends at home.

314 A. P. de Candolle: Prodromus Systematis Naturalis Regni Vegetablis, Paris, 1824-1873. At least one volume so annotated passed into the possession of J. H. Maiden. See The Public Service Journal, 9 May 1903, p.12.

by botanical as by geographical considerations. Accordingly he spent the last three months of 1822 in charge of a modest expedition[315] botanising in the Blue Mountains, and around the Cox, Macquarie, Turon and Cudgegong Rivers. Returning to Parramatta on 4 January 1823, well laden with material, Cunningham wrote a report which was published two years later.[316] In this, he referred to 100 species, sixty-two of which he himself named and described as new discoveries. As often happened, some of these plants had been previously discovered and named, and others have been subsequently revised and renamed, but twenty-eight of the species Cunningham collected on this expedition are still known by the names he published,[317] while six other species have since been reduced to varietal rank.[318]

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315 Cunningham, 2 servants, 2 horses and a light cart. The horses were lost in November 1822.

316 "A Specimen of the Indigenous Botany of the Mountainous Country between the colony around Port Jackson and the Settlement of Bathurst..." in Field: Geog. Memoirs.

317 including a Needlebush, Hakea propinqua (Blue Mts.); a Spider Flower now widely cultivated, Grevillea rosmarinifolia (Cox R.); a Geebung, Persoonia chamaepitys (N. of Bathurst); Zieria obcordata (hills on Macquarie R.); Sticky Boronia, Boronia anemonifolia (Blue Mts.); Wax Flower, Eriostemon obovale (Blue Mts. not B.obovalis as at present); Phebalium lachnaeoides (Blackheath); Heath, Epacris apiculata (Blue Mts.); Wattles, Acacia asparagoides (Blue Mts.); A.buxifolia (Macquarie R.); A.rubida (Blue Mts.); A.lanigera ("Interior"); and A.obtusifolia (Blue Mts.); Pea-bushes, Pultenaea incurvata (Blue Mts.); P.canescens (Blue Mts.); P.polifolia and Dillwynia sericea (Bathurst); Bossiaea foliosa (Bathurst); Pomaderris ledifolia (Cox's R.); P.andromedaefolia (Blue Mts.); Darwinia taxifolia (Blue Mts.); Wild Hops, Dodonaea attenuata (Cox's R.); Acaena ovina (Bathurst) and Native Flax, Linum marginale ('Forest-land, interior'). It is difficult to understand why J. E. Planchon (1833-1900) and Hooker's London Journal of Botany (1848) have been mentioned in connection with the naming of this last plant which was clearly published by Cunningham in 1825.

318 e.g. Hovea rosmarinifolia A. Cunn. = H.longifolia var. rosmarinifolia (N.W. of Bathurst); Dillwynia phylicoides A. Cunn. = D.retorta var. phylicoides (hills around Bathurst); Epacris onosmaeflora A. Cunn. = E.purpurascens var. onosmiflora. Cunningham took this opportunity to publish three species he had collected on Oxley's first expedition of 1817: a Spider Flower, Grevillea acanthifolia; a wattle, Acacia verniciflua and A.doratoxylon, "the spear-wood of certain tribes of natives in the interior" (Pine-ridges on the Macquarie R.).

On this journey, Cunningham had the advantage of trees blazed by Lieut. William Lawson, Commandant at Bathurst, 1819-1824, during two recent expeditions from Bathurst to the Liverpool Plains.[319] Lawson and Cunningham actually met in the bush on 26 November 1822 at the place on the Cudgegong called Mudgee.[320] Lawson himself made some general botanical references, enthusing over the vegetation when it appeared to be suitable for stock.[321] Despite the title Lawson gave to his manuscript journals, he did not penetrate the Liverpool Range to the Plains.

Governor Sir Thomas Brisbane, Fellow of the Royal Society of London and destined to become President of the Royal Society of Edinburgh, in patronising science in the Colony, naturally encouraged Allan Cunningham. Thus on 31 March 1823, the botanist left Parramatta with five men[322] for Bathurst. On 15 April the party "with five heavy laden packhorses" left Bathurst "to explore the country north from the Cugeegong (sic) River, as far as the extensive clear tracts of level land called Liverpool Plains."[323] On 7 June, Cunningham examined Pandora's Pass through the Liverpool Range, but lacked the resources to explore the Plains to which it clearly gave access.[324] By 27 June he was back at Bathurst. During this journey, Cunningham paid careful attention to the possibilities of the country for

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319 January 1822, and November-December 1822.

320 Wm. Lawson: "Journal of a Journey from Bathurst to the Liverpool Plains, Nov-Dec. 1822", ML. C121. Lee: Early Explorers, p.500 has two errors: Lawson did indeed mention Mudgee in his Journal at least, and Cunningham did not have to return to Bathurst to learn that Lawson was also exploring. They met soon after Cunningham had lost his horses.

321 e.g. The Campbell R. "runs through a fine Rich...Country, and in many places the Flats were Sixteen miles wide, the wood growing on them is Apple & Box Trees, nothing can exceed this Country for goodness of Pasturage for either Sheep or Cattle." (14 Jan. 1822). Lawson also referred to stringybark, ironbark, pine, "cypresses", and "an abundance of grass intermixed with herbs & vines"; "grass and Trafoil" (sic); "good grass very thick and full of herbs." It seems that Lawson used "herbs" to mean herbaceous plants which were not grasses. (Cf. Evans's description of 1813). Wm. Lawson: Journals, ML. C120[2] and C121.

322 together with pack-horses, cart, etc. See Cunningham: "Journal of a Route from Bathurst to Liverpool Plains", in Field: Geog. Memoirs, pp. 131-191.

323 Cunningham in op.cit., p.136.

324 op.cit., pp.175-177.

settlement, noting features "that...are generally valuable to the grazier"[325] and ascertaining "(for the information of the colonial government) the structure and agricultural importance of the country" with particular reference to lines of communication with Bathurst and the Hunter River.

Having established himself under the favourable auspices of the new Governor, as an explorer in his own right, Cunningham became more restless than ever, and the botanical fascination of the Blue Mountains and Illawarra intensified. In November 1823, he travelled to Archibald Bell's farm, 'Belmont', near Richmond, and on 26th he followed the line of road blazed some three months before by Archibald Bell, junior. This took the botanist and his two men through Kurrajong to Mt. Tomah, where "among shady forests, abounding in the tree-ferns (Dicksonia antarctica Labill.)", he discovered a new genus of climber[326], and seedlings of another new plant[327] on the trunks of the Dicksonias themselves. The party returned to Parramatta on 10 December with substantial collections.[328]

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325 e.g. "exceedingly rich, black, moist, loamy soil, adapted to all the purposes of agriculture", on the Cudgegong R.; "excellent cattle pasturage"; country "admirably adapted to the formation of artificial meadows for sheep, or wheat lands" on the Goulburn R.; valleys on the south side of Liverpool Ra. "are copiously watered, and furnish excellent cattle food, whilst their boundary hills afford generally an ample range of sheep pasture"; "open grazing forest", etc. There were also references to "miserable desolate country".

326 Fieldia australis dedicated to Barron Field, "a gentleman who has, in his judicial capacity, much aided the advancement of the colony of New South Wales...and whose important researches there, in various branches of physical science, will materially tend to confer that interest upon our distant settlement which it so richly deserves..." Cunningham had seen the same plant at Illawarra. Cunningham in Field: op.cit., pp.363, 365.

327 Possum Wood, Quintinia sieberi.

328 Cunningham noted and/or collected: "large Blue Gum", probably E.saligna; "Iron bark", perhaps Black Ash, E.sieberi or Narrow-leaved Ironbark, E.crebra. Other species included: Prickly-leaved Tea-tree, Melaleuca styphelioides; Mountain Cedar Wattle, Acacia elata; Red-fruited Olive Plum, Elaeodendron australe; Black Plum, Diospyros australis; "the Turpentine tree of the colonists", which Cunningham called "Tristania albicans"--this was probably T.albens A.Cunn., now Syncarpia glomulifera; the tree "called by the colonists Sassafras", Black Sassafras, Atherosperma moschatum. These "were the more remarkable". Twiners which gave trouble to the packhorses were: Wonga Vine, Pandorea pandorana; Wild Grape, Cissus antarctica; Smilax australis. Other plants noted were Hibbertia saligna; Native Cranberry, Lissanthe sapida; the ferns, Blechnum procerum, Pteris umbrosa, Pellaea falcata and the Rasp Fern, Doodia aspera. Live specimens of the Orange Blossom Orchid, Sarcochilus falcatus were also collected. Heward: Biog. Sketch. pp.51-2,55.

During 1824, Cunningham made collecting trips west to Bathurst[329], south to Lake George, the Murrumbidgee, Monaro and Shoalhaven[330], south again to Illawarra[331], north to Moreton Bay with Oxley[332], and west again to Bathurst.[333]

In March 1825, Cunningham led yet another expedition from Parramatta Passing through Richmond and Wollombi, the party entered the Hunter Valley near Patrick's Plains, and followed the river upstream before heading for the Liverpool Range and Pandora's Pass. This time, Cunningham negotiated the pass and examined the Liverpool Plains[334] before returning along his earlier route via Mudgee and the Cudgegong to Bathurst which was reached on 7 June 1825. Ten days later he was back at Parramatta.[335] Other journeys quickly followed: to the Wellington Valley where he collected widely on either side of the Macquarie[336]; to the Blue Mountains and Cox River, to Illawarra[337], and to New Zealand.[338] Cunningham had no sooner returned with a fine collection of New Zealand plants than he offered his services to Governor Darling to lead a proposed expedition "to ascertain the nature and description of the country

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329 January--for ripe seeds.

330 March-May.

331 July-August, for "a very valuable and extensive collection of live plants ...in small boxes or pots", including the Giant Stinging Tree, Dendrocnid excelsa. Heward: Biog. Sketch, p.62.

332 September-October in the Mermaid which put in at Port Macquarie and Cook Island (off Pt. Danger) on the way. An initial examination of the Tweed R. was made by the master, Charles Penson.

333 October-December, for more seeds.

334 He noted a score of species of "the prevailing vegetation" of the Plains; the current names include: Australian Bugle, Ajuga australis; Variable Plantain, Plantago varia (=P.struthionis A. Cunn.); Yellow Paper Daisy, Helichrysum bracteatum; Goose 'Grass', Galium aparine (introd. from Europe); Flax Lily, Dianella caerulea; Blue Bell, Wahlenbergia gracilis sens. lat.; Common Buttercup, Ranunculus lappaceus; Laurentia fluviatilis; Wiry Dock, Rumex dumosus; Gratiola peruviana; Mimulus gracilis; Common Reed, Phragmites communis; Blady Grass, Imperata cylindrica var. major; as well as species of Centaurea, Podolepis, Danthonia, Chloris, Cyperus and Indigofera, "the proof of a permanent marsh". Heward: Biog. Sketch, p.66.

335 For an account of this Journey, see The Australian, 21 July 1825.

336 October-December 1825. Maiden says he covered 150 miles on each side of the river. Pub. Serv. Jour., 9 May 1903, p.12. Cunningham collected tubers of 25 spp. of terrestrial orchids for shipment. Heward: Biog. Sketch, p.67.

337 from the end of February to early August, 1826.

338 left Port Jackson 28 Aug. 1826. Cunningham was not, therefore, in New Zealand "for the greater part of 1826" as stated in Lee: Early Explorers, p.544.

between Liverpool Plains and Moreton Bay."[339]

No longer did Cunningham have to go cap in hand to the King's Representative humbly requesting assistance to convey the King's plants from the bush to Parramatta, for times, and Governors, had changed. Darling considered him "better qualified for the undertaking than any person here" and "immediately gave orders for the necessary Equipment."[340] The botanist thereupon extended his earlier northern tours by undertaking the expedition for which he is mainly remembered. A forward depot was established at Thomas Potter Macqueen's property "Segenhoe" near Scone, and from here Cunningham led his party on 30 April 1827. By the end of July when he returned to the station, he had crossed the Liverpool Range, skirted the eastern side of the Liverpool Plains, crossed the Peel, the Nandewar Range, discovered the Gwydir Dumaresq and Condamine Rivers, and the Darling Downs, a return journey of som 400 miles.[341] On 31 August Cunningham returned to Parramatta via Bathurst, and the tour won Darling's warm approbation.[342]

Between September 1827 and February 1828, Cunningham made excursion to Bathurst, to the Callitris ridges of the Macquarie, and to Illawarra for seeds and epiphytic orchids, before joining Charles Fraser on the Lucy Anne which sailed for Moreton Bay on 7 June 1828.

Accompanied by the Commandant, Captain Patrick Logan, the two botanists visited Brisbane where they inspected Logan's site for a botanic garden[343]. They went to Breakfast Creek to see the "gigantic timber", inland to Limestone Hills (Ipswich) and out to Stradbroke Island. Their major journey was southward to the McPherson Ranges, where on 3 August 1828, the

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339 Darling to Goderich, 12 Nov. 1827. HRA, XIII, p.619, also Heward: Biog. Sketch, p.78. Letter from Allan Cunningham to Darling through Col.Sec. Alexander McLeay, 19 Feb. 1827, Heward: op.cit., pp.78-81.

340 Darling to Goderich, 12 Nov. 1827, HRA, XIII, p.619. The "Equipment" included six men and 11 horses.

341 Details of journey are in Rev. Charles P. N. Wilton (Ed.): The Australian Quarterly Journal of Theology, Literature & Science, Vol. I, Syd., 1828, Jan. and April, pp.65-85; 151-189. Plants collected included 30 spp. of Acacia.

342 Darling to Goderich, 12 Nov. 1827, HRA, XIII, p.620. Also T. de la Condamine to Cunningham, 17 Nov. 1827 in Heward: Biog. Sketch, p.89.

343 Brisbane Botanic Garden still occupies this site on the river.

Commandant, the botanists and two others began the ascent of what is now known as Mount Barney.[344] From this eminence Cunningham noted "at S.S.E. five miles a very precipitous rocky head, seemingly inaccessible from any point around us."[345] This point, "with its pigeon-house shaped summit"[346] was "named Mount Hooker, in honour of the mutual friend of Mr. Fraser and myself."[347] On 4 August, Logan advanced to the foot of this mountain, which by a subsequent rearrangement of names is now known as Mt Lindesay.[348] Investigations were made to the west and north to see whether the gap in the main dividing range discerned by Cunningham on his 1827 expedition could be gained from the east, but from this angle this appeared impossible, and on 11 August Logan and Fraser headed for Brisbane, leaving Cunningham to continue his quest by way of Limestone Hills. Some ten days later, he discovered the gap which now bears his name. Cunningham made further

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344 Mt Barney, 4449', then referred to as Mt. Lindesay, in honour of Col. Patrick Lindesay, O/C 39th Regiment, "a distinguished officer and a very active naturalist" (Prof. Robert Jameson, Edinburgh). Cunningham and Fraser collected "several previously unknown species" early in the ascent but at 1500 feet, Cunningham "deemed it prudent to proceed no farther", and he occupied himself taking bearings of such landmarks as Mt. Warning, 3750', correctly estimated as "E. by S. distant from 25 to 30 miles." Fraser and Logan, "putting off...shoes and stockings...began scrambling on hands and knees" another 300 feet up the mountain. Fraser left his collecting gear before following the intrepid Logan for another 500 feet, when he "wisely stopped". Logan is recorded as having made the summit alone. After all this, Fraser made the devastating observation: "The botany is not much varied,...It is worthy of remark, that on the upper regions of these mountains, the common productions of the South-head Road and Port Jackson predominate." He also referred to "Currijong, or Natives' Cordage Tree", Hibiscus heterophyllus, "overhung with a new and beautiful kind of Passion Flower," (Passiflora herbertiana) and to the Moreton Bay Chestnut, Castanospermum australe which was "eaten by the natives of the Brisbane River, and by the convicts...as substitutes for our Spanish Chestnuts". C. Fraser: "Journal of a Two Months' Residence on the Banks of the Rivers Brisbane and Logan", in W. J. Hooker: Botanical Miscellany, Lond., Vol. I., 1830, pp.261 et seq., and Cunningham Journal in Lee: Early Explorers, pp.588 et seq.

345 Cunningham Journal, in Lee: op.cit., p.589.

346 Fraser's Journal in Hooker: op.cit., I, p.264.

347 William Jackson Hooker (1785-1865), Professor of Botany at Glasgow, 1820-1841, Director of Kew Gardens, 1841-1865.

348 Mt. Lindesay, 4064', on the NSW-Qld. border. Fraser's Journal in Hooker: Botanical Miscellany, I, p.265 and Cunningham Journal in Lee: Early Explorers, p.591.

EXPLORERS' LANDMARKS

MOUNT LINDESAY: This was the eminence "with its pigeon-house shaped summit" which according to Allan Cunningham, was "named Mount Hooker, in honour of the mutual friend of Mr. Fraser and myself", i.e. William Jackson Hooker. In the foreground is a remnant of rainforest along the upper Richmond River, with Flooded Gum, E.grandis, Silky Oak, Grevillea robusta, Hoop, Richmond R. or Colonial Pine, Araucaria cunninghamii and Forest Oak, Casuarina torulosa.

Photo.: L. G., north of Grevillea, Jan. 1968.

OXLEY'S TABLELAND AND MT. OXLEY: named by Charles Sturt, 1829. Oxley himself did not visit this far western area.

Photo.: L. G., c. 10 m. N.E. of Bourke, May, 1968.

excursions around the Brisbane River before Sailing for Port Jackson on 29 October. He was particularly enthusiastic about some of the northern timber trees.[349]

During 1828, Cunningham renewed his request for leave of absence. Writing apparently to Aiton, he asked:

> May I be permitted again, most earnestly and respectfully to beg you, to weigh duly the several points submitted to your consideration, in my letter of March last, and in again urging my great desire to visit my native land.[350]

Nevertheless, in the following year, he made more trips to Bathurst[351] and Moreton Bay.[352] Between May and September 1830, he botanised on Norfolk Island and Phillip Island.[353] Returning to Parramatta he made further local excursions, and in December 1830, he went to Illawarra yet again, and to Broken Bay.[354] At the beginning of 1831, Cunningham made another trip to his beloved Blue Mountains and the Cox River.

By now, Cunningham had received permission,[355] if not an actual order to return home.[356] He auctioned his possessions, vacated the Parramatta house, bade farewell to his "extensive circle of friends",[357] including the Macleays at Elizabeth Bay,[358] and sailed from Sydney on the

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349 e.g. Native Teak, Flindersia australis; Tulipwood, Harpullia pendula; Silky Oak, Grevillea robusta, "another tree I think that will prove an acquisition"; Hoop or Colonial Pine, Araucaria cunninghamii, which "towers above all other plants; it exceeds 100 feet in height, and is fully 4½ feet to 5 feet in diameter...It furnishes spars for masts". He also collected living specimens of the Moreton Bay Chestnut, Castanospermum australe.

350 Heward: Biog. Sketch, p.90.

351 In January, during the drought which enabled Sturt to penetrate the "reedy morasses" which had blocked Oxley. Cunningham "was struck with the blighted aspect of vegetation" beyond Springwood. op.cit., p.93.

352 May-September. He collected living specimens of Hoop Pine, Araucaria cunninghamii. op.cit., p.90.

353 where escaping convicts robbed him of a chronometer, arms, tent and provisions. op.cit., pp.101-104.

354 where he obtained seeds of the fine Spider Flower, Grevillea caleyi.

355 Cunningham asked for leave in 1828; permission arrived 16 Nov. 1830.

356 Note the letter to the Treasury, 24 April 1839, quoted by Maiden in Pub. Serv. Journ., 10 June 1903, p.12.: "Of late years the means of maintaining this garden (Kew) appear to have been considerably reduced, one of two collectors sent abroad in 1814...having been recalled in 1823 and the other in 1830." (i.e. Bowie and Cunningham).

357 Heward: Biog. Sketch, p.109.

358 where he was delighted to see in the garden "rare native plants... growing with the utmost luxuriance."

Forth on 25 February 1831, arriving in London with some of his collections in July.[359] He left the Colony knowing that Darling thoroughly approved of his geographical work[360] and that Aiton felt similarly about his botanical researches. Such assurances heartened the compulsive wanderer whose health was already beginning to show a serious decline.[361]

Despite the work of Evans, Oxley, Hume and Hovell, Cunningham and others, the problem of the western rivers of N.S.W. still tantalised many—Governors, surveyors, intending squatters and academic explorers alike.[362] Nor were those tantalised loath to irritate each other. In October 1827, James Ballantine of Glasgow sent William Huskisson, Secretary of State for the Colonies, a lengthy plan for attacking the problem of "exploring the interior of Australasia (sic) or New South Wales"[363] with the hope that the Secretary would "prove a friend to geographical science". Ballantine courageously pointed out that

> after an uninterrupted possession of New Holland for nearly forty years, it surely does not reflect credit on the enterprising spirit of Britons that only a corner of this immense Island should have been explored, and that conjecture solely should supply the place of certainty regarding the interior of the country.[364]

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359 he went to live at Strand on the Green on the north bank of the Thames, near Kew Gardens. Heward: op.cit., p.116.

360 Darling to Murray, 19 Nov., 1828 and 24 Feb. 1829, HRA, XIV, pp.471,668.

361 Cunningham to Rev. Samuel Marsden, 12 April 1832: "I have been so exceedingly unwell since my arrival in England 9 months ago...so reduced in strength" and in a "sad state of lassitude". He hoped for a summer cure. Marsden Papers, Vol. I, p.521. ML. A 1992.

362 The sense of urgency concerning river exploration was well expressed by Surgeon Peter Cunningham: "It is evident...that, until the outlet of our interior rivers shall be discovered, the Australian continent can never be looked up to as a country destined to prove either rich or powerful." P. Cunningham: Two Years in New South Wales... Lond., 1827, I, p.29.

363 J. Ballantine to Rt. Hon. Wm. Huskisson, 20 Oct. 1827, HRA, XIII, p.555.

364 Memoir from Ballantine to Huskisson, HRA, XIII, p.556. Ballantine's suggestions included the use of 14 camels for penetrating the interior. Introduction of camels to N.S.W. was advocated in the Sydney Herald, Sept., 1839. Three camels were brought to Sydney in 1841, but the first major use of camels in N.S.W. was by the Burke and Wills expedition, 1860-1862.

THE RIVALS

CAPTAIN CHARLES STURT

1795-1869

An explorer with an interest in birds and plants. "I pretend not to science, but I am a lover of it; and to my own exertions, during past years of military repose, I owe the little knowledge I possess of those branches of it, which have been so useful to me."[365]

Photoprint from painting by Crossland, 1859, by courtesy of the Mitchell Library.

MAJOR SIR THOMAS LIVINGSTONE MITCHELL

1792-1855.

Surveyor-General of New South Wales, 1828-1855, an explorer whose contacts with George Bentham, John Lindley, William Jackson Hooker and Professor de Vriese, resulted in the first descriptions of many plants being published in his journals. An ardent collector and accurate observer, Mitchell confessed having a "passion for discovering 'something rich and strange'..."[366]

Photoprint from a portrait, c.1839 by courtesy of the Mitchell Library.

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365 C. Sturt: Narrative of an Expedition into Central Australia... Lond., 1849, I, p.ii.

366 T. L. Mitchell: Three Expeditions into the Interior of Eastern Australia...2nd Ed., Lond., 1839, I, p.224.

Huskisson referred Ballantine's letter and plan to Darling, who advised that "Mr. Cunningham the Botanist is about proceeding on another Expedition" and that "an Officer...has expressed a strong desire" to explore the interior. The Governor felt that Ballantine's proposition in its entirety would not "justify the Expence and that the Undertaking would be attended with infinite difficulty and hazard."[367]

Darling's "officer" was Captain Charles Sturt, 39th Regiment, major of brigade and military secretary, who, notwithstanding the appointment of Major Thomas Mitchell to succeed Lieut. John Oxley as Surveyor-General,[368] was given command of a western expedition "to ascertain the level of the inland plains, and to determine the supposed existence of an inland sea".[369] Sturt had discussed these questions with Oxley, Cunningham, Hume and P. P. King, and also, rather imprudently, with Major Mitchell, who naturally considered that his newly-won office had been slighted, and long remembered the fact. Darling however, assured the Colonial Office that "Captain Sturt, from his scientific knowledge, appears to be fully competent to the undertaking"[370] and on 9 November 1828 Sturt received "his definitive instructions" from the Governor,[371] who drew heavily on the memorandum prepared by Earl Bathurst twelve years before.[372]

During the drought of 1826-1828 when "it almost appeared as if the Australian sky were never again to be traversed by a cloud,"[373] it seemed likely that the Macquarie marshes which had thwarted Oxley would have dried sufficiently to enable either the main course of the river to be traced, or the shores of "the new Australian Caspian"[374] to be examined. Sturt began

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367 Darling to Under Sec. Stanley, 25 May 1828, HRA, XIV, p.199.

368 Surveyor-Gen. John Oxley died at Kirkham, 26 May 1828, and Mitchell, then Acting Surveyor-General, was immediately appointed. HRA, XIV, pp.79, 209.

369 Sturt to Isaac Wood, 10 Nov. 1827, in Mrs. N. G. Sturt: Life of Charles Sturt, Lond.,1899, p.24. Darling had decided long before that Sturt should lead such an expedition.

370 Darling to Sir Geo. Murray, 18 Nov. 1828, HRA, XIV, p.472.

371 C. Sturt: Two Expeditions into the Interior of Southern Australia, Lond., 1834, Vol. I, p.3.

372 Sturt was advised: "It is further expected that you will as far as may be in your power attend to the animal, vegetable and mineral Productions of the Country noting down anything that may occur to you and preserving Specimens as far as your means will admit, especially of some of all the ripe Seeds that you may discover. When preservation of Specimens is impossible Drawings or detailed accounts of them are very desirable." Draft of Darling's Instructions, Nov. 1828 in Sturt: Journals, Maps & Letters, ML. FM4/21. Also Sturt: Two Expeditions, I, p.187.

373 Sturt: Two Expeditions, I, p.2.

374 a taunting expression used by Edward Smith Hall's Monitor when attacking Sturt's appointment as another example of Darling's maladministration.

his journey down the Macquarie from Wellington on 7 December 1828, with a small party which included Hamilton Hume, and by a curious coincidence, another "botanical soldier"[375] named Fraser who acted as collector. The party moved down the Macquarie into the marshes,[376] to the Bogan, thence to the Darling and the Castlereagh, before returning to Wellington on 21 April. Throughout the journey, Sturt paid keen attention to the plants[377], as well as to the birds and minerals. Fraser "collected numerous botanical specimens"[378] and no doubt these and other "curiosities" were "carefully sealed up" and delivered to the Governor with the journals and maps.[379] Sturt and Hume, who made separate excursions, showed that

> of whatever extent the marshes of the Macquarie might be, it was evident they were not connected with those of the Lachlan.[380]

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375 Oxley's term for Charles Fraser. Oxley: Journals, p.76.

376 Sturt: Two Expeditions, I, p.38. The Common Reed, Phragmites communis, despite the drought was "from ten to twelve feet high".

377 Sturt referred to Flooded Gum (not E.grandis, but more likely Black or Flooded Box, E.largiflorens); Angophora (probably A.floribunda) and Casuarina (probably C.cunninghamiana) along the upper Macquarie. On poor sandy soil, he noted Ironbark (probably Mugga, E.sideroxylon) and Cypresses (probably Callitris hugelii and C.endlicheri); he was familiar with Cunningham's Acacia pendula (Myall or Boree), Native Cherry, Exocarpos cupressiformis and Lignum, Muehlenbeckia cunninghamii (which he called Polygonum junceum). More general references included: plains "covered with salsolaceous plants"; "plants of the chenopodia kind"; "two kinds of caparis (sic)"; "miserable acacia scrub"; "a species of oxalia" (probably Yellow Wood Sorrel, Oxalis corniculata). Sturt's "blue-gum trees...of magnificent size" at the Darling-Bogan junction would have been E.camaldulensis. He also referred to box, "a new species of tortuous box" (probably E.largiflorens); "new species of eucalypti"; "sterculia" (i.e. Kurrajong, Brachychiton populneum) "rough gum" and "mountain gum." Sturt was not impressed by the timber trees of the interior: "Generally speaking, I fear the timber is bad—the rough gum may be used for knees, and such purposes, and we may have seen wood for the wheelwright and cabinet-maker, specimens of which I have procured, but none for general or household purposes". Sturt's report to Darling from Mt. Harris, 4 March 1829. Sturt: Two Expeditions, I, p.215.

378 op.cit., I, p.63.

379 Sturt: Two Expeditions, I, p.188.

380 op.cit., I, p.48.

They had "set at rest the hypothesis of the existence of an internal shoal sea in southern Australia."[381] Yet the Darling, with its brine springs, while providing the solution to one problem, presented another problem of its own. As Sturt put it:

> the veil has only as it were been withdrawn from the marshes of the Macquarie to be spread over the channel of the Darling.[382]

Sturt appreciated the potential of the country he traversed:

> Acacia pendula stood leafless upon the plains, and the polygonum junceum [=Lignum, Muehlenbeckia cunninghamii] appeared to be the only plant that had withstood the effects of the drought. Yet, notwithstanding this general depression of the vegetable kingdom, the animals that had been brought from Wellington Valley, were in the best condition, and were, indeed, too fat for effective labour; it might, therefore, be reasonably presumed, that herbage affording such nourishment in so unfavourable a season, would be of the richest quality, if fresh and vigorous under the influence of seasonable, and not excessive, rains.[383]

Sturt received further instructions from the Governor in September 1829, and in November he led his second expedition from Sydney to continue the examination of the Darling by way of the Murrumbidgee. This time we are given a rare glimpse of Fraser the soldier, who again accompanied Sturt as botanical collector. As the expedition reached the turn-pike near the junction of George Street and Parramatta Road, Sturt recorded that his servant, Harris,

> led the advance, with his companion Hopkinson.[384] Nearly abreast of them the eccentric Fraser stalked along wholly lost in thought. The two former had laid aside their military habits, and had substituted the broad brimmed hat and the bushman's dress...,but was impossible to guess how Fraser intended to protect himself from the heat or the damp, so little were his habiliments suited for the occasion. He had his gun over his shoulder, and his double shot belt as full as it could be of shot, although there was not a chance of his expending a grain during the day.[385]

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381 op.cit., II, p.1.
382 op.cit., I, p.151.
383 op.cit., I, p.113.
384 another soldier who had also been on the earlier expedition.
385 Sturt: Two Expeditions, II, pp.9-10. The sight of Fraser so armed must have caused Sturt some concern, for later he confessed: "I did not trust Fraser, who would, ten to one, have missed his mark", when the effort was being made to impress the aborigines with the accuracy of European weapons, op.cit., I, p.127. Yet later we see him posted in the bow! Mrs. N. G. Sturt: Life of Charles Sturt, p.30 records that Fraser died in 1843.

This expedition, which had an additional naturalist in George Macleay[386] who replaced Hume, proceeded via Liverpool and Hume's station near Lake George, to the Yass Plains and the Murrumbidgee where "the only plant that enriched our collection, was an unknown metrosideros."[387] The first days of January 1830 were spent in assembling the prefabricated whale-boat[388] and in building from "a tree from the forest" a smaller boat to serve as a tender. Local cypress (Callitris hugelii or C.endlicheri) was used for "a mast and a spar",[389] and on 7 January 1830 the voyage down the Murrumbidgee began, with "Fraser posted in the bow...gun in hand..."[390] A week later, the descent of the Murray began, and the long voyage past the Darling junction to Lake Alexandrina and back to the Murrumbidgee depot has long been acknowledged as one of the great exploits of Australian exploration. Naturally such a voyage did not provide much opportunity for plant collecting, a fact which Sturt appreciated:

> Our botanical specimens were as scanty as our zoological, indeed the expedition may, as regards these two expeditions, almost be said to have been unproductive.[391]

Nevertheless, when at last the Murrumbidgee depot was regained in mid-April, 1830, Sturt had Clayton, the boatbuilder "make some plant cases of the upper planks of the boat" before it was burnt.[392]

Lack of collecting facilities probably moved Sturt to record even more botanical information than on the earlier journey, and no doubt George Macleay assisted in this,[393] but in any case, the perspicacity Sturt showed on these journeys was quite remarkable, especially when we recall that he

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386 son of Colonial Secretary, Alexander McLeay. Throughout the journey he "was always indefatigable in his pursuit after subjects of natural history". Sturt: op.cit., II, p.62.

387 op.cit., II, p.39. Metrosideros was once applied to several genera of the Myrtaceae.

388 27 feet long.

389 op.cit., II, pp.70-1.

390 op.cit., II, p.73.

391 op.cit., II, p.188 (20 Feb. 1830).

392 Sturt: Two Expeditions, II, p.219.

393 Sturt noted cypress pine, box-trees, stringybark, flooded gum, blue gum (i.e. River Red Gum), oat-grass, and other species in general terms, as well as many plants of known genera: Grevillea, Casuarina, Melaleuca, Xanthorrhoea, Banksia, Laxmannia, Rhagodia, Salsola, Sclerolaena (=Bassia), Stenochilus (=Eremophila), Mesembryanthemum (=Disphyma), Amaryllis (=Calostemma). Some plants he identified specifically: Manna Gum, E.mannifera (which could have been, or have included E.viminalis); Common Reed, Phragmites communis (noted as Arundo phragmites); Lignum, Muehlenbeckia cunninghamii (noted as Polygonum junceum); Myall or Boree, Acacia pendula.

did not arrive in New South Wales until May 1827. He could not, for example, "but be struck with the apparent connection between...geology and vegetation" in the interior. In fact, he

> had little difficulty, after a short experience, in judging on the rock that formed the basis of the country...from the kind of tree or herbage that flourished in the soil above it.[394]

Thus cypress pines and casuarinas in the interior indicated sandy ridges; the limestone country near Wellington and "the better portions" of the County of Argyle, were characterised by Manna Gum, E.mannifera; "richer grounds" by Apple Trees, Angophora spp., while other species "betrayed sandstone formation". Sturt noticed when the River Oak, Casuarina cunninghamiana disappeared from the banks of western rivers, to be replaced by the River Red Gum, E.camaldulensis; he noted changes in soil related to changes in vegetation; dominants and associates in plant species; he saw that some plants, such as Lignum, resisted drought, while one look at the pasturage on Yass Plains convinced him that the area "will ere long be wholly taken up as sheep-walks."[395] As Darling once put it, Sturt's "mind appears naturally inclined to such researches..."[396] He was to make more contributions later.

The fuming Surveyor-General was finally given his opportunity to enter the field of geographic and botanical discovery when "Sir Patrick Lindesay,[397] with due regard to the responsibility" held by the "successor to Mr. Oxley", accepted Mitchell's "services to conduct a party into the interior." The aim was to investigate "a great river beyond Liverpool Plains", reported by escaped convict George Clarke, the 'Barber', as the "Kindur", along which "in a south-west direction, he had twice reached the sea shore."[398]

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394 Sturt: op.cit., I, pp.xxx-xxxi. The affinity between soil and vegetation is now regarded as a basic fact.

395 Sturt: Two Expeditions, II, p.15.

396 Darling to Stanley, quoted in W. A. Rainbow, "Charles Sturt, Explorer and Naturalist", Australian Museum Magazine, Vol. IV, No.3,1930, p.76.

397 Col. Sir Patrick Lindesay was administrator of N.S.W., 22 Oct. 1831 to 2 Dec. 1831 during the interregnum between Darling and Bourke.

398 T. L. Mitchell: Three Expeditions into the Interior of Eastern Australia, Lond., 1839, Vol. I, pp.1-3. Clarke had eluded police by disguising himself as an aborigine; "he was deeply scarified...naked and painted black" and "went about with a tribe." He apparently lived thus for some five years before being apprehended by mounted police in November 1831. It was held that Clarke's "Statement, far from being Contradictory to the accounts of Messrs. Oxley and Cunningham, Strongly Supports the Theories entertained by the latter..." Lindesay to Goderich, 23 Nov. 1831, HRA, XVI, pp.465-6.

BOTANICAL ART OF SIR THOMAS MITCHELL

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1. "Box Tree in Lake George".
2. An Acacia "near A.eglandulosa" found by Mitchell "near the E. bend Darling 9 June" (1835). Mitchell noted: "...the branches had so graceful a character, that I was tempted to draw it, while I awaited the arrival of the carts." (Mitchell: Three Expeditions, I, p.230).
3. Yarra Tree, i.e. River Red Gum, Eucalyptus camaldulensis, sometimes referred to as Blue Gum by the early explorers, who recognised it as a sure indicator of water.

Sketches by permission of the Mitchell Library, from Drawings by T. L. Mitchell, ML. DG.A6.

Mitchell left Sydney on 24 November 1831, travelling via Parramatta,[399] Wiseman's Ferry, into the country north of the Hawkesbury to Wollombi, the Hunter Valley, and over the Liverpool Range to Oxley's Peel River. Mitchell traced the Peel to the Namoi where in late December two canvas boats were made using "ribs of blue gum" and floor planking of local pine.[400] While the men worked at the saw-pit, Mitchell made an excursion, finding

> a flowery desert, the richest part of the adjacent country being quite covered with a fragrant white amaryllis in full bloom.[401]

The boats had no sooner been launched into the Namoi than they had to be abandoned[402], and Mitchell led his men into "a scrub of Acacia pendula",[403] and into a plain between the river and the Nandewar Range, where he discovered the Wild Orange or Native Pomegranate which still bears his name, Capparis mitchelli. Cunningham's Gwydir River[404] was located, and traced to its junction with the Darling, before Mitchell turned south and homeward in February 1832. Mitchell recorded,

> In thus returning I gathered for my friend, Mr. Brown a hortus siccus, of such plants as appeared new to me; the field of research being obviously, at this time, confined to our line of route.[405]

Actually Mitchell showed great interest in botany throughout this, and other journeys, taking great care to describe plants which appeared new to him, noting the frequency of occurrence of species already familiar, seeking the recurrence of plants which appeared to be rare, and even suggesting scient-

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399 where he was the guest of the ageing John Macarthur.

400 Black or White Cypress; the 'blue gum' may have been E.camaldulensis.

401 Wilcannia Lily, C.luteum, apparently the rather uncommon white form. The locality was on the Namoi between the sites of Gunnedah and Boggabri. Lindley named the plant Calostemma candidum.

402 Painted canvas was no match for the jagged snags in the rivers.

403 31 Dec. 1831. Mitchell: op.cit., I, p.58.

404 Mitchell attempted boat transport again, this time (late Jan. 1832) using planking of blue-gum, and of Callitris, for which the cart was sent back 12 miles to the nearest stand. Mitchell: op.cit., I, pp.96-9

405 Mitchell: op.cit., I, p.115. Although he collected personally for his "friend Mr. Brown" (Robert Brown), species believed to be new were name and described in Latin footnotes provided by Dr. John Lindley, in Mitchell's published journal.

ific names for plants he believed to be undescribed. Mitchell's first trip showed that the Gwydir also flowed into the Darling, and although no stream was found answering Clarke's description of the 'Kindur', the Gwydir and the 'Kindur' were later considered synonymous.[406] Mitchell had the misfortune to lose two men at the hands of aborigines near "Mt. Frazer" which was named "after the botanist of that name."[407] The botanical results of this journey--not only in specimens and observations, but also in the use to which the specimens were put--were more significant than the early journeys of Sturt.[408] Mitchell also deserves to be remembered for his efforts in preserving aboriginal names.[409]

With great satisfaction Mitchell recorded:

> In May 1833, the local authorities were informed, that His Majesty's Government judged it expedient, an expedition should be undertaken to explore the course of the

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406 W. H. Wells: A Geographical Dictionary... Syd., 1848, p.223.

407 op.cit., I, p.66. Unwittingly, Mitchell named this prominence after a man who had died less than a fortnight before. Fraser died on 22 Dec. 1831; the hill was named 4 Jan. 1832.

408 On the 'Kindur' expedition, Mitchell indicated that he knew Banksia; Xanthorrhoea; Acacia pendula, "that beautiful shrub of the interior"; Callitris pyramidalis (= probably Black or Red Cypress, C.endlicheri); Casuarina spp.; Stenochilus maculatus (=Native Fuchsia, Emu Bush, now Eremophila maculata.) He recorded native uses of Acacia pendula, and noted iron-bark, blue-gum (probably E.camaldulensis), box, apple, water-lilies, etc. He discovered such interesting species as Wilcannia Lily, Calostemma luteum; Wild Orange, Capparis mitchelli; Hibiscus tridactylites (=H.trionum); Quandong, Eucarya acuminata. On the Gwydir, Mitchell "found a species of cucumber of about the size of a plum, the flower being...purple." The fruit was sliced, peppered, and "washed...with vinegar"; it was chewed, but neither Mitchell nor White, the assistant surveyor, "had the courage to swallow it." Probably a species of Solanum, e.g. S.tetrathecum or S.esuriale.

409 Despite some unfortunate incidents with aborigines, Mitchell recorded that "on many a dark night, and even during rainy weather, I have proceeded on horseback amongst these steep and rocky ranges [i.e. the Hawkesbury area] my path being guided by two young boys belonging to the tribe, who ran cheerfully before my horse, alternately tearing off the stringy bark which served for torches, and setting fire to the grass trees (xanthorhoea (sic)) to light my way." Mitchell: op.cit., I, pp.10-11.

RICHARD CUNNINGHAM

RICHARD CUNNINGHAM

1793-1835

Colonial Botanist, 1832-1835. Killed by Bogan River aborigines about 17 April 1835.

Photoprint: Mitchell Library, from the portrait by McNees.

A strip of woodland country representative of that in which Richard Cunningham was lost. The trees are Bimble Box, E.populnea, White Cypress Pine, Callitris hugelii and Belah, Casuarina cristata. The line of trees in far background indicates the Bogan River. Note the newly-erected telephone post of White Cypress. Burdenda Station, Tottenham, near Cunningham's grave.

Photo.: L. G., April, 1968.

> River Darling, and that this service should be performed by the survey department.[410]

Two "light whale boats" and a boat carriage were prepared and personnel appointed. Alexander McLeay, the Colonial Secretary, noted:

> The Secretary of State having authorised an Expedition to trace the course of the Darling it was thought likely to conduce to a more perfect knowledge of the Botany of New South Wales to add the Colonial Botanist to the exploring Party.[411]

Thus Richard Cunningham, Allan's brother, who arrived in January, 1833 as Colonial Botanist in succession to Charles Fraser, was appointed, £21-2-9 being approved for his equipment.[412] Mitchell's instructions bade him

> to afford every facility to the Colonial Botanist in the prosecution of his researches, and for preserving and conveying the collections he may be enabled to make, of plants, roots, and seeds.[413]

Furthermore,

> Specimens of every kind obtained during the expedition, are to be considered the property of the public, and lists to be made of them from time to time as they are collected, setting forth the places where they have been found and any facts that may tend to elucidate their natural history and character. On the return of the expedition, all such specimens of the animal and mineral world, with the corresponding lists, are to be placed in the Australian Museum, and the vegetable productions in the Botanical Garden.[414]

Mitchell's party of two dozen men, seven carts, boat carriage and packhorses, left Parramatta on 9 March 1835 to set up an advanced base 170 miles from Sydney at Boree Station on the Belubula River. Here Mitchell met them and assumed command.

We have but few glimpses of Richard Cunningham at work. On 13 April, Mitchell noted:

> Mr. Cunningham had a busy day in examining many interesting plants which he had not previously seen on this journey.[415]

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410 op.cit., I, pp.147-8.
411 Quarterly Finance Return to 30 June 1835, in N.S.W. Governors' Despatches Vol.25, 1835. ML. A1214. pp.164-5.
412 ibid.
413 Bourke's Instructions to Mitchell, 26 Mar. 1835. No.14, N.S.W. Government Gazette, Vol. VI, 1837, p.63.
414 Bourke's Instructions to Mitchell, 26 Mar. 1835, No. 15, N.S.W. Government Gazette, Vol. VI, 1837, p.63.
415 Mitchell: Three Expeditions, I, p.173.

Three days later, the botanist was missing in the woodland on the Bogan River. It had been his wont to diverge from the line of route to enable him to cover more country in the search for specimens. Mitchell, whose camps and progress were organised with military precision, did not applaud the botanist's zeal:

> I had repeatedly cautioned this gentleman, about the danger of losing sight of the party in such a country; yet his carelessness in this respect was quite surprising.[416]

An intensive search began. Guns were fired, bugles sounded, messages were left on trees,[417] parties called out as they scoured the bush searching for tracks and natives were questioned, but all to no avail. After some ten days of this, one party found the botanist's dead horse, saddle, whip and other items and some footprints were followed, but Cunningham himself was not found. On 3 May, Mitchell described his mixed feelings:

> My anxiety about him was embittered with regret at the inauspicious delay of our journey, which his disappearance had occasioned; and I was too impatient on both subjects, to be able to remain inactive at the camp.[418]

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416 op.cit., I, p.178.

417 For example, this classic: "Dear Cunningham,
These are my horse's tracks, follow them backwards,
they will lead you to our camp, which is N.E. of you.
T. L. Mitchell." op.cit., I, p.181.

418 Mitchell: Three Expeditions, I, pp.193, 195. This camp was near "a small pond, the name of which is Burdenda". Cunningham's grave is to-day on Burdenda Station on the Bogan, near Tottenham. In October 1835, Lieut. Henry Zouch of the mounted police was sent to investigate Cunningham's disappearance. He ultimately found further articles belonging to the botanist in the possession of some aborigines, four of whom had apparently clubbed Cunningham to death after he had alarmed them by wandering around their camp at night, probably in a delirium. Zouch apprehended three of the alleged murderers, two of whom escaped. The third, Bureemal, led Zouch to a place where bones and portions of clothing were found. "I collected all the remains I could discover," wrote Zouch, describing the events of 10 November 1835, "and having deposited them in the ground, raised a small mound over them, and barked some of the nearest trees, as the only means in my power of marking the Spot." Mitchell: op.cit., II, p.354; HRA, XVIII, p.237. The monument and wrought-iron fence were erected some time between 1862 and 1875.

RICHARD CUNNINGHAM'S GRAVE

Bimble Box, Eucalyptus populnea, blazed by Lieut. Henry Zouch in 1835 to mark the grave in which he had buried the remains of Richard Cunningham, Colonial Botanist.

Photo.: L. G. April, 1968.

The grave of Richard Cunningham, Burdenda Station, near Tottenham. Trees in the background line the Bogan River. Bimble Box, E.populnea, and Black Box, E.largiflorens have been left around the grave, which is now surrounded by cultivation.

Photo.: L. G. April, 1968.

RICHARD CUNNINGHAM'S GRAVE

Grave of Richard Cunningham, Burdenda Station, near Tottenha N.S.W.

Photo.: L. G. April, 1968.

RICHARD CUNNINGHAM/ GOVERNMENT BOTANIST/ OF THIS COLONY/ ATTACHED TO AN EXPLORING EXPEDITION/ UNDER THE COMMAND OF MAJOR / MITCHELL SURVEYOR GENERAL / WANDERED IN HIS ENTHUSIASM/ FOR BOTANICAL INVESTIGATION/ FROM HIS COMPANIONS AND LOSING / HIMSELF IN THIS LOCALITY OF THE / BOGAN RIVER FELL INTO THE HANDS / OF THE ABORIGINALS BY WHOM HE / WAS UNFORTUNATELY KILLED / ABOUT 25th OF APRIL 1835 / IN THE 42nd YEAR OF HIS AGE/ THIS TABLET IS ERECTED TO HIS / MEMORY BY A VOTE OF THE/ PARLIAMENT OF N.S. WALES / THROUGH THE CCC LANDS / BY S. R. DANIEL CCL / WELLINGTON DISTRICT.

Silvanus Brown Daniel (not S. R. Daniel) was Commissioner of Crown Lands for the Wellington District from 1862 to 1875. The stone was therefore erected over the grave 30 years or so after Cunningham's death. Plants within the wrought-iron fence around the grave include: Galvanized or Blue Burr, Bassia birchii, Five-spined Saltbush or Black Roly Poly, Bassia quinquecuspis and Prickly Saltwort or Roly Poly, Salsola kali.

Thus despite the sprained ankle he had suffered throughout the search, Mitchell rode another thirty-three miles into the bush looking for traces of his botanist, noting with unconscious irony some of the plants he saw during the search.[419]

When this search failed, there was no alternative but to resume the journey. Mitchell traced the Bogan to the Darling, reaching the junction on 25 May. Here he found

> abundance of pasture, indeed such excellent grass as we had not seen in the whole journey...There were four kinds, but the cattle appeared to relish most a strong species of anthistiria, or kangaroo grass.[420]

Fort Bourke was erected of local timbers[421] between 27-29 May and examination of the river was begun. Mitchell found the bed of one tributary

> was covered with a plant resembling clover or trefoil, but it had a yellow flower, and a perfume like that of woodroofe. A fragrant breeze played over this richest of clover fields and reminded me of new mown hay...my passion for discovering 'something rich and strange' was fully gratified...

Mitchell had discovered Menindee Clover, Trigonella suavissima.[422] A little later, "the perfume of this herb, its freshness and flavour" induced Mitchell

> to try it as a vegetable, and we found it to be delicious, tender as spinach, and to preserve a very green colour when boiled. This was certainly the most interesting plant hitherto discovered by us; for independently of this culinary utility, it is quite a new form of

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419 e.g. "The callitris pyramidalis, and the stirculia (sic) heterophylla were among the trees." Mitchell: op.cit., I, p.196. i.e. Black or Red Cypress, Callitris endlicheri and Kurrajong, Brachychiton populneum.

420 Mitchell: Three Expeditions, I, p.216. Kangaroo Grass, Themeda australis, in Mitchell's day, known as Anthistiria australis.

421 e.g. River Red Gum, E.camaldulensis, Coolabah, E.microtheca and Black Box, E.largiflorens.

422 Mitchell: op.cit., I, p.224. This plant, also known as Darling or Scented Clover, has been acknowledged as a useful indigenous fodder plant ever since 4 June 1835, when Mitchell's horse, "defying the rein, seemed...pleased in the midst of so delicious a feast as this verdure must have appeared to him." Swampy areas near Fort Bourke are still rich in this plant, exuding the fragrance of which Mitchell spoke. Mitchell's "woodroofe" was Woodruff or Woodrowel, Asperula odorata of English woodlands. It too has scented leaves.

MITCHELL'S FORT BOURKE

FORT BOURKE, DARLING RIVER: Mitchell built his Fort Bourke stockade of local timbers (e.g. River Red Gum, Black Box, Coolabah) in May 1835 on the eminence behind the large River Red Gum, E. camaldulensis. It stood close to the dual-trunked Whitewood, Atalaya hemiglauca on the rise to the left of the Red Gum.
Photo.: L. G., May, 1968.

DARLING RIVER AT FORT BOURKE: Here, once again, Mitchell was impressed by the giant 'blue gum' or 'yarra' trees which characterise the western rivers, and which the explorers constantly sought as indicators of permanent water. From this point Mitchell began his 300 mile survey of the Darling.
Photo.: L. G., May, 1968.

MENINDEE CLOVER, Trigonella suavissima and Ixiolaena leptolepis in a swampy area at Fort Bourke, Darling River. Sir Thomas Mitchell considered that Trigonella "was certainly the most interesting plant hitherto discovered by us." He used it as an antiscorbutic.

Photo.: L. G., May, 1968.

LIGNUM, Muehlenbeckia cunninghamii, a characteristic plant of the interior in areas likely to be flooded. The "Polygonum" plant of the explorers, aptly named after Cunningham.

Photo.: L. G. at Fort Bourke, May, 1968.

> Australian vegetation, resembling, in a striking manner, that of the south of Europe.

Roots of the plant were carefully collected, as well as the usual herbarium specimens of flower and foliage.[423]

Mitchell spent over two months examining the Darling, which he traced some 300 miles downstream from Fort Bourke before turning back after a clash with aborigines near Laidley's Ponds (Menindee). During the Darling survey, Mitchell noted and/or collected many plants,[424] among which he distinguished twenty-six species of grasses.[425] By the time it was decided to return to the Fort, "some men...showed symptoms of scurvy" and Trigonella suavissima was accordingly "cooked...as a vegetable." This "proved an excellent antiscorbutic", and by August, only two men were positively suffering from "the black scurvy".[426]

Mitchell was greatly impressed by the River Red Gum, E.camaldulensis so prevalent along the Darling:

> On the river bank, trees peculiar to it, grow to so large a size, that its course may be easily traced at great distances; and they thus facilitated our

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423 op.cit., I, p.254.

424 including Lamb's Tongue, Plantago varia; a dwarf saltbush, Atriplex halimoides; Cassia artemesioides; Boobialla or Water Bush, Myoporum montanum; Lignum, Muehlenbeckia cunninghamii; a wattle, "very near Acacia eglandulosa"; Horse Radish or Mustard Tree, Codonocarpus cotinifolius; Native Orange, Capparis mitchelli, and species of Callitris and Casuarina believed to be new. Mitchell also referred in general terms to composites, salsolae, "cucurbitaceous plants", and "an umbelliferous weed".

425 including Native Millet, Panicum decompositum; Kangaroo Grass, Themeda australis; Windmill or Umbrella Grass, Chloris truncata; Spear or Corkscrew Grass, Stipa setacea; Poa sp.; Mitchell Grass, Astrebla lappacea; the latter near the Darling-Bogan Junction. On the plains near the lower Bogan, Mitchell found what he believed to be Crab or Crowfoot Grass, Eleusine indica "a very tall nutritious grass", and Sand Couch, Sporobolus virginicus. It seems however, that the former grass was probably Button Grass, Dactyloctenium radulans, which bears some resemblance to Eleusine, and though normally prostrate or scrambling, could appear to be tall when overgrowing other plants. Another possibility is Cane or Umbrella Grass, Leptochloa digitata. Both are closely related to Eleusine indica which Dr. Joyce Vickery believes is a comparatively recent introduction. The other grass was doubtless Rat's Tail Couch, Sporobolus mitchellii and not S.virginicus, which is a littoral species. Mitchell "gathered seeds of twenty-five different kinds" of grass, "six of which grew only on the alluvial bank of the Darling". It must be remembered however, that Mitchell had a rather rigid concept of the nature of a species.

426 Mitchell: op.cit., I, pp.281-2, 300, 316, 318.

> survey most materially. These gigantic trees consist of that species of eucalyptus called blue-gum in the colony...the shining trunk, and white, knarled (sic) arms...the surest guides to water.[427]

Other trees mentioned are not so easy to identify:

> We passed a solitary tree of a remarkable character, related to Banisteria, the wood being white and close grained, much resembling beech. As it pleased the carpenters, I gathered some of the seeds.[428]

Mitchell visited the Darling country during a better season than Sturt had endured, and his desire to discover new species as well as new country—and an even stronger desire for fame—led him to enthuse over the ecological variety within the western landscape. Mitchell traversed country which we would now describe as tree and shrub savannahs[429], mulga country,[430] Mitchell Grass country[431] and saltbush plains.[432] Always interested in grasses, Mitchell was quick to appreciate any "abundance of pasture" or "excellent grass" he found, and of necessity, he kept a close watch on the condition of his horses and bullocks. To Mitchell

> it appeared, that where land was best and grass most abundant, the latter consisted of one or two kinds only, and, on the contrary, that where the surface was nearly bare, the greatest variety of grasses appeared, as if nature allowed more plants to struggle for existence where fewest were actually thriving.[433]

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427 op.cit., I, p.302.

428 Mitchell: Three Expeditions, I, p.236. Possibly Whitewood, Atalaya hemiglauca. If so, it is a happy coincidence that "a solitary tree" still stands at the site of Fort Bourke.

429 characterised in different places by Bimble Box, E.populnea; Bimble Box and Pine, Callitris hugelii; River Black Box, E.largiflorens and River Red Gum, E.camaldulensis; Coolabah, E.microtheca; Belah, Casuarina cristata and Rosewood or Boonery, Heterodendron oleifolium. The latter was identified by Mitchell as "Australian 'rose-wood'", the "warm-green" of which "relieved the sober greyish green of the pendent acacia." (i.e. Acacia pendula). Mitchell: op. cit., I, p.205.

430 characterised by Acacia aneura.

431 characterised by Astrebla lappacea.

432 characterised by Atriplex vesicaria, et al. spp.

433 op.cit., I, pp.334-5.

The Surveyor-General had some feeling for the country he explored. He felt that

> the beauty of the sylvan scenery on the lower Bogan may be cited as an exception to the general want of pictorial effect in the woods of New South Wales.[434]

Here again we see the Englishman's tendency to seek relief from the dense forests of the coast in country presenting more the appearance of parkland. To Sturt, the drooping habit of Myall, Acacia pendula helped render "the desolate landscape still more dreary"[435] (although he appreciated "the graceful manner" in which the River Oak, Casuarina cunninghamiana "bends over the stream"[436]) but to Mitchell, the Myall was a "beautiful shrub" which when "blended with a variety of other acacias, and crowned here and there with casuarinae, forms very picturesque groups..."[437] The Surveyor-General revealed his artistic tendencies in his prose as well as in his drawings. From the economic viewpoint, he felt that the acacias, "so peculiar to the desert interior regions" could be the source of "an article of commerce" in the form of "gum acacia", once "the country is more accessible".[438] He considered the Callitris pines were "a very good substitute for the cedar of the colony (cedrela toona R. Br.)[439], which...is likely to be exhausted in a short time."[440]

Mitchell retraced his route back to Boree, where he learned more of the fate of Richard Cunningham, then proceeded to Bathurst and to Sydney where he was able to examine "the few plants which, after his unfortunate fellow traveller had sacrificed his life to the pursuit", he "was able to collect", and to which "a permanent place in the botanic system has been given by Dr. Lindley."[441] Mitchell noted that in the interior

> the plants, were in general different from those nearer the colony, and though they were few in number, yet they were curious...The country was, nevertheless, almost bare, and the roots, stems, and seeds, the products of a former season, were

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434 op.cit., I, p.318.
435 Sturt: Two Expeditions, II, p.60.
436 op.cit., I, p.11.
437 Mitchell: Three Expeditions, I, p.318.
438 op.cit., I, p.303.
439 Toona australis, the Red Cedar of the coastal rainforests.
440 Mitchell: op.cit., I, p.328--an interesting observation for 1835.
441 op.cit., I, p.iv. Dr. John Lindley was Professor of Botany at London.

> blown about on the soft face of the parched and naked earth; where the last spring seemed indeed to have produced no vegetation, excepting a thin crop of an umbelliferous weed.[442]

It was now considered desirable not only to complete the survey of the Darling below Laidley's Ponds, but also to test the belief that "fine pastoral tracts" lay in the area bounded by the Murray, Murrumbidgee and the Australian Alps, and so Mitchell led another expedition, southwards in March 1836. Having already piqued Governor Bourke by failing to present full journals and maps of the first Darling expedition, he now

> added the strange indiscretion of taking his original memoranda with him on the second expedition, thus risking the fruits of the labors of the first.[443]

This expedition of twenty-five included John Matthew Richardson as "collector of plants" with "occasional employment" as shepherd. Since Richardson during the 1820s had worked in the Sydney Botanic Gardens, and had accompanied Oxley on at least one expedition to Moreton Bay, he was doubtless acquainted with Allan Cunningham and Charles Fraser and with the kind of work they had done.[444]

Boree was again the assembly point from which the party proceeded towards the Lachlan on 19 March 1836. Mitchell reached the river on 24th and traced it, with various diversions, to the Murrumbidgee junction (12 May), thence to the Murray, and on to a river where he "recognised several shrubs...seen before only on the Darling."[445] Having traced the Darling some miles towards his southermost point of the previous year (but not actually to it) Mitchell returned to the Murray, thence to the Murrumbidgee junction. Having examined the Murray banks, the party turned south-east from Swan Hill at the end of June, and did not recross the Murray

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442 op.cit., I, p.303.

443 Bourke to Glenelg, 15 Mar. 1836, HRA, XVIII, pp.358-9. Mitchell kept Bourke waiting for a year—see Bourke to Glenelg, 19 Feb. 1837, HRA, XVIII, p.691.

444 John Matthew Richardson (?1797-1882), gardener, transported for life, 25 Mar. 1822. Arrived at Hobart, Sept. 1822; married in St. Philip's Church, Sydney, 13 July 1824 to Jane Nelson; with wife and child settled on Melville Island, 1826-8; conditionally pardoned 28 Jan. 1837; living at Patrick's Plains by 1852. Died at Newcastle 28 July 1882. See Aust.Dict.Biog. II, p.377 and RAHS Newsletter, No. 24, Apr. 1964.

445 Mitchell: Three Expeditions, II, pp.109, 113.

TREES OF THE WESTERN PLAINS

MYALL OR BOREE, Acacia pendula, a tree characteristic of many parts of the western plains, discovered and named by Allan Cunningham during his journey with John Oxley in 1817.

Photo.: L. G., between Tottenham and Nyngan, May 1968.

WILGA, Geijera parviflora, one of the most widely-distributed trees of the western plains, first described by Dr. John Lindley from material collected during Mitchell's northern expedition of 1845-6.

Photo.: L. G., Burdenda Station, Bogan River near Tottenham, April 1968.

again 19 October.[446] Sydney was then regained by way of Murrumbidgee outstations, Lake George, Berrima and Liverpool.

Mitchell, and no doubt Richardson also, was particularly active in botanical work on this celebrated Australia Felix expedition, during which sixty-eight of the seventy-seven supposedly unknown species found by Mitchell during his first three journeys, were collected. The journal abounds in botanical references, with many of Mitchell's descriptions of species being supported by Lindley's footnotes which provided what was believed to be the first published names and scientific descriptions. Subsequently it was found that the assiduous Robert Brown, and others, had in fact published names and descriptions from earlier specimens, so that many of Lindley's names have been superseded.[447] Mitchell himself took great glee in discovering species he believed to be new, as for instance quite early in the expedition, between Boree and the Lachlan:

> ...we met with a new species of Psoralea...I was subsequently fortunate enough to discover two more species of this genus; which with one, as yet unpublished, found by Mr. Allan Cunningham...makes the number inhabiting Australia to be 4 ...[448]

Here was something of an achievement; four species known, of which three were discovered on this expedition by Major Mitchell! With the same enthusiasm, Mitchell

> found no fewer than three new species of the pretty genus Trichinium; a small species of Sida before undiscovered, with minute yellow flowers, and also a fine looking acacia, with falcate leaves, singularly

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446 The expedition had in the meantime crossed Mitchell's 'Australia Felix', visiting the Henty Family at Portland Bay before proceeding N.E. to cross the Murray again near Corowa.

447 Before effective scientific communication, the problem of synonmy was a difficult one, with species being published often in extremely terse descriptions in publications which were obscure, and with limited circulation. Other problems were differences between taxonomists concerning the nature of a species, completeness of specimens, and the actual knowledge and skill of individual taxonomic botanists. See Appendix IV.

448 Mitchell: Three Expeditions, II, pp.8,9. Mitchell discovered Psoralea tenax, P.patens, and P.cinerea. Half-a-dozen N.S.W. species were ultimately recognised.

> white, or rather silvery, and with drooping graceful branches.[449]

Along the Lachlan, further discoveries were made: "a bush resembling the European dwarf elder" (Native Elder, Sambucus australasica); Native Jasmine, Jasminum lineare; Myall, Acacia pendula; "a new herbaceous indigo, with white flowers and pods like those of the prickly liquorice" (Glycyrrhiza psoraleoides); "a curious willow-like acacia" (Native Willow or Cooba, A.salicina)--and so the progress of the expedition, and the search for plants continued. Some days stood out as being particularly significant botanically. For example, on the Lachlan, 18 April 1836, Mitchell noted:

> This was a fortunate day for us, in regard to plants. Besides several curious kinds of grass,[450] a splendid blue Brunonia[451] was found...Its colour surpassed any azure I had ever seen in flowers, the tinge being rather deeper than that of the turquoise. We also obtained the seed, so that I hoped this plant, which seemed hardy enough, might become a pleasing addition to our horticultural treasures... The pink lily[452] was also found ...amongst rocks, but growing in rich soil. We gathered a number of the bulbs, being very desirous to propagate this plant, which differs from the common white amaryllis,[453] and others belonging to the plains, not only in colour, but also in the absence from their corona of intermediate teeth. We again found the new Xerotes,[454] having the flower in five or six round tufts on the blade. The flowered blades drooped around, radiating from the centre, while those without flowers stood upright, giving to the whole an uncommon appearance; the flower had a very pleasant perfume.[455]

Mitchell not only collected plants, he enthused about them, waxing lyrical at times. Whether or not he had the help of Lindley or Richardson, he often described quite accurately the characteristics of his

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449 Mitchell: op.cit., II, p.13. The three species of Pussy Tails are now known as Ptilotus alopecurioides; P.parviflorus; and P.obovatus. Mitchell later found P.nobilis as well. The Sida was Sage Weed, S.corrugata, but the wattle was later dismissed by Bentham as synonymous with Myall or Boree, Acacia pendula, despite Mitchell's contention that it "proved to be a very distinct, undescribed species."

450 including Small Burr-grass, Tragus australianus and Wire-grass or Spear-grass, Aristida ramosa.

451 apparently a particularly vivid form of Brunonia australis.

452 Garland Lily, Calostemma purpureum var.carnea.

453 Murray or Darling Lily, Crinum flaccidum.

454 It was not new, but the Mat-rush described as Xerotes leucocephala, now Lomandra leucocephala.

455 Mitchell: Three Expeditions, II, pp.42-3.

discoveries in a way which indicates more than a cursory interest. Mitchell recognised, or later obtained the determinations of many other species on this journey,[456] but he was especially impressed again by the River Red Gums, E.camaldulensis. On the Lachlan, Mitchell noted "The

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456 e.g. Western Pittosporum, P.phillyraeoides (=P.angustifolium) "loaded with its singular orange—coloured bivalved fruit", Wilcannia Lily, Calostemma luteum; Native Fuchsia, Correa speciosa var.leucoclada; Quena or Tomato Bush, Solanum esuriale; Native Leek or Wild Onion, Bulbine bulbosa which "near the Lachlan...occurred in abundance, and the cattle seemed to eat it with avidity"; Goathead Burr or Bull-head, Bassia bicornis,"a curious woolly plant with two-spined fruit, belonging to the genus Sclerolaena of Brown"; Lignum, Muehlenbeckia cunninghamii; Native Fuchsia, Correa speciosa var.glabra; Prickly Nightshade, Solanum ferocissimum,"so completely covered with yellow prickles, that its flowers and leaves could scarcely be seen"; White or Congoo Mallee, E.dumosa, "that most unpleasing of shrubs to a traveller"; Leucopogon cordifolius, "a most beautiful Leucopogon, allied to L.rotundifolius of Brown, with small heart-shaped leaves polished on the upper side, and striated on the lower, so as to resemble the most delicate shell-work"; Wattles, Acacia sclerophylla, A.aspera, A.farinosa and A.pugioniformis; Dwarf Saltbush, Atriplex halimoides; Pig-face, Disphyma australe,which "crept over the light red earth, ornamenting it with a rich variety of light green, light red, purple, and scarlet tints..."; Quandong, Eucarya acuminata on which Mitchell discovered "a parasitical plant, whose bright crimson flowers were very ornamental", Amyema quandong; Spiridium parvifolium; Daviesia pectinata; Mitchell's "goborro" and Oxley's "dwarf box" were probably Black Box, E.largiflorens. Mitchell found Murray natives using as food the stems of a daisy, described as Picris barbarorum. This species was declared to be synonymous with Hawkweed, P.hieracioides by Bentham, who considered that "it may... be an introduced plant in many of the Australian localities. In others however there is every probability of its being truly indigenous." (Benth.: Fl. Aust. III, p.678). Bentham recorded specimens collected by A. Cunningham 'north of Bathurst', i.e. before 1839, and even by Robert Brown, at Port Jackson, i.e. between 1802 and 1805. It is now considered to be exotic, but must have been introduced very early; the fact that natives had adopted it as a food plant on the Murray by 1836, suggests long familiarity with the plant. Mitchell was apparently instrumental in having this plant introduced to the Horticultural Gardens, Chiswick, where by July 1838, it had flowered. Mitchell: op.cit., II, p.419. It is now believed to have been introduced to Australia from Europe, Asia and Africa. No species believed to be truly indigenous agrees with Lindley's description of "Picris barbarorum". Mueller considered the plant exotic, but Maiden disagreed. See Ag. Gaz. N.S.W., 1899, p.619.

TREES OF THE WESTERN PLAINS

Wilga, Geijera parviflora, Leopard Wood, Flindersia maculosa and Belah, Casuarina cristata about 30 miles west of Bourke.

Photo.: L. G. May, 1968.

SALTBUSH PLAINS of Bassia spp. just west of the Warrego River, which is indicated by the line of trees in the far right background. When traversing such country, explorers watched for these tree-lines as indicators of water.

Photo.: L. G. May, 1968.

'yarra' tree grew here, as on the Darling, to a gigantic size,...sometimes exceeding 100 feet", and unlike Callitris, "always hopeless objects to persons in want of water", these gums were sure indicators, since "all permanent waters are invariably surrounded" by them.[457] Mitchell also encountered Menindee Clover, Trigonella suavissima once more. Discerning what he poetically described as "a perfumed gale", Mitchell

> soon found that the fragrance proceeded from the plant resembling clover, which we found so excellent a vegetable during the former journey...I recognized it with delight, as it seems the most interesting of Australian plants. The natives...called it Calomba, and told us that they eat it...[458]

Mitchell had

> on leaving Sydney for this expedition...placed in charge of Mr. McLeay, colonial secretary, the first specimen of this plant produced by cultivation. It grew luxuriantly in a flower-pot, from seeds brought from the Darling, where it was discovered.[459]

The aborigines near the Murrumbidgee-Lachlan junction also ate 'Balyan', the rhizome of a bulrush, of which Mitchell reported:

> It contains so much gluten, that one of our party, Charles Webb, made in a short time, some excellent cakes of it; and they seemed to me lighter and sweeter than those prepared from common flour. The natives gather the roots and carry them on their heads in great bundles, within a piece of net...this was obviously their chief food among the marshes.[460]

Mitchell took his usual interest in grasses, noting many species

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457 Mitchell: Three Expeditions, II, p.55.
458 op.cit., II, p.64.
459 op.cit., II, p.65.
460 op.cit., II, p.61. Probably Bulrush or Cumbungi, Typha angustifolia. This was probably the plant noted by Dr. George Bennett in the Murrumbidgee district in 1832. He was told that "it has an agreeable farinaceous taste". G. Bennett: Wanderings in New South Wales...Lond. 1834, Vol. I, p.183. See also Gerard Krefft in Proc.Philos.Soc.N.S.W. 1862-65, for account of the use of this plant by the aborigines of the Lower Murray. He considered however, that the substance obtained from the rhizomes was "at best a miserable apology for flour".

some of which proved new,[461] but John Lindley reminded the Surveyor-General that he had much to learn, not only about the collecting of good specimens, but also about the actual nature of a species, fundamental concept then undergoing a rather difficult evolution. On 6 January 1838, Lindley advised Mitchell in his fearful handwriting:

> As soon as I rec'd y^r^ note...I set about an examination of y^r^ grasses, and I have done little else since that time. You will perhaps wonder that many shd. be marked indeterminable,& others named only approximately; but the fact is that Grasses are among the most difficult of all plants to determine with precision, and it is impracticable to ascertain exactly what they are unless the specimens are in a very perfect state & skilfully collected & in considerable quantity in order to shew within what limits they vary...It will not surprize you that so few should be new when you consider that they are the easiest... plants to transport by wind, birds, water and other agencies...[462]

In his enthusiasm, Mitchell even tried his hand at botanical nomenclature. On the Murray, 27 May 1836, he

> found a new and remarkably beautiful shrub, bearing a fruit, the stone of which was very similar to that of the quandong...This shrub was not unlike the weeping willow in its growth, and the fruit, which grew at the extremities of the drooping branches, had the shape of a pear, and a black ring at the broad end. The crop...was unripe, and was probably a second one; the flower was also budding, and we hope to see the full blossom on our return. Only three or four of these trees were seen, and they were all on the hill near our

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461 Mitchell Grass, Astrebla pectinata; Warrego Summer Grass, Paspalidium jubiflorum; "two kinds of very rich grass", Sand or Mud Couch, Sporobolus virginicus and "an Echinochloa allied to E. crusgalli"; "A Poa near Poa australis R.Br. and Bromus australis of R.Br." (the latter is now Sand Brome Grass, B.arenarius). A species of Andropogon "allied to A.bombycinus" (=Cymbopogon obtectus); Wallaby Grass, Danthonia eriantha, "a new kind of grass with large seeds". See also Appendix IV.

462 John Lindley to Mitchell, 6 Jan. 1838. Mitchell Papers, Vol. III, 1830-39. ML. A292. The letter includes Lindley's notes on Mitchell's grasses, some being dismissed as "indeterminable" or "altogether indeterminable"—terms which indicate the botanist's impatience with poor specimens. Some were assigned to species already published by Brown, and a few were named and described for the first time.