CHAPTER I

INTRODUCTION

"It is always interesting to know, how any special science or branch thereof, has been developed, and I shall therefore give a short historic introduction..."

Robert von Lendenfeld, to the Linnean Society of New South Wales, 27 Feb., 1884.[1]

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1 Proc.Linn.Soc.NSW., 1884-5, p.122.

CHAPTER I.

INTRODUCTION.

"The indigenous vegetation of the Australian colonies is peculiar." F. Lancelott, 1852.[1]

This is a study of the field shared by Australian history and a branch of Australian science—the history of botanical investigation in New South Wales between 1811 and 1880. This period is chosen not only because it follows immediately upon that investigated previously, but also because it is bounded by years which are significant in themselves. In 1810, Robert Brown's Prodromus Florae Novae Hollandiae appeared in a tiny edition to win the immediate approbation of the few professional British and Continental botanists while the rest of the world remained quite unperturbed by the appearance of such a highly specialised work written in such appropriately specialised language. Towards the end of the period, the seventh and final volume of another work was published—George Bentham's Flora Australiensis, an English work with a Latin title, with over 4,200 octavo pages, unrelieved by a single illustration. It remains the only work which embraces the flora of the whole continent, and the one to which botanists still refer, though it is over a century since its first volume appeared. Among the "colonial floras" of the nineteenth century it was a giant, whose creator, curiously enough, had no need to come to Australia. A substantial part of this study shows why this was so.[2] At the very end of the period, a new era in botanical investigation began with the arrival in Sydney of Joseph Henry Maiden in 1880. Clearly here was the logical point at which to conclude any investigation of the early history of botany in the area known since 1859 as New South Wales.

The geographical limits of this study are more arbitrary than the chronological limits, since they depend upon the way in which four separate colonies resolved their territorial differences, sometimes using natural boundaries and sometimes not. This means that investigation of the botanical work of some explorers and collectors has been limited by political boundaries. For example, the botanical work of Major Thomas

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1 F. Lancelott: Australia as it is, Lond., 1852, I, p.53.
2 See Appendix I.

Mitchell is not considered south of the Murray or north of the 29th parallel. Similarly, the work of Allan Cunningham, Charles Sturt and Burke and Wills has been considered only within the present N.S.W. boundaries. To do otherwise would have demanded the resources, energy and ability of another George Bentham. A further restriction has been the consideration of only the botanical work of those naturalists who may also have been equally, or even more proficient in zoology, geology or some other branch of natural science.

Historians, sociologists, journalists and folk singers have in recent years given much attention to the Australian legend, mystique, ethos, character, way of life...and there has been a spate of works written by Australians, for Australians, about Australians, for we are striving to know who we are, what we are and how we have come to be as we are, while we search for our own identity in a rapidly changing world. Family trees and long-hidden family skeletons are being vigorously examined for evidence which might qualify one for membership of select associations, and if the rattling of manacles should be heard during the search, albeit ever so faintly, then so very much the better. Much has been said about the pioneers and their 'harsh environment'. This is a study of a major part of that environment, the Australian bush, and of the ways in which the pioneers learned about it, learned to live in it and how they made it yield certain necessities of life. This aspect of the environment has been largely overlooked. History has not always been sought in the bush, nor has botanical information often been sought in historical records, and even now there remains a tendency to dismiss the vegetative environment altogether or to consider the matter well enough served by references to some pieces of Australian prose or verse. Even our anthologies of "bush songs" tend to feature selectors and squatters, politics and injustice, police tyrants and bushranger heroes--everything in fact, but the actual nature of the bush itself. They were songs sung <u>in</u> the bush but rarely <u>about</u> the bush, for the bush was all too easily seen; it was not idealistically described in song, but seen rather as the enemy, threatening, harsh and ubiquitous, which had to be chopped, slashed and burned, either before or after it had been thoroughly exploited. It was a long time before the conservationists, spurred by motives which were patriotic,

aesthetic and biological rather than merely economic, pronounced their warnings. Australia has long been notorious for the practice of the maxim: "if a thing moves, shoot it; if it doesn't, chop it down." We are still more famous for producing champion axemen than for our re-afforestation projects. Only 2.02% of the area of N.S.W. remains covered by true forest.[3]

In the previous study, investigation of the flora was shown to have been made during the formative years of the Colony at three levels, which though distinguishable, were by no means mutually exclusive. These were at the level of utility, at the level of curiosity, and at the scientific level. Although these same levels of investigation continued to be pursued in this later period, it is not convenient here to consider them separately as before. While the three levels will be clearly apparent in what follows, the distinctions between them become increasingly blurred. Some people who were attracted to the flora by curiosity became skilled amateurs whose work ultimately achieved status which was scientifically acceptable. Some amateurs submitted the results of their collecting and observing for exhibitic or publication, yet they remained amateurs. Meanwhile there slowly developed a small professional class of botanists whose interest and level of work had hardly been anything but scientific. Some of them were concerned to put their scientific knowledge to practical use. There were also the explorers and surveyors, settlers and bushworkers for whom at least some botanical knowledge at the level of utility was absolutely essential.

In 1813 the era of grand expeditions 'into the interior' began with the discovery of a route to the west over the Blue Mountains, and such expeditions were still passing through far western New South Wales half a century later. The botanical work of these explorers merits detailed attention, for they saw the country when a stable ecosystem, which had long-since embraced the aboriginal hunters and even their dingoes, still preserved an overall balance despite fearful floods and droughts, and the fires started by natural agencies or the hunters. The explorers provide us with a glimpse of the land before the beginning of what has been called 'the great extermination'.[4] That is, before the assault on the bush and the slaughter

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3 R. H. Anderson: The Trees of New South Wales, Syd., 1968, p.ix.

4 A. J. Marshall (Ed.): The Great Extermination: a guide to Anglo-Australian cupidity, wickedness and waste, Lond., 1966.

of indigenous animals and before the introduction of exotic species, both plant and animal. The plant collections of the explorers contained many type specimens which are still basic to botanical taxonomy, while their field notebooks recorded descriptions and impressions of ecological regions far different from those around the 'settled districts' such as the County of Cumberland. In time it became clear that New South Wales contained the greatest ecological contrasts in Australia - rainforest and semi-desert, sclerophyll forests and grasslands, alpine herbfields and mallee scrub. Explorers and settlers penetrated them all.

Advance of settlement usually followed in the wake of the explorers both 'official' and 'private', but sometimes the settlers themselves were the explorers, who were apt to keep their discoveries to themselves. For the settlers--first squatters, then selectors, investigation of the flora at the level of utility was a pressing obligation. For their own survival they had to learn what the bush would provide for themselves and their animals in food shelter and other necessities. They quickly put to use the botanical resources of their holdings and these uses will be investigated since they are indicative not only of the ingenuity and resourcefulness traditionally attributed to the Australian pioneer, but also of a way of life which has wellnigh disappeared. Sometimes settlers chose the land itself on the basis of their botanical knowledge. Sometimes they chose the wrong land for the wrong purpose because of their lack of such knowledge. Yet it will be readil seen how rapidly they did in fact adapt themselves to new country by acquiring the knowledge necessary to be successful in it.

In the bush, a new class of artisan came to be recognized as a necessary aid to living, and to making a living, in a difficult environment. These were the bushworkers--fencers, splitters, shinglers, shed- and house-builders, well-sinkers, timber-cutters, pit-sawyers and shepherds--men with special strengths, skills and a wide practical knowledge of the bush and its plants. Although they would have disclaimed botanical knowledge, they lived by it, and when such knowledge came to be recorded, it was to these men that the scientific botanists turned if they wished to record something about a tree, shrub, or herb other than its botanical description and taxonomic position in a given system.

As long as 'new chums' arrived to try their hands or fortunes on pastoral runs or goldfields, investigation of the flora at the level of

curiosity continued, but this tended to decrease as more currency lads and lasses grew up and worked in an environment, which though familiar enough to them, had seemed so strange and curious to their parents and grandparents. Yet the plants of New South Wales long held a fascination as desirable novelties for the stoves and glasshouses of the gentlemen amateurs and scientific professionals of England and the Continent. Many of the native-born themselves became semi-scientific amateurs who investigated the flora with motives which were rather more specific than the general curiosity of the earliest settlers. Not that this early curiosity was idle—on the contrary, it was usually most vigorous, but it often lacked well-defined purpose and direction. With the development of urbanisation, many 'currency' folk grew up, as now, in surroundings far removed from the bush, which was a place for holidays or an adventurous excursion, not the usual environment. As the population soared, especially during the forties and fifties, vast areas of bushland were cleared, not only for agricultural, pastoral, and mining activities, but also for the growth of towns and cities. With the applicatio of more effective methods of transport, communication and construction, areas of bush were even further decreased, as it was made to yield not only space, but also the very materials for this development. Chief of the resources of this land of seemingly endless forest, was timber, and in this, many saw the long-sought staple item of export as well as material for immediate essential use. Of all the bushworkers, the timber-cutters, and the trees which particularly interested them, receive special attention here.

Arbitrary trial of plant materials and rather haphazard assessment of the resources of the bush were not sufficient to meet the needs of a growing Colony with a developing economy, and there were those who appreciated that resources were apt to fail utterly if over-exploited. The work of the nurserymen, conservationists and experimentalists is therefore considered, and their contribution to our botanical knowledge assessed. It is interesting to compare some of their warnings and laments with some still heard.

The history of the Royal Botanic Gardens, Sydney, is especially relevant, since it indicates changes in attitude towards the acknowledged role of such an institution, and also the development of investigation of the flora at the purely scientific level. Here too, we can see the growth of botanical work at the professional and academic levels.

Not only institutions, but also individuals, must be considered in the light of their contributions to botanical knowledge. Thus work of representative enthusiasts is considered—amateur scientists, photographic and traditional artists, authors, teachers and collectors who took special interest in publishing, corresponding with each other, or sending material to the great Exhibitions of the late nineteenth century. Not all of these individuals were permanent settlers. Some were visitors with scientific expeditions, others were private travellers or free-lance collectors from Britain, Europe and the United States. Being strangers in a strange land, they sought, and usually obtained, help and hospitality from botanically-inclined hosts. Some of these visitors, (for example Franz Wilhelm Sieber) showed the enthusiasm of a Robert Brown in their collecting. Such work proved invaluable when authors like George Bentham needed material upon which to base descriptions of species and to record geographical distribution.

It was inevitable that those interested in natural science in its various branches should seek the fellowship and knowledge of others with similar interests, and so scientific societies were formed with the aim not so much of popularizing natural science, but rather of upgrading the work of amateurs to academically and scientifically accepted standards. Naturally there arose problems of relationships between individuals and the different societies, but the achievements of these societies, some of which are still in existence, are extremely important in the history of any branch of natural science in New South Wales, and some assessment must be made of their contribution.

Much, but by no means all, of the work of many of the above contributors was systematised in published works, more especially in Bentham's Flora Australiensis, 1863-1878, which described over 8000 species and varieties. The story of this monumental work would provide ample scope for a study in itself, but as it is largely the culmination of this particular period and field of study, it is considered, albeit briefly, towards the conclusion. In some ways, Flora Australiensis symbolises the nineteenth century passion for facts, which may, or may not have been devoted to inductive reasoning. As long as the old 'encyclopaedic' approach to botany prevailed, the use of masses of isolated 'facts'--in the form of plant species—remained limited. In the work of Brown and J. D. Hooker, however and in Flora Australiensis itself, we can see the development of a more

scientific attitude as the 'facts' were employed to derive relationships and generalisations, in such fields as plant geography, the distribution of species and in the reassessment of the very concept of a species. Whereas it had once been sufficient to acknowledge the fact that one species grew here, and another species grew there, the true scientist and the enlightened amateurs and collectors now asked why this was so.

The nature of species, belief in the immutability of species, notions of spontaneous creation and creation by evolution, along with other controversial issues, were all thrown into the melting pot four years before the appearance of the first volume of Flora Australiensis by the publication of Charles Darwin's Origin of Species. There were bitter disputes within the churches, the scientific societies and between people who belonged to both or to neither. Darwin, erstwhile trainee for the Church, unwittingly caused a tremendous furore within it, yet notwithstanding this, the contribution made to Australian science, especially botany, by nineteenth century clergymen was most significant. To them, an interest in the bush while not obligatory, was perfectly natural, and many saw the works of the Lord as clearly in the bush as in the Bible.

Behind all this activity in the field were politics, patronage and personal relationships, which influenced so much of the search for knowledge and affected the attitude and enthusiasm of these early investigators. While not the subject of a separate chapter, the bearing of these factors upon the history of botanical science is evident. In the previous study, the influence of Sir Joseph Banks was seen to be supreme during the years 1788–1810. It tended to wane somewhat during Banks's final years, but it was revived in the work of his appointee, Allan Cunningham. One of Banks's last acts was to ensure that William Jackson Hooker became Professor of Botany at Glasgow in 1820, and thereby much of the old Banksian influence was retained through the work of the Hookers, William Jackson and Joseph Dalton, father and son, throughout the remainder of the period under review. Between 1811 and 1880, Banks, the Hookers, Bentham and Kew botanists generally exerted tremendous control over the development of botanical science in New South Wales and elsewhere in the British Empire. Nor was the influence of Robert Brown insignificant, for he retained his interest in the land he had visited with Matthew Flinders, and was consulted on 'botanical appointments' until his death in 1858, over half a century after he and Ferdinand Bauer had

sailed home with their enormous collections precariously packed in the crazy Investigator.

Like the previous study, this is an investigation of problems rather than the defence of any single declared argument. These problems are posed by such questions as: What factors influenced the amassing of botanica collections and knowledge within New South Wales between 1811 and 1880? To what extent was the pursuit of such knowledge a matter of scientia gratia scientiae? To what extent did personal, political, economic and commercial considerations determine the nature and course of botanical investigation of New South Wales during this particular period? To whom do we owe this botanical knowledge? To what use, if any, was this knowledge put? Can we discern the development of a scientific attitude during this period? Have we effectively preserved the knowledge so arduously sought, or have we lost much of it along with the bush whence it came? What was the nature of the impact between settlers and the bush in the various ecological regions of New South Wales? What methods did the early settlers, amateur scientists and professional botanists employ in seeking knowledge, and mastery, of the bush? How was the bush made to yield certain necessities of life for man and his stock? How did the conservation movement originate? In what ways did the motives for botanical investigation, and the methods used in its pursuit, change during this particular period? What conclusions can be drawn concerning the most significant influences and motives, contributors and discoveries?

As before, a major part of this thesis consists of the determination of currently-accepted botanical and vernacular names of plants discovered, mentioned or used by the early workers. Difficulties arise from obsolete, inaccurate and incorrect nomenclature, geographical distribution, and non-botanical descriptions originally used to identify species. A major difficulty was working through the maze of synonymy developed over a century and more. Where possible, plant species mentioned in the text, are identified by both vernacular and botanical names, capitals being used for the former only where there is specific implication. For example, there may be general references to "gum trees" or to "cypress pines", or specific references to "River Red Gum, Eucalyptus camaldulensis" or to "White Cypress Pine, Callitris hugelii." The authors of botanical names are also given, no

only because they are botanically desirable, but also because of their historical significance. For example, Myall or Boree, Acacia pendula A.Cunn., Manna or Mottled Gum, Eucalyptus mannifera Mudie, and Bitter Quandong, Eucarya murrayana T. L. Mitch. (=Fusanus persicarius F. Muell.) However, to save space and to avoid needless repetition of authors in the text, the botanical names of all plants mentioned are listed, with their authors, in the final Appendix, where the normal uses of "ex" and of brackets have been followed to indicate original authors and subsequent revisions, which often have historical significance. In some cases, where long-established names, especially with historical associations, have been rendered synonyms, these are shown in parentheses. As a rule, however, references to plants are made in current terms, even if this has meant using a recent revision which has invalidated the names given by early explorers and collectors. There seems no point here in perpetuating names which have already fallen into disuse or which promise to become archaic, unless there is some good historical reason for doing so. It must be admitted, however, that the reasons behind many revisions, are largely historical, and are therefore relevant here.

In the Plant Names Appendix, the modern practice of stripping Baron Ferdinand von Mueller of his title has been followed, so that the neat "F.v.M" used in the first thesis is now replaced by the clumsier "F. Muell.", which, although easily confused with another author abbreviated as "J. Muell." is a practice of which George Bentham would doubtless approve![5] Controversy over priority, suitability and validity of names has been generally avoided, and every care has been taken to use the most recent names, despite the unscientific thoughts that one sometimes has when a long-familiar, and apparently quite appropriate name suddenly disappears to be replaced by one which is quite unfamiliar and seemingly obscure in meaning; or worse, by several such names produced by the taxonomic practice known as "splitting". By this, some long-accepted multi-form species is divided into several clearly, or vaguely, distinguishable forms each with specific or varietal or some inferior rank. However, this practice merely reflects the scientific

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5 Happily, Dr. Hansjoerg Eichler in his Supplement to J. M. Black's Flora of South Australia, Adel., 1965, p.13, has restored the old abbreviation without the fullstops, thus: "FvM". This use has yet to be widely adopted.

refinement which we should expect with advances in knowledge, methodology and technology far beyond the resources, and even the imagination of those workers who pioneered the field of botanical taxonomy in New South Wales.

Long lists of plants have generally been avoided in the text, being relegated to footnotes and appendices. As before, attention is given only to flowering plants and ferns, with minimum reference to introduced species. The history of the introduction of plants into New South Wales would be a fit field for study in its own right. Ethnobotany[6] too, is also a wide field, and we shall not be greatly concerned with aboriginal uses for plants unless it is clear that such uses were adopted by Europeans. The field of palaeobotany is also avoided. Although many botanical names and concepts must necessarily be considered, the overall aim is to present a history, involving both plants and people, but more especially people, and the ways in which they studied and utilised a major aspect of their environment.

In scores of works, the history of New South Wales has been considered in many aspects -- political, social, economic, industrial, constitutional, ecclesiastical, agricultural, and, more recently, archaeological. The people who made these histories, wittingly and unwittingly, have also attracted deserved attention -- aborigines, explorers, squatters, selectors, miners, soldiers, statesmen, churchmen, inventors, farmers, unionists and poets. What follows is an attempt to consider the history of New South Wales in yet another aspect, and to assess the contribution to that history of a rather diverse group of people — the botanists.

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6 The Australian Institute of Aboriginal Studies has some interesting work on ethnobotany by the late Dr. F. R. Irvine.

CHAPTER II

GEOGRAPHICAL EXPLORATION AND BOTANICAL DISCOVERY.

"'Admiring Nature in her wildest grace,'* it has ever been the most attractive of the author's duties to explore the interior of Australia. There the philosopher may look for the facts; the painter and the poet for original studies and ideas; the naturalist for additional knowledge; and the historian might begin at a beginning."

* Burns. Major Thomas Mitchell.[1]

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1 T. L. Mitchell: Journal of an Expedition into the Interior of Tropical Australia...Lond., 1848, p.3.

CHAPTER II.

GEOGRAPHICAL EXPLORATION AND BOTANICAL DISCOVERY.

> "I have always felt I was on classic ground when botanising in country traversed by those early explorers."
>
> Frederick Turner.[1]

Between 1811 and 1880, New South Wales as we now know it, was thoroughly explored and widely settled. Exploring parties, 'official' and 'private' made a tremendous contribution to the advance of botanical knowledge. Advancing into trackless unknown country, with its vastness and its thousands of nameless physical features, the explorers were faced with the problem of having a frame of reference to enable them to describe and identify. Calculation of latitude, longitude and altitude, all depended upon the precision of instruments and the skill with which they were used and their readings interpreted. The results were often far from accurate, but nevertheless essential to the land cartographer. Some identified their discoveries by ascertaining aboriginal names for mountains, rivers and lakes; others combined such means with a working botanical knowledge to identify, describe and map the country they crossed. It was soon clear in both official reports and instructions that the most effective explorer was one with the ability to apply some botanical knowledge, however elementary. Geographical descriptions were incomplete if restricted to discussions of rocks and soils. Journals of the nineteenth century explorers indicate an increasing appreciation of this fact, and there is clear evidence that explorers used botanical knowledge to:

1. describe accurately country which was unnamed and unmapped.
2. identify localities previously visited either by themselves or by other explorers.
3. compare one locality with another.
4. anticipate the proximity of swamps, rivers, lagoons, etc. or the coast.
5. estimate the extent of fodder for stock.
6. predict possible use to which the land might be put by settlers.
7. predict the value of an area as a source of raw material from plants, e.g. timber.
8. supplement food rations in the field.
9. make running repairs to equipment.
10. erect temporary shelters and enclosures.
11. construct means of transport.

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1 Proc.Linn.Soc. N.S.W., 1904, p.132.

After 1816, 'official' explorers were positively instructed to pay attention to the botany of the country they examined, but some had the desire to make botanical discoveries without the motivation of such instructions. We shall now consider the evidence upon which these assertions are made.

While there is no evidence to suggest that leaders of official exploratory expeditions were trained in botanical observation, or were selected because they had botanical knowledge, it is obvious that if a leader were to follow the official instructions, he would have to pay some attention to this branch of knowledge had he not already done so. Sometimes men were appointed to expeditions especially to act as botanical collectors. Official despatches made ample reference to the desirability of leaders having "scientific knowledge", but no doubt to many members of exploring parties, the business of making elementary botanical observations and of knowing some of the more widespread species by sight, was all part of simply being a good bushman.

As Macquarie was pleased to point out after his eleven years of administration, when he took over on the first day of 1810, he had "found the Colony barely emerging from infantile imbecility...the Country impenetrable beyond 40 miles from Sydney..." He left the Colony in February, 1822, however,

> reaping incalculable advantages from my extensive and important discoveries in all directions, including the supposed insurmountable barrier called the Blue Mountains...[2]

The botanical results of the early attempts to cross the Blue Mountains have already been assessed.[3] The actual crossing, and the opening of the west had the most profound effects on Australian botany. Even as this successful crossing was being planned, the botanist George Caley was still haunted by the mountain barrier which had thwarted him some nine years before:

> And those Mountains of N.S.W. I cannot erase from my mind, and believe that I am the only person that is interested with a knowledge of them, by regularly

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2 Macquarie to Bathurst, 27 July 1822, HRA, X,pp.671-2.
3 e.g. Col. William Paterson, George Caley. See Thesis I.

LACHLAN MACQUARIE

1762-1824.

As Governor of New South Wales 1810-1821, he encouraged much of the exploration which led to the botanical investigation of the country west of the Blue Mountains. Although he took care to send botanical material to Earl Bathurst as requested, he clashed with the King's Botanist, Allan Cunningham.

After the portrait by John Opie, Dixson Gallery, Sydney.

SIR THOMAS BRISBANE, F.R.S.

1773-1860

Brisbane was the "more Scientific Governor" who succeeded Macquarie. During his administration, 1821-1825, he patronised the infant scientific societies, established an observatory, and generally encouraged scientific investigation. Wishing to be associated with "the furtherance of Science" in the colony, he left his astronomical instruments and scientific library when he returned to Scotland, where he was elected President of the Royal Society of Edinburgh in 1832.

After a lithograph by F. Schenck, Dixson Gallery, Sydney.

> exploring them in person—They are fresh this moment in my mind as if they were in my sight.[4]

Characteristically, Macquarie set out to know the colony he was sent to govern. Before the end of his first year, it was proclaimed that

> His Excellency has been much gratified by the natural fertility and beauty of the country in general...the banks of the rivers Hawkesbury and Nepean in particular, hold forth the prospect of a most luxuriant harvest.[5]

Macquarie had ample company on his explorations of the Nepean and Warragamba[6]—his wife, George William Evans[7], James Meehan[8], Gregory Blaxland and others. Blaxland made two excursions up the Warragamba in 1810 and hit upon the idea of following the water-shed instead of the gullies to find a way across the mountain barrier.[9] He also recorded that Macquarie "landed to pick some currywing[10] flowers" at the point of land between the Nepean and Warragamba.[11]

On 11 May 1813, Gregory Blaxland, Lieut. William Lawson and William Charles Wentworth with four servants, left Blaxland's farm at South Creek to make the assault on the mountains which led to exploration of the west. On 31 May, they reached Mt Blaxland, their westernmost point, and by 6 June they were back at Blaxland's farm. According to Blaxland, he had told Macquarie of his intention to follow the high land between the Grose and Warragamba, and the Governor had "thought it reasonable, and expressed a wish that I should make the attempt."[12] Actually, Macquarie had little time for the Blaxlands[13] and subsequently tended to attribute the discovery

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4 Caley to James Dickens, Seedsman, Covent Garden, London, 13 Apr. 1813. Caley, who had left N.S.W. in 1810, is making typically exaggerated claims. Robert Brown: Correspondence, ML Uncat.MSS, Set 226.
5 Govt. and Gen. Order, 15 Dec. 1810. HRNSW, VII, p.468.
6 Recorded as Warragombie in L. Macquarie: Journals of his Tours...1810-1822, Syd., 1956, p.21.
7 Acting Deputy Surveyor, and discoverer of the Warragamba, 1804. Macquarie: Journals of Tours, p.20; Syd. Gaz., 7 Oct. 1804.
8 Acting Surveyor.
9 G. Blaxland: A Journal of a Tour of Discovery across the Blue Mountains ...Syd., 1913, pp.12-13.
10 Currajong or Kurrajong, Hibiscus heterophyllus.
11 Blaxland to Macquarie, 4 Dec. 1810, HRNSW, VII, p.465.
12 Blaxland: Journal, p.13.
13 Macquarie to Liverpool, 17 Nov. 1812, HRA, VII, p.559.

of a way to the west to George Evans.[14]

As private individuals not tied to official instructions, Blaxland, Lawson and Wentworth were able to proceed according to their own plan for finding a way over the mountains, and, if possible, for discovering pastures likely to benefit the Blaxland stock. There is no evidence that any botanical collections were made[15], although botanical observations of a general nature were used in describing the journey through a very difficult terrain. Blaxland referred to "very coarse rushes" in a large lagoon[16]; "scrubby brush-wood...with some trees of ordinary timber"[17]; and to "the flowers of the honey-suckle tree"[18] from which the aborigines had obtained nectar as food, but generally he was concerned only with ample water sources, good grass and useful timber.

William Lawson too, referred to the "Luggoon ful of Large Rushes" and to the "great quantitys of Honney Suckle",[19] and he employed general ecological terms to describe the country: "forest land", "thick brush", "thick Scrubs", "a fair Meadow", and "a heath much the appearance of some of our Heaths in England..."[20] He referred to one plant by name: "Forest Land...with great Quantitys of Indigo growing..."[21], but generally his concern was with pastures and fresh water.

William Charles Wentworth, a currency lad, who spent his formative years partly in New South Wales and partly in England gaining an education, apparently prepared his general account of the journey from detailed field notes—or perhaps he had an excellent memory, but in any case he showed a muc

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14 Macquarie finally acknowledged the work of Blaxland, Lawson & Wentworth, in Govt. and Gen. Order, 10 June 1815, HRA, VIII, p.569, but as late as 10 Nov. 1816 Blaxland wrote to Banks describing his Blue Mts. expeditions, pointing out that while the Governor had approved, he offered no assistance nor had he (Blaxland) received any credit since. Blaxland had written to Earl Bathurst on the matter without apparent result; could Banks bring the matter to the notice of His Majesty's Ministers? Blaxland to Banks, 10 Nov. 1816, W. R. Dawson (Ed.): The Banks Letters, Lond., 1958, p.105.

15 Although native grasses were cut and loaded on the horses to ensure adequate fodder supplies. Blaxland: Journal, p.22.

16 The lagoon near old Glenbrook Railway Station, Blaxland: Journal, p.17. The rushes would have been Lepironia articulata.

17 Blaxland: Journal, p.17.

18 Probably Banksia serrata. Blaxland: op. cit., p.36.

19 W. Lawson: Expedition across the Blue Mts. MS. Journal. ML.C123, p.3.

20 Lawson: op. cit., pp.2,6,7,9,11. Blaxland also referred to a heath of "short coarse grass." Blaxland: Journal, p.28.

21 Lawson: op. cit., p.2. Near Glenbrook Station—probably Indigofera australis.

A "LUGGOON FUL OF LARGE RUSHES" AND "AN UNCOUTH FOREST".

GLENBROOK LAGOON, where Gregory Blaxland found "good water" on 12 May 1813. The "Large Rushes" noted by William Lawson were Lepironia articulata, shown here growing in the water, and along the far edge of the lagoon. The plants in the immediate foreground are Frogsmouth or Woolly Waterlily, Philydrum lanuginosum. Some Bull-Rush, Typha angustifolia also grows around this lagoon.

Photo.: L. G., 24 May 1969.

BARGO BRUSH, a thick sclerophyll forest in the vicinity of Bargo River between Picton and Mittagong. Early travellers did not relish the journey through such "an uncouth forest" as Lieut. William Breton called it. John Henderson recorded: "...a more miserable and cut-throat looking place one would not wish to ride through."

Photo.: L. G., 25 May 1969, near Catherine's Hill.

greater appreciation of the geological and botanical features of the country than his two older companions. Possession of a grant on the Nepean no doubt caused him, like the others, to have an eye for good grass and water, but he was also able to identify the "pear tree"[22], "tea tree"[23], "currant bushes"[24], "honeysuckle"[25], "peppermint"[26], and to note on the mountains "in general the same variety of small flowering shrubs which grow between Sydney and the South Head."[27] He also noted that the "scrubby brush" which was "extremely distressing" contained "dwarf gums[28], stringybarks[29], and blood trees[30], all of which are generally withered at the Tops." In the gullies was "a tree very much resembling the Mountain ash which grows very luxuriantly and is probably a very valuable wood."[31] Wentworth found in the latter stages of the journey that

> the stringybarks and blue gums[32] were of more stately growth altho' there is no visible alteration in the soil. This change arises most probably from some alteration in the substratum.[33]

This was an interesting and valid ecological observation.

Macquarie quickly despatched Assistant-Surveyor Evans to go over and beyond Blaxland's route. Taking as a guide James Burns, one of Blaxland's party, Evans left the Nepean on 19 November 1813 and reached Mt. Blaxland a week later.[34] He discovered and followed the Fish River to the confluence of the Campbell and the Macquarie, which he traced some twenty miles beyond the present site of Bathurst. By 8 January, 1814, Evans was back at the Nepean. On this journey, he recorded the ecology

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22 Woody Pear, Xylomelum pyriforme.
23 Melaleuca sp. or Leptospermum sp.
24 Native Currant or Acid Berry, Leptomeria acida used as an anti-scorbutic since the first settlement.
25 Banksia serrata.
26 Eucalyptus piperita.
27 W. Wentworth: Journal of a Journey across the Blue Mts. MS. Journal. ML. C122. pp.9-10.
28 e.g. Mountain Mallee, Eucalyptus stricta.
29 e.g. E.eugenioides; E.agglomerata; E.oblonga.
30 Bloodwood, E.gummifera or Sydney Red Gum, Angophora costata.
31 White Ash, E.oreades. The light strong timber did prove valuable.
32 e.g. E.saligna.
33 Wentworth: MS Journal, pp.9-10.
34 There are interesting if confusing links between these early expeditions. James Burns (or Byrnes) a convict who accompanied Blaxland, went as guide with Evans, 1813-1814. Patrick Byrnes (or Nurns) who accompanied Evans in 1815, also joined Oxley in 1817.

GEORGE WILLIAM EVANS

1780-1852

Surveyor Evans was not considered by Earl Bathurst "to be qualified by his Education" to report scientifically on the "New Country" west of the Blue Mountains. Evans however collected the first specimens of western timber.

Photo.: Mitchell Library.

EVANS'S BOTANICAL ART

Evans's watercolour of his "Liverpool Plains Lily", 1815, shows considerable appreciation of botanical detail. The plant is Crinum flaccidum, known variously as the Murray, Darling or Macquarie Lily.

Photo.: Mitchell Library, from Scientific Sketches, Drawer 15.

of the country in general terms[35], and noted some plants by name[36]; he also collected some "samples". Macquarie was pleased to send to Earl Bathurst these "Specimens of the Pebbles and Minerals...and a sample of Timber, altogether different from any on this Side of the Western or Blue Mountains."[37] Evans was chiefly concerned with "good grass" for his immediate needs and for those who might follow.[38] He also appreciated the climatic and economic problems which his discoveries west of the mountains might help resolve for County of Cumberland.[39]

Once William Cox and his small party had completed clearing and grading a road to the Bathurst Plains in January 1815, Macquarie advised Earl Bathurst of his

> Intention to proceed thither Early next Month for the purpose of Surveying and ascertaining its real Value and Capabilities; for this purpose, I shall take with me the Surveyor General and the two Deputy Surveyors..., and some other Scientific Gentlemen, to assist me in My Survey and Examination of the Quality of its Soil, Timber, and other Natural productions.[40]

The Governor also proposed to take "two small light portable Boats" to see whether the Macquarie River "Empties itself into the Sea on the Western Coast, which it is Supposed to do." Evans would therefore be detached

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35 e.g. "Forest Land", "small Meadows clear of Trees", "thick Iron Bark Brushes", "scrub of young Trees", "thick Brush".

36 e.g. "Mimosa" (i.e. Acacia); "White Daisey as in England", "Gums", "Box Tree", "Stringy Bark", "Oaks", "iron Bark", "Pines" (Callitris spp) Evans's Journal, ML.MSS 589 and HRA, VIII, pp.165-177.

37 Macquarie to Bathurst, 28 April 1814. HRA, VIII, p.150. No mention was made of Blaxland, Lawson and Wentworth, but a copy of Evans's Journal was enclosed with the despatch. Timber is unknown—perhaps Callitris sp.

38 e.g. 18 Dec. 1813, on the Macquarie, where "the Valleys are beautiful, as also the intervening ridges that divide them, being thickly covered with herbage; Graziers may keep stock here to great advantage, particularly sheep, as they like dry healthy parts." HRA, VIII, p.173; and 9 Dec. 1813 on the Macquarie: "The Grass here might be mowed it is so thick and long, particularly on the flat land." HRA, VIII, p.171; and 22 Dec. 1819 on the Campbell River: "nothing can exceed the fine appearance of this Country; the hill quite Green with grass, and the Plains also, intermixed with variety of Flowers and herbs, with flocks of Emu's feeding on them." HRA, VIII, p.174. Compare Lawson's description of 1822

39 The hot dry summer of 1812-13 was followed by a dry winter and spring, and with another dry summer, 1813-14, "all Vegetation is again at a Stand". Macquarie to Bathurst, 19 Jan. 1814, HRA, VIII, p.121.

40 Macquarie to Bathurst, 24 March 1815, HRA, VIII, p.468. Those accompanying the Governor in April 1815, were Mrs. Macquarie, J. T. Campbell, Secretary, Capt. H. C. Antill, Lieut. John Watts, Dr. Wm. Redfern, Sir John Jamison, William Cox, John Oxley, James Meehan, Geo. W. Evans and John William Lewin, "painter & naturalist".

"to trace the Course of this River on my Arrival at Bathurst Plains..."[41]

Six days after Macquarie had proclaimed the town of Bathurst on 7 May 1815, Evans headed south and west to discover the Lachlan River. Just south of Bathurst he found hills supporting "serviceable Timber, namely Stringy Bark, which is a Tree most used in this part of the World."[42] Other botanical observations were made[43] and once again considerable attention was paid to fodder grasses and "an evergreen Shrub that Cattle are fond of", useful timber, and adequate water. Evans appreciated the importance of furnishing a report on unfamiliar country in familiar terms:

> My journal is short; but I have endeavoured to state every thing, as it actually is, in as plain and correct a manner as I am capable of doing, that it should be clearly understood by any person, who may hereafter follow my Track.[44]

Macquarie took care to transmit to Earl Bathurst the journals, descriptions and specimens relating to the new country. While His Lordship did not fail "to peruse with considerable Interest" such material, he considered "All that has hitherto been ascertained of that Country only makes it desirable to penetrate further into the Interior." The new town would be an advanced depot from which future exploration would be continued. Although Evans was to be praised,

> he does not appear from the Style of his Journal to be qualified by his Education for the task of giving the Information respecting this New Country, which it is so desirable to obtain.[45]

Bathurst therefore hoped

> that in the further prosecution of these discoveries you will associate with him some person of more scientific Observation and of more General Knowledge.

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41 ibid.
42 Evans's Journal, 14 May 1815, HRA, VIII, p.611.
43 e.g. "a thick Forest of good grown trees", "fine Grazing country, well wooded, with Box and Stringy Bark Timber", "small Crooked Gums", "thickly wooded with Box, Gum, and Stringy Bark Trees", "Pine Trees intermixed with the Box", "Black Butted Gums, some...8 and 10 feet in diameter." HRA, VIII, pp.611-619.
44 HRA, VIII, p.619.
45 Bathurst to Macquarie, 18 April 1816 and 30 Jan. 1817, HRA, IX, pp.114-115, 203. One of Evans's limitations was that he "was not a qualified land surveyor and was unable to determine his latitude and longitude at any point by sun observations." A. K. Weatherburn: George William Evans, Explorer, Syd., 1966, p.53.

Such a person might be found

> either among the Officers of the Regiment now stationed in the Colony or among the Medical Officers...more particularly if anyone can be found in the Colony possessing any competent Knowledge of Botany or Mineralogy.[46]

If the Governor could find "persons so qualified to pursue the discoveries with Advantage" he could consider himself "authorized to direct another Expedition into the Interior." If suitable scientific personnel could not be found within the Colony,

> little difficulty can exist in obtaining scientific persons here, not only willing but anxious to enter upon the great field which has been opened to them.[47]

To put any future expeditions on a proper basis, as he saw it, Bathurst provided Macquarie with a detailed memorandum to serve as "the Groundwork of any Instruction which you may give to future Travellers."[48]

Bathurst's memorandum on exploration indicated the need for "a detailed Journal" which would record "all Observations and occurrences of every kind" and descriptions of "the general Appearance of the Country, its Surface, Soil, Animals, Vegetables and Minerals", together with anthropological data. More specifically, attention should be paid to

> The Vegetables and particularly those that are applicable to any useful purposes, whether in Medicine, Dyeing, &c.; any scented or ornamental Woods, adapted for Cabinet Work and Household Furniture, and more particularly such Woods as may appear to be useful in Shipbuilding; of all which it would be desirable to procure small Specimens, labelled and numbered so that an easy Reference may be made to them in the Journal to ascertain the Quantities in which they are found, and the Situations in which they grow.
>
> ....
>
> With respect to the Animals, Vegetables or Minerals, it is desirable that Specimens of the most remarkable should be preserved as far as the Means of the Travellers will admit, and especially the seeds of any plants not hitherto known. Where the preservation of Specimens is impossible, Drawings or detailed Accounts of them are most desirable.[49]

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46 ibid.
47 Bathurst to Macquarie, 18 April 1816, HRA, IX, p.115.
48 ibid.
49 Bathurst's Memorandum, 18 April 1816, HRA, IX, p.116.

HENRY, THIRD EARL BATHURST

1762-1834.

President of the Board of Trade, 1807-1812 and Secretary of State for the Colonies, 1812-1827. Earl Bathurst's Memorandum on Exploration, 1816, stressed the need for careful botanical exploration of the country west of the Blue Mountains, and his instructions set the pattern for fifty years. He especially sought botanical material from Macquarie, and his experience as President of the Board of Trade suggested to him that plant materials of commercial significance should be sought as well as "novelties".

From a portrait by Sir Thomas Lawrence (1769-1830) in the collection of H.M. the Queen, by kind permission of the Royal Library, Windsor.

LIEUT. JOHN OXLEY, R.N.

1785?-1828.

Surveyor-General of New South Wales, 1812-1828. Oxley was the first explorer to be instructed according to Earl Bathurst's Memorandum, which among other things, stressed the need for explorers to be botanical investigators and collectors. On most of his many journeys, Oxley had the company of either Charles Fraser, Colonial Botanist, or Allan Cunningham, King's Botanist, and sometimes both. The botanists found in Oxley a co-operative leader.

From a portrait in the Mitchell Library.

It was thus His Majesty's Secretary of State for the Colonies and erstwhile President of the Board of Trade[50], who set the pattern for Governors' instructions to official exploring expeditions in New South Wales for the next fifty years. Perhaps he had the ageing Banks's assistance; perhaps that of Robert Brown; perhaps the memorandum was entirely his own composition Macquarie sent an "Attested Copy" with his own instructions[51] to his Surveyor General, Lieut. John Oxley, R.N.

Between them, Banks and Bathurst through their appointments, instructions, and requests, had a profound influence on the history of botanical science in New South Wales. The year 1816, between the building of Cox's road and Oxley's first expedition to the western rivers, was most important botanically. By the time Bathurst had penned his memorandum, Charles Fraser had arrived in Sydney with the 56th Regiment.[52] He was soon appointed superintendent of the newly re-constituted Botanic Garden[53], and then attached to Oxley's expedition "in order to form a separate collection of seeds and specimens for Earl Bathurst."[54] Macquarie gave this assignment to Fraser after receiving through Bathurst the Prince Regent's request to send "Seeds of the Choicest Plants...of New South Wales" for the Emperor of Austria, with due care to be taken to preserve the seeds from injury from insects or dampness.[55] The arrival of a botanically-inclined soldier just six months before the receipt of Bathurst's scientific memorandum must have seemed providential to Macquarie. Then just before Christmas 1816, King George III's botanical representative arrived as well — Banks's appointee, Allan Cunningham[56]. He too, had his instructions in which Banks reminded him that he had

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50 Henry, third Earl Bathurst (1762-1834), President of the Board of Trade, 1807-1812, Secretary of State for the Colonies in Lord Liverpool's Ministry, 1812-1827.

51 Oxley Papers ML A5322/No.48. Instructions are dated 24 Mar. 1817.

52 See L. A. Gilbert et al. under Charles FRAZER in Aust.Dict.Biog., Vol.I, pp.416-7, also biographical notes in Chapter V.

53 See Chapter V.

54 Allan Cunningham's words. Ida Lee: Early Explorers in Australia, Lond., 1925, p.192.

55 Bathurst to Macquarie, 1 Oct. 1816 (Rec'd. 11 Mar. 1817) HRA, IX, p.188.

56 Allan Cunningham (1791-1839) arrived in Sydney in the Surry 20 Dec. 1816.

> had the good fortune to be selected[57] from among the very great number of Excellent young men who have been Educated at the Royal Gardens of Kew under the Eye of their worthy director Mr. Aiton, not so much from any superiority you posess (sic) of many others in Botany or Horticulture as from a firm persuasion in Mr. Aiton that you do Excell in [the qualities] of honesty sobriety diligence activity Humility & Civility & that you will never lose sight for a moment of these Essential Qualifications which above all others insure to a traveller Respect among Strangers & assistance from those in high office who have the Power either of giving or of withholding it.[58]

Cunningham's reward was within his own reach if he were to "add frugality to the Qualifications abovementioned." He was to

> use Every possible opportunity of sending home pacquets of seeds carefully sealed up & adressed to Wm. Aiton Esqr under cover to the Earl of Liverpool & you will keep a daily Journal of your Proceedings noting every thing proper to be made made (sic) known...[59]

Expenses were to be met by drawing bills upon Banks, taking care "to procure the most advantageous Rate of Exchange." As if all this were not enough to tax the personal resources and character of any human being, the actual collecting process was to be a rather exclusive business requiring great care:

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57 Banks's original draft has "by Mr. Aiton" crossed out. The Kew curator, William Townsend Aiton (1766-1849) reminded Banks on 29 May 1814 that before his illness, the King had promoted the sending of collectors to obtain plants for Kew Gardens--could this practice be resumed? Aiton had several men in view (no doubt Cunningham was one) and since South Africa, America and New Holland were rich fields, he asked Banks to take up the matter with the Prince Regent. (Dawson: Banks Letters, p.11) Banks replied on 7 June 1814 that a treaty with France would re-open the possibility; the Austrian Emperor sent collectors for Kew's "only rival", the garden at Schönbrunn. Collectors could be sent to the Cape, Buenos Aires and N.S.W. if the Prince Regent would permit it. (op.cit., pp.11-12) On 27 August 1814, Cunningham, no doubt on Aiton's advice, wrote to Banks seeking employment as a botanical collector abroad (Banks Papers, ANL, G026 (MF)). On 29 Oct. 1814, Allan Cunningham and James Bowie sailed in HMS Duncan for Rio de Janeiro where they collected for Kew for two years before being sent to NSW and the Cape respectively. Such was Banks's influence that by the time peace was made with France (20 Nov. 1815) the two collectors were in the midst of their work in Brazil "for the Purpose of increasing the Collection of Curious & usefull Plants Preserved in the R. B. Gardens at Kew." Banks Papers, ANL, G026 (MF).

58 Draft of Instructions by Sir Joseph Banks. Banks Papers, ANL, G026 (MF).

59 ibid.

> You are not...in any...case to allow any Person whatever to Receive or under any Pretence to Obtain from you any Part of the seeds or any of the Plants or bulbs Collected by you while you Continue in your Present Employ Should any new (?) Plant sent...by you to Kew appear in any other Garden an Enquiry will be immediately set on Foot to Find out in what way...it was procured & if...it Proves to have been obtained from you in any Circuitous manner whatever your having Parted with...it will be deemed a breach of the Fidelity you owe to your Employers.[60]

It was Banks's final instruction that led to strife between the King's Representative and the King's Botanist. Cunningham was not only to transmit to Banks his journals, but also

> to write to me as often as possible Stating to me such Circumstances of your Reception & the Conduct of those with whom you are Concerned Towards you & your undertaking as you may think fit to Communicate but you are Carefully to abstain from all Enquiry Relative to the Political State of the Colony...[61]

With these instructions, a salary of £180 per annum[62], and a request to be frugal, Allan Cunningham, King's Botanist, twenty-five years old, waited upon His Excellency the Governor of New South Wales, a fellow Scot, at his country residence at Parramatta on 21 December 1816.[63]

Macquarie received Cunningham "with every possible degree of kindness and hospitality", although his arrival apparently came as a surprise.[64] Cunningham, "with some difficulty" took "a small cottage at Parramatta"[65] which had a "centric situation" more convenient for excursions than Sydney. The Governor allowed him a servant, a convict whom Cunningham met on the Surry. Macquarie "strongly recommended" that Cunningham should join Oxley's expedition with Fraser, "being firmly persuaded that an Immense number of new and interesting specimens of Plants might be detected, in the

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60 ibid.
61 Banks Papers, ANL, G026 (MF).
62 Ass.Sec. of Treasury to the Collectors, 9 Sept. 1819. Dawson: Banks Letters, p.148.
63 A. Cunningham to Banks, 2 Jan. 1817. Banks Papers, ANL, G026 (MF).
64 Macquarie "observed that he had received no Instructions respecting me, but would render me any Assistance deem'd necessary to enable me to make my Collections with facility and care." Cunningham to Banks, 2 Jan. 1817. Banks Papers, ANL, G026 (MF).
65 Rent was £2-10-0 month, and "one Month's House Expenses including Wood & candle for self and Servant" cost £5-12-0. Cunningham's Accounts, 1817-18. Banks Papers, ANL, G026 (MF).

several districts thro' which we should pass."[66]

In the meantime, Cunningham intended to become "fully acquainted with the plants in the neighbourhood of Sydney, Parramatta, &c. "and seeds and specimens would be sent as a result of these preliminary excursions. Like Robert Brown before him[67], he had little difficulty in recognising in their native habitat the many plants which had been long since raised in the gardens, nurseries and hot-houses of England. He had the further benefit of experience as assistant to W. T. Aiton while the second edition of Hortus Kewensis was being prepared, and he found himself immediately at home among the plants of local sclerophyll forests and heathlands[68] where he identified many species on sight[69] and made his first collections.[70]

Cunningham was an enthusiast. As he pointed out to Banks in a lengthy postscript to his application for employment,

> It is a love of plants, and to search for them in their wild state, and a wish to make myself useful in the Capacity of a Collector, that now urges me to address you at this time, and should I be so fortunate as to be appointed Collector in the Service of His Majesty's garden, it shall be the highest ambition of my Life to exert myself in the perform[ance] of the requisite Duties that constitute a Collector, so that the Royal Collection at Kew may exceed all other Collections in the Riches of new, beautiful and desirable plants.[71]

This enthusiasm, his status as King's Botanist, his powerful patron and possession of what amounted to a royal commission to perform his duties, all combined to bring about the clash with Macquarie which shortly followed.

Meanwhile, Macquarie felt confident that a man of Oxley's "Talents and Qualifications"[72] accompanied by two botanists, should surely be able to

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66 Cunningham to Banks, 2 Jan. 1817. Banks Papers, ANL, G026 (MF).
67 See Thesis I, passim.
68 e.g. "on the Botany Bay Road"; near the Bay itself; Parramatta; North Rocks; Pennant Hills and Baulkham Hills. Cunningham's Journal, 4-22 Mar. 1817, in Lee: Early Explorers, pp.171-2.
69 e.g. "Banksia oblongifolia" (=B.integrifolia); Petrophila pulchella; Ceratopetalum gummiferum, already known to the colonists as 'Christmas Bush'; Native Cherry, Exocarpos cupressiformis; Wild Iris, Patersonia sericea. Other plants included species of Tetratheca, Epacris, Goodenia, Elaeocarpus, Veronica, Cissus (Wild Grape) and Hypoxis (H.hygrometrica).
70 Cunningham's first shipment of seeds, specimens, journal transcripts, accounts and letters for Banks and Aiton were shipped on HM Armed Brig Kangaroo, "bound for England direct" on 25 Mar. 1817. Lee: Early Explorer p.173.
71 Cunningham to Banks, 27 Aug. 1814. Banks Papers, ANL, G026 (MF).
72 Macquarie to Bathurst, 5 Sept. 1817. HRA, IX, p.477.

produce evidence of a scientific examination of the interior to Earl Bathurst's satisfaction. Although the Governor strongly recommended that Cunningham should "embrace so very favourable an opportunity" by joining Oxley, the young botanist still had doubts even when the expedition was almost on the point of departure. He asked Banks for further instructions "to direct and govern me in my present or future proceedings."[73] Nevertheless he took the Governor's advice. On 20 March 1817 he "sent forward a specimen press and some paper" to the Bathurst depot, and on 4 April he and George Evans left Parramatta for the west. Although "the botany, with very few exceptions, is the same as that observed in similar situations in the environs of Parramatta", Cunningham had begun his collection by the time they reached the Nepean Ferry.[74] He was still collecting on the very last day of the expedition some twenty-three weeks later. He found the Nepean banks botanically uninteresting except for White Cedar, Melia azedarach var. australasica, River Oak, Casuarina cunninghamiana, and "wild arum".[75]

The expedition arrived at Bathurst on 14 April 1817, and five days later proceeded south and west towards the Lachlan River which was traced to "immense marshes of this desolate and barren country."[76] On 19 May the party quitted the Lachlan downstream from the present site of Forbes and headed south-west to the southern extremity of the Cocoparra Range.[77] Rounding the mountains near the site of Yenda, Oxley headed north into the mallee thickets[78] west of the range back to the Lachlan which was regained on 23 June upstream from the site of Hillston. Once the river again led to swamps, Oxley turned back on 7 July near the site of Booligal, traced the river upstream to the Goobothery Range[79], then proceeded east-north-east to meet the Macquarie[80] which was followed back to Bathurst. Since leaving this point nineteen weeks before, the expedition had travelled some 1200 miles by horse, boat and on foot[81] through a wide range of ecological zones

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73 A. Cunningham to Banks, 25 Mar. 1817, Banks Papers, ANL,G026 (MF). Oxley left for the interior 12 days later.
74 Cunningham Journal in Lee: Early Explorers, p.174. Specimens included a mint-bush, Prostanthera sp. and a geebung, Persoonia sp.
75 Typhonium eliosurum then abundant, now rare.
76 J. Oxley: Journals of Two Expeditions...Lond., 1820, pp.37-8. The reeds in the marshes were Phragmites communis.
77 Oxley's Peel Range. See photograph, p.43.
78 Cunningham named the dominant mallee Eucalyptus dumosa.
79 Oxley's Watson Taylor's Range.
80 Near the site of Wellington.
81 750 miles according to Cunningham.

as we know them—savannah woodland with box[82] and pine[83]; shrub woodland with myall[84], gum[85] and ironbark[86]; box[87] and red gum[88] river forests, mallee[89] scrub and saltbush[90] country. However dreary much of the journey was for the surveyors and chainmen and for those responsible for keeping the expedition on the move, Cunningham and Fraser found plenty to interest and employ them. By the time Cunningham arrived at the Bathurst assembly point, Fraser had been botanising in the surrounding hills for about a month[91], and quite early in the expedition Oxley advised the Governor: "I think Fraser will be enabled to present to your Excellency a Valuable Collection. I cannot say as much for the mineralogical acquisitions..."[92]

The journals of Oxley and Cunningham indicate that the two botanists worked cooperatively, and their excursions added greatly to the area of country traversed. Cunningham however, seldom referred to Fraser by name, but often recorded plants "we" had discovered. When Cunningham was "seized with a violent ague" and unable to stir, Evans, Fraser and Parr (the mineral collector) brought plants to him.[93] Cunningham was equipped

> with moderate-sized portable saddle bags, and specimen cases, well canvassed over and painted, for the reception and protection of those treasures that the interior of this country may afford[94]

and doubtless Fraser had similar equipment. Cunningham also brought "a quantity of peach-stones of two qualities, some quince pips or seeds, and a few acorns"[95] which he sowed at suitable localities throughout the journey.

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82 e.g. Bimble Box, E.populnea; Grey or Mallee Box, E.woollsiana; White Box, E.albens; Grey or Black Box, E.microcarpa.
83 e.g. White Cypress Pine, Callitris hugelii and Black Cypress Pine, C.endlicheri.
84 Myall or Boree, Acacia pendula.
85 e.g. Red or Tumble-down Gum, E.dealbata; Blakely's Red Gum, E.blakelyi.
86 e.g. Cunningham's 'Western Ironbark' or Mugga, E.sideroxylon.
87 Black or River Black Box, E.largiflorens.
88 River Red or Murray Red Gum, E.camaldulensis.
89 e.g. White or Congoo Mallee, E.dumosa.
90 e.g. Bladder or Perennial Saltbush, Atriplex vesicaria; Flat-topped Saltbush, A.inflata.
91 Cunningham Journal, 27 Apr. 1817, in Lee: Early Explorers, p.192
92 Oxley to Macquarie, Lewis Ck., Lachlan R., 28 Apr. 1817, Oxley Papers, ML.MSS.589.
93 30 May 1817, Lee: op.cit., p.222
94 Cunningham Journal, 3 Apr. 1817, Lee: op.cit., p.174.
95 Cunningham Journal, 28 Apr. 1817, Lee: op.cit., p.194.

ALLAN CUNNINGHAM

ALLAN CUNNINGHAM

1791-1839

King's Botanist, explorer, and a tireless collector for Sir Joseph Banks and Kew. To Lieut. P. P. King, he "was a rare specimen--quite a genus of himself; devoted to his own science, Botany; a warm friend, and an honest man..." Macquarie's assessment was somewhat different.

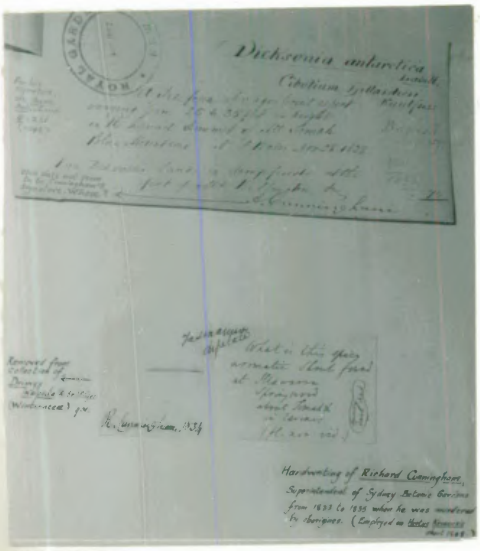
From lithograph by A. Picken, Mitchell Library.

SOFT TREE FERN, Dicksonia antarctica. Collected by Cunningham in 1839, it would have been among the last of his specimens from New South Wales.

Photo. L. G., Jan. 1967, Melbourne Herbarium.

DENNSTAEDTIA DAVALLIOIDES

A fern collected by Cunningham at Mt. Tomah, 1834.



LEFT: Plant labels prepared by Allan and Richard Cunningham, 1823 & 1834 respectively.
Photos. L. G. Jan 1967, Melbourne Herbarium.

Both pressed specimens and seeds were collected, each requiring special care. The pressed herbarium specimens had to be continually "repapered", as Cunningham put it; that is, the paper between the specimens had to be changed when damp so that the specimens would be dehydrated as quickly as possible between dry sheets, thereby minimising the chances of the plants being ruined by mould. The damp paper was dried and used again. The actual plant presses would have been kept in sunlight during the day and near the camp-fire at night. The seeds had to be carried in separate packets labelled either with names, descriptions or numbers, and kept perfectly dry. Atmospheric humidity, dew, rain, the crossing of rivers and travelling throug swampy country all created problems for the botanists. Poor, incomplete or spoiled specimens were continually replaced by better ones, and during a protracted journey it was often possible to collect fruit subsequent to flower, or flower subsequent to bud. Sometimes the movement of the saddle bags spoiled the more brittle specimens by "friction"[96] and these had to be replaced, and there was always the possibility of losing specimens should a horse fall.[97]

A major task in the field was the labelling of seeds and specimens with tentative identification, an indication of the locality, and perhaps the date of collection and a note on the plant's habit or habitat. It was in identification that Cunningham's remarkable botanical perspicacity was revealed. It is hard to believe that the one who was so au fait with the Australian flora was a young Anglo-Scot just arrived from England via Brazil. Such had been his training and experience in England that he was rarely at a loss to describe a new discovery in terms of what was already known. The journals he sent to Banks contain references to plants by class or order (family)[98], genus[99] and even species.[100] Sometimes he employed colonists'

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96 e.g. White Cypress Pine, Callitris hugelii specimens replaced 10 Aug. 1817. Cunningham Journal, in Lee: Early Explorers, p.280.

97 e.g. at Bathurst, 30 Aug. 1817: "The horse that carried my cask of plants fell in a swampy situation and, before the kegs could be taken up, the water had penetrated between the staves and had slightly injured some of my specimens. I was diligently employed in unpacking and airing my collection of plants and seeds." Cunningham Journal, Lee: op.cit.,p.299.

98 Some 20 species were thus identified.

99 Some 217 spp. were thus identified.

100 Some 233 species were thus identified or named for the first time.

names to identify plants,[101] described specimens in botanical terms[102] or referred to some known species to which the new plant indicated close affinity.[103] By these various means, Cunningham described and at least partially identified some 518 species of ferns and flowering plants[104] on this journey. Of most, if not all of these, he collected seeds and/or specimens, including many specimens in duplicate (which were noted as such) from widely scattered localities. Probably Cunningham took with him copies of Brown's Prodromus[105] and Aiton's Hortus Kewensis[106] but even so his industry and feat of classification in the field were quite astonishing. Not that all of his classifications were completely accurate at the time, or accepted since[107]; for instance it was a tentative identification indeed which depended on the habit of a plant in the absence of flower and fruit, but in these cases, Cunningham amended his classifications when better material was discovered.

Other factors to be considered when making an assessment of Cunningham's work on this expedition are (i) his concept of the nature of a species, and (ii) the fact that some plants already discovered, described, named and published, especially by Brown, may have had 'inland' forms and varieties which presented, before the discovery of intermediates, such modified characteristics as to suggest entirely new species. But Cunningham often appreciated that he had found a variant of a known species.[108]

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101 e.g. Stringybark, Black-butted Gum, Marsh Mallow, Blue Gum, Native Elder, Snake-wood or Snake-bark.

102 e.g. "a species of Eucalyptus having a submucronated hemispherical operculum, and flowers of two colours, red and white, in terminal panicles, a tree about 30 feet high." Cunningham Journal, 30 June 1817, Lee: Early Explorers, p.249. This was Black, River Black or Flooded Box which Cunningham appropriately named E.bicolor. He also applied the name E.pendula, but both have now been discarded on various grounds for E.largiflorens.

103 Some 37 species were thus identified.

104 Note the correspondence of this figure with that of Macquarie's letter to Bathurst, 15 Dec. 1817, "upwards of 500", HRA, IX, p.729. Cunningham also referred to lichens and to a fungus.

105 Robert Brown: Prodromus Florae Novae Hollandiae et Insulae Van Diemen... Lond., 1810.

106 Wm. T. Aiton: Hortus Kewensis; or a catalogue of the plants cultivated in the Royal Botanic Garden at Kew, 2nd Ed., Lond., 1810-13.

107 e.g. his "Eucalyptus globulus."

108 e.g. "I discovered a new species [i.e. a new kind or form] of Acacia impressa". Cunningham Journal, 14 Aug. 1817, Lee: Early Explorers, p.282. Probably Broad-leaved Hickory, A.penninervis var. falciformis.

Many of the names bestowed by Cunningham in the field during this journey were later published, and are still accepted. These include significant species of the central western landscape.[109] Other names have, owing to subsequent revisions and rules, become mere synonyms,[110] while others were not published at all, not even by Bentham as synonyms from "A.Cunn.MSS", and these are now difficult to apply to the plants intended. Both the Governor and the Surveyor-General were honoured by the King's Botanist[111]. However undesirable botanically,[112] it is historically fortunate that one of Cunningham's plants in later revisions, was named after him[113]. Other plants he collected with Oxley commemorate his name as co-author after revisions have

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109 e.g. Myall or Boree, Acacia pendula; Golden or Mudgee Wattle, A.spectablis; Crowded-leaved Wattle, A.conferta; Yarran, A.homalophylla; River Cooba, A.stenophylla; 'Wattle', A.cardiophylla; Ploughshare Wattle, A.vomeriformis; Varnish Wattle, A.verniciflua; Desert Cassia, Cassia eremophila; Currawong or Spearwood (so named by Cunningham because natives made spears therefrom) A.doratoxylon; Spoon Wattle, A.obliqua; White or Congoo Mallee, Eucalyptus dumosa; Black or Flooded Box, E.bicolor (accepted until a very recent revision); Cunningham's "Western Ironbark" or Mugga, E.sideroxylon; Groundsel, Senecio anethifolius; Pea-bush, Hovea heterophylla.

110 e.g. Apple, Eucalyptus perfoliata A.Cunn.MSS. = E.stuartiana F.Muell.; Mint Bush, Prostanthera atriplicifolia A.Cunn.MSS. = P.ovalifolia R.Br.; Drooping or Mountain She-oak, Casuarina macrocarpa A.Cunn.MSS. = C. stricta Ait.;
Wild Hops, Angular Hop-bush, Dodonaea calycina A.Cunn.MSS. = D.truncatiales F. Muell.

111 Pancratium macquaria A.Cunn. "in honour of His Excellency Lachlan Macquarie, Esqre., our worthy and much respected Governor, during whose arduous administration the colony of New South Wales has been enlarged and beautified in an eminent degree, and by whose meritorious and praiseworthy exertions the western part of the Continent has been laid open, as well to the labours of the industrious agriculturist as to the no less laudable research of the unwearied naturalist." Cunningham Journal, 30 April 1817, in Lee: Early Explorers, p.197. (Now Calostemma purpureum, the Garland Lily). The Western Wonga Vine, Tecoma oxleyi A.Cunn. "This new and beautiful species I have presumed to dedicate to the memory of our worthy and persevering chief in the present expedition." Cunningham Journal, 6 May 1817, Lee: op.cit., p.204. See Botanical Names Ap

112 since proper names betray no specific features of plants so named. On the other hand proper names as specific epithets may be historically interesting, as in the Emu Bushes, Eremophila spp. which commemorate over 30 botanists, explorers, collectors and promoters of expeditions—e.g. Charles Sturt, Thomas Mitchell, Wm. John Wills, Ernest Giles, William Woolls, Ferdinand von Mueller, John McKinlay.

113 Lignum, formerly Polygonum junceum A.Cunn. now Muehlenbeckia cunninghamii.

been made.[114]

The influence of Cunningham and Fraser, and Oxley's desire to give them due honour, may be noted in names bestowed upon outstanding features of the landscape[115] and it might be conceded that Cunningham's botanical "Cassythian Brush" was more obviously appropriate than Oxley's classical "Euryalean Brush"[116] to describe the "very thick eucalyptus brush, overrun with creepers and prickly acacia bushes"[117] near the Cocoparra Range (named Peel's Range by Oxley).

Oxley's published journal tends to refer to things botanical in general terms, but it is clear that the botanists were consulted when it was desired to record a comprehensive description of the country.[118] Oxley also

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114 e.g. Spider Flower, Anadenia anethifolia A.Cunn. = Grevillea anethifolia (A.Cunn.) R.Br.; Daisy-bush, Helichrysum alatum A.Cunn.MSS. = Ammobium alatum (A.Cunn.) R.Br.; Mallee Pine, Callitris verrucosa A.Cunn.MSS. = C.preissii Miq.ssp.verrucosa (A.Cunn.ex Endl.) Garden; Wattle, Acacia cuspidata A.Cunn.MSS. = A.diffusa Lindl.var. cuspidata (A.Cunn.) Benth.

115 e.g. Mt. Aiton (Wm. T. Aiton); Mt. Caley (George Caley); Good's Peak (Peter Good); Smith's Plains (Sir J. E. Smith); Mt. Brown (Robert Brown); Dryander's Head (Jonas Dryander); Mt. Fraser; Mt. Cunningham; and Hove's Rock (after Hovea heterophylla found there).

116 in allusion to one of the three Gorgons mentioned by Hesiod.

117 Mallee thicket of Eucalyptus dumosa et al. spp. including such shrubs as Needle Wattle, Acacia rigens; Kangaroo Thorn, A.armata; Spine Bush, A.colletioides and Prickly Wattle, A.farnesiana overgrown with Dodder Vine, Cassytha sp. Near present site of Warburn.

118 e.g. 22 July 1817, Lachlan R., north of Goulburn Ra.: "It is impossible to imagine a worse tract of country than that through which our route lay this day; to the very edges of the stream it was barren acacia scrub intermingled with cypress and dwarf box trees. The flats were uniformly swampy, and covered with bushes (rhagodea) [sic]; the hills instead of grass were clothed with knaphalium [i.e. gnaphalium]". Oxley: Journals, p.119. 23 July 1817, near Lake Cargelligo (Oxley's Prince Regent's Lake) "the low-lands were all swamps covered with rhagodia bushes, and where the land was a little more elevated, the soil was sandy and barren, covered with acacias, dodonoea (sic), small cypresses and dwarf box-trees." Oxley: Journals, p.123.

OXLEY'S EXPEDITIONS: LANDMARKS AND COLLECTING PLACES

OXLEY'S PEEL RANGE, NOW KNOWN AS THE COCOPARRA RANGE. THIS IS THE SOUTHERN EXTREMITY NEAR WHICH OXLEY RECORDED ON 1 JUNE 1817: "Barren as the scrub appeared to us, yet our botanists reaped an excellent harvest here..." Photo.: L. G., 30 Aug. 1969 near Binya.

OXLEY'S ARBUTHNOT RANGE, NOW KNOWN AS THE WARRUMBUNGLE RANGE, WHERE OXLEY NOTED ON 8 AUGUST 1818: "Many new, and otherwise interesting subjects of the indigenous botany were discovered..." Photo.: L. G., 22 Aug. 1969.

recorded some of the plant names given by Cunningham[119] and he noted with some care the numerous excursions made by the botanists.[120]

Cunningham recorded four uses to which native plants were put during the expedition -- as a green vegetable[121], a beverage[122], a substitute for tobacco[123] and for raft-building.[124] One of Earl Bathurst's

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119 e.g. Boree or Myall: 5 May 1817, near present site of Warroo: "...a new species of acacia which received the specific name of pendula, from its resembling in habit the weeping willow." Oxley: Journals, pp.19-20. Mallee: 10 June 1817, Cocoparra Ra.: "Mr. Cunningham named the thick brushes of eucalyptus...as eucalyptus dumosa, or the dwarf gum, as they never exceed twenty feet in height." Oxley: op. cit., p.63.

120 e.g. 1 June 1817, Cocoparra Ra.: "...barren as the scrub appeared to us, yet our botanists reaped an excellent harvest here; nothing being more true than that the most beautiful plants and shrubs flourish best where no grass or other herbage will grow." Oxley: op. cit., p.52. 25 June 1817, Lachlan R.: "Several new plants were the result of to-day's research, among them a new species of amaryllis, upon which the botanists prided themselves much." Oxley: op. cit., p.84. Probably the Darling Lily, Crinum flaccidum.

121 8 May 1817: "At my suggestion our people gathered a quantity of the young leaves of the Rhagodia, which they boiled and found them an excellent substitute for a better vegetable, which, with the emu, made us an excellent dinner." Cunningham Journal, Lee: Early Explorers, p.205, and
23 July 1817: "the large Rhagodia, the young leaves of which we found an excellent substitute for cabbage." op. cit., p.266. Perhaps Thorny or Hedge Saltbush, Rhagodia spinescens, Old Man Saltbush, Atriplex nummularia or Bladder Saltbush, A.vesicaria, which Cunningham certainly collected on Molle's Plains.

122 2 May 1817, Macquarie River flats: "A species of Satureia is common on low lands; like other species of this genus it has a mild aromatic penetrating taste, and is in common use as tea among our people." Also 26 June 1817 and 11 July 1817. Cunningham Journal, Lee: op. cit., pp.199, 247, 258. This would have been one of the Native Mints, Mentha australis or M.satureioides. Cunningham collected the latter species, which grows around Port Jackson, and was probably already well-known to the men as a source of mint tea.

123 21 June 1817, flats near Cocoparra Ra.: "Nicotiana undulata is very frequent...the lower leaves of which our people gathered, and when dried found them not a bad substitute for its congener N.tabacum although not so strong a narcotic." Cunningham Journal, Lee: op. cit., p.238. This was Wild Tobacco, now N.suaveolens. N.tabacum is the central American tobacco of commerce.

124 31 July 1817, Lachlan R.: "Our people are employed sawing pine or cypress for the raft." Cunningham Journal, Lee: op. cit., pp.272-3. White Cypress, Callitris hugelii and Black or Red Cypress, C.endlicheri.

instructions no doubt drew Cunningham's comment on the cypress pine

> which Mr. Evans had noticed on his tour...It has been suggested that stems might be procured that would form good spars or booms, it is, however, much to be feared that in consequence of the many knots on its trunk or stem it would be found extremely brittle and short.[125]

Writing to Macquarie on the return to Bathurst, Oxley warmly praised the botanists:

> It would perhaps appear presuming in me to hazard an Opinion upon the Merits of Persons engaged in a Pursuit of which I have little knowledge. The extensive and Valuable Collections of Plants formed by Mr. A. Cunningham, the King's Botanist, and Mr. C. Frazer, the Colonial Botanist, will best evince to your Excellency the Unwearied Industry and Zeal bestowed in the Collection and Preservation of them. In every other respect they also Merit the highest praise.[126]

This information was duly relayed to Earl Bathurst.[127]

Cunningham was loath to let the results of his "Unwearied Industry and Zeal" out of his sight:

> we sent off a large cart loaded with luggage and collections on its way to Sydney. My collection of plants forming large packages of bulk in casks, it was found impossible to carry them on the cart which we could procure on the plains. Rather than subject my luggage to accident in passing rivulets, I determined to accompany the whole myself, giving up my saddle horse to bear that part of the collection that could not be carried by the cart.[128]

This collection was increased on the way back over the Blue Mountains, and indeed Cunningham continued adding to it until he "arrived at Parramatta at dusk with the whole of our collection" on 8 September 1817.[129]

The next morning, Cunningham reported to the Governor who suggested that he should now join Lieut. Phillip Parker King's northern survey expedition. That evening, and again on 17th, the botanist dined at Government House. On the 18th, however, the Superintendent of Government Stock demanded the return of the horse Cunningham had used on the expedition.[130] Hoping to retain the horse for excursions and for the transport of specimens, Cunningham wrote to the Governor accordingly, but the recent dinner guest drew a cool, if

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125 30 April, 1817. Cunningham Journal, Lee: op.cit., p.196.
126 Oxley to Macquarie, 30 Aug. 1817, HRA, IX, p.484.
127 with Macquarie's letter to Bathurst, 5 Sept. 1817, HRA, IX, p.477.
128 1 Sept. 1817, Bathurst. Cunningham Journal, Lee: op.cit., p.300.
129 Cunningham Journal, Lee: op.cit., p.305. This suggests that the collections of both botanists were packed together.
130 Lee: op.cit., p.305.

immediate response:

> ...I very much regret that I cannot consistently with the nature of any Instructions from Home[131] comply with the request contained in your letter...namely furnishing you with a Government Horse to enable you to carry on your Botanical Pursuits in this Country. This is a Govt indulgence tho' applied for by them has been even refused to the Surveyors and Medical Officers of Government, whose various Public Duties frequently require the use of a Horse; and were this indulgence extended to you, they would have reason to complain of so mortifying a distinction.
>
> If a Horse is requisite for enabling you to prosecute more efficiently your Botanical researches I should imagine

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131 This is impossible to reconcile with Bathurst's letter to Macquarie of 20 Sept. 1814 concerning Cunningham and Bowie: "...I am to desire that during their residence within your Government you will afford every facility and assistance in your power to enable them to prosecute with Success the undertaking in which they are engaged." Bathurst enclosed a copy of a letter from the Treasury (16 Sept. 1814) wherein Secretary George Harrison pointed out "that it will be of great importance to the success of the Undertaking that the Collectors should receive every facility and assistance, which can be afforded by the Government." The Governor of the Cape was to be instructed "to provide for the Service of the Collectors, a Waggon, a couple of Teams of Oxen for their Journies, a Hottentot Driver, and two or three Men to attend the Oxen, and also to furnish the Collectors with the Usual Orders upon the boors for boorspans of Oxen; and if they should go beyond the limits of the Colony with an Order to the Landrost to give them the protection of a few boors, which my Lords are informed is termed a Commando, And also to afford them every other Facility and Assistance in his Power..." Bathurst was "to convey to the Governors, or other persons having the Principal Authority in the several Settlements in New South Wales, Instructions to afford to both, or either of these Persons, in the Event of their proceeding to that Country, similar Facilities in the prosecution of their undertaking." HRA, VIII, pp.273-4. Macquarie acknowledged receipt of these instructions on 24 June 1815 without comment, except to say that to all despatches "the Most respectful Attention will be paid." HRA, VIII, p.553. Yet while Bowie clearly had the advantages, if required, of waggon, oxen, and an armed guard, Cunningham could not even obtain a horse—a "mortifying...distinction" indeed! Macquarie's return of Nov. 1817 showed 149 horses then belonging to the Crown, HRA, IX, p.724.

your Employers at Home would approve of your Purchasing one.[132]

Cunningham contented himself by confiding the gist of this letter to his journal[133], having "returned the horse forthwith without delay of time", and proceeded to prepare his specimens for shipment by the brig Harriet soon due to sail. He wrote to Banks and Aiton to advise his safe return. During October and November he continued his excursions, presumably on foot, and visited ships likely to bring tidings from Banks. He also examined a friend's farm at Liverpool, where he found that "like other farms in the neighbourhood it is overrun with the Bursaria spinosa, now in fruit."[134]

By 14 November 1817, Cunningham had completed his "seed and specimen list" to accompany his shipment of material, and on 1 December he wrote at length to Banks concerning the recent expedition, the matter of accounts, the business of the "Government Horse", the unsatisfactory nature of plant cases and his relationship with the Governor. He also confessed that "several Persons (Prisoners) of the late Expedition" had collected "ample Duplicates of many of my very interesting and valuable Seeds and bulbs...chiefly with a view of turning them to Cash, upon their return to Sydney". Cunningham understood that "many are now in the Possession of several wealthy Individuals...

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132 Macquarie to Cunningham, 18 September 1817. Banks Papers, ANL,G026 (MF). Perhaps Macquarie was still a little piqued at the thought that on the eve of taking office, Banks had seen fit to crave his indulgence for an earlier, and certainly more irascible collector, George Caley, of whom Banks had written: "His disposition is Singular & Whimsical & may at first require more indulgence than you may be inclined to grant him it is said to be a Proverb at New South Wales that Caley & the common hangman are the only two people who do as they please." Banks to Macquarie, 13 May 1809, Banks (Brabourne) Papers, ML. Vol.20, A83.

133 and doubtless also to Banks in his letter of 20 Sept. 1817 advising his safe return "with a fair Collection of specimens and seeds" which he would ship aboard the Harriet "under the special Care of the Captain (Jones),...pack'd in double Cases." The plan was to send a duplicate collection by either the Chapman or Lord Elton, convict transports both seeking cargo. Cunningham to Banks 1 Dec. 1817, wherein mention is made of letter of 20 Sept. 1817. Banks Papers, ANL, G026 (MF).

134 Blackthorn or Native Boxthorn, Bursaria spinosa a native plant long declared noxious, see J. H. Maiden: The Weeds of N.S.W., Syd. 1920, pp.26,28. Cf. Sir Wm. Macarthur's description of the deteriorated condition of pastures at Camden half a century later: "The land, naturally all forest and broken into short hill and dale, had become crowded--choked up in many places by thickets of saplings and large thorn bushes (bursaria spinosa)..." Macarthur to T. L. Learmonth, 6 Apr. 1866, in T. M. Perry: Australia's First Frontier, Melb., 1963, p.28.

who intend to transmit them to their friends in England by the earliest opportunity..." He hoped that "nothing incorrect" might be attributed to him, especially in the light of his instructions.

The contents of this letter were clandestinely relayed to Governor Macquarie.[135]

The next day, 2 December, Cunningham

> waited upon His Excellency, according to appointment, in order to superintend the execution of a few drawings of plants discovered in the interior, which the Governor intends to transmit to Earl Bathurst.[136]

Macquarie took great care in reporting to Bathurst the botanical success of "the late Circuitous Tour thro' the Interior." It had

> in its Botanical Department been productive of an Accession of upwards of Five Hundred Plants totally different from those hitherto Collected or known in this Country. One Hundred and Fifty of them were found bearing Seed.

The Governor further advised Bathurst that he was sending "Dried Specimens of all the Plants"; seeds of 150 species, and drawings "by the Masterly Hand of Mr. Lewin" of four of the plants which

> were Considered so rich and beautiful by the persons, who Collected them...These Drawings being taken whilst the Plants retained some Share of their Natural Beauty, and immediately under the Eye and Direction of the Botanists who collected them, their Colours and Peculiarities have been well preserved, and will Convey a much more perfect Idea of the Plants themselves than Could be possibly Obtained from the bare Inspection of the dried Specimens, especially after so long a voyage as that they are about to Undergo.[137]

In addition, there were packets of seeds for the Emperor of Austria and for "Monsieur Goüm, Superintendent of the King's Garden at Paris,...particularly addressed to...Sir Joseph Banks", and there were "thirteen Amaryllis Bulbs and twelve Bulbs of the Paneraticum (sic)[138] Macquaria."[139]

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135 For the text of this letter, see Appendix II.

136 Cunningham Journal, in Lee: Early Explorers, p.308. The drawings were made by John William Lewin (1770-1819), naturalist, artist, and coroner of Sydney Town.

137 Macquarie to Bathurst, 15 Dec. 1817. HRA, IX, p.729.

138 Should be Pancratium--apparently an error in transcription.

139 J. T. Campbell's enclosure with above. HRA, IX, p.731. The bulbs would have been of the Darling Lily, Crinum flaccidum and Garland Lily, Calostemma purpureum. The Secretary also listed the seed packets under old Linnean Classes, e.g. Diandria, Triandria, Tetrandria, Pentandria, etc. This was doubtless a copy of the seed-list Cunningham completed on 14 Nov. 1817.

Facing the perennial problem of paper for the storage of specimens Cunningham asked the Governor for a "supply of Paper of divers qualities, Memorandum Books, &c. "but even when armed with an order for such items, he found that the store "had no such paper (viz. Cartridge & strong brown) on hand". He was therefore obliged to accept such paper as was in stock though it was of unsuitable quality.[140] He also wrote to Aiton on the matter, as his previous supply had long since been exhausted by the Brazilian collection.

On 16 December 1817, having loaded his luggage on the cutter Mermaid in preparation for the northern voyage, Cunningham called on the Governor,

> actuated by the purest motives, and being fully impress'd with the necessity of paying that mark of respect, attention, and duty due more particularly to His Excellency... from Persons in his Majesty's Service.

What followed is best described by the botanist himself:

> The Governor after the usual compliments had been exchanged, commenced with observing, that in all probability, we might never see each other again, alluding to his own resignation, and he wish'd to know whether I was satisfied with the Assistance he had render'd me,...I answer'd that I had hoped to be provided with a small House or Hut, a Government Horse, and any other Indulgence, which from the situation I held...and more especially from Instructions, which I doubted not, His Excellency had received from the Colonial Office respecting me, I humbly presumed His Excellency would have deem'd it justifiable to afford me; but for the Assistance I have already received, I humbly beg'd His Excellency would accept my sincerest thanks.
>
> He continued with observing that I was not entitled to even a Government Ration from the Stores, nor was it in Consequence of any Instruction he had received respecting me that I was allow'd to make use of the Government Horse occasionally, on the late western Expedition. He hinted that his Instructions (affecting me) were in the most common & general Terms, and that those Indulgences I did enjoy, were afforded me by His Excellency more from a favourable impression he had received of me...than from any Commands from home. His Excellency finally concluded, charging me with having written to you (by this ship) against himself, upon this subject, and that he had obtain'd it from good authority.[141]

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140 Cunningham to Banks, 13 Dec. 1817. Banks Papers, ANL, G026 (MF).

141 Cunningham to Banks, 20 Dec. 1817. Banks Papers, ANL, G026 (MF). The offending letter was that written on 1 December—see Appendix II.

Cunningham, "with becoming respect", tried to assure the Governor that he "had merely detail'd matters of fact" advising Banks of the support he had indeed received, and that he had by no means sent any "accusation or charge against His Excellency", but the botanist was "not allow'd to make any further Observations" for the Governor abruptly left the room. Cunningham quitted Government House "under an ill Impression of the sinister means" used to ascertain the contents of his correspondence. It was "doubtless thro' the medium of a Constable, who had been recommended...by the Magistrate, as a useful man and who I had employ'd copying my Journal." Seeing possible grounds for winning favour, "this Prisoner...had reported the subject to His Excellency."

Fearing that his letters may have been "seized or Detain'd", Cunningham boarded the Harriet where he found "all...Packets safe". He explained to Banks that in describing the assistance he had, and had not, received from the Governor, he was in fact obeying Banks's own instructions to both collectors. At all times, in Brazil and in New South Wales he had tried to conduct himself with prudence, showing respect and deference where appropriate, keeping clear of politics, and being mindful of due "loyalty and fidelity as a British Subject", and of an earnest desire to meet Banks's "wishes and commands".[142] No doubt with great relief, Cunningham added, "I expect to sail with Mr. King tomorrow morning."[143]

Macquarie ensured that Banks heard his side of the story. He held a "very high Respect" for Banks "as a Patron of Men of Genius and Science." It was therefore "with much Disappointment and Surprize" that he

> learned that Mr. Allan Cunningham...a Collector of Seeds and Plants, and generally...an Operative Botanist, has addressed a Letter to you...Complaining that I have not extended those Facilities towards him in making his Collections that He had been led to Expect and...that I have with held All these Accommodations necessary to his personal Convenience and Comfort.

While reluctant to believe the report, Macquarie felt "that some little Enquiry should be made". On "putting a few Questions" to Cunningham, he soon felt, because of the botanist's "Confusion and Hesitation of Manner" that the "Information was Correct". Such "false and ungrateful Conduct" had caused

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142 Cunningham to Banks, 20 Dec. 1817. Banks Papers, ANL, G026 (MF).
143 i.e. Sunday, 21 Dec. 1817 on H. M. Cutter Mermaid, 84 tons burthen, Lieut. Phillip Parker King.

Macquarie to express his regret and disappointment, and the botanist was "dismissed...with a suitable Reproof". He stressed that he had been hospitable to Cunningham, who had been received "with the Civility and Attention due to a Gentleman"; he had "Complied with all his Demands", and Banks could

> Judge how far I have merited such a Return from this Unbred, Illiterate Man, whose only pretensions to personal Attention from me arose from the Opinion you have entertained of his Usefulness in the Line of his Profession.

Cunningham could hardly have been allowed a house "whilst several of the principal Officers of this Government" were not so accommodated, but he had been given "one Government Servant permanently", and "Rations equal to those I draw for my own use." The Governor was sorry to trespass on Banks's valuable time, but thought it well "that the 'Bane and Antidote' may be at once" presented.[144]

On 22 December 1817, two vessels cleared the heads of Port Jackson. Allan Cunningham was aboard one bound for the south, west and northern coasts and more botanical discovery, while aboard the other[145] were the results of his expedition with Oxley, and some rather unhappy correspondence, bound for England and Sir Joseph Banks.

Banks, now old and gout-ridden[146], retained his customary diplomacy, without allowing complimentary phrases to obscure his feelings, or his message. In July 1818, he acknowledged Macquarie's letter "Complaining of The Prince Regents Botanist...for having written to me on the Subject of Certain Indulgences which he expected." There was, however, "nothing in Cunningham's Letter" which "had the appearance of a Complaint", a point with which Earl Bathurst had agreed. Banks was pleased that Cunningham had reported "the indulgences of a Servant & Rations", even if it were necessary to withhold "the house & the horse" which Cunningham "would have been glad to have Received". No doubt "at the time", His Excellency "had sufficient Reason" for his conduct. "If at any future time it should be deem'd expedient" to grant Cunningham both these requests, then Macquarie's "Countenance to scientific Pursuits will be brought into Notice by the diminution of...Expenses on the annual audits of the Collectors accounts." Sir Joseph and His Lordship, Earl Bathurst could only suppose that the Governor had "been Greivously misinformd."

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144 Macquarie to Banks, 18 Dec. 1817. Banks Papers, ANL, G026 (MF).
145 Ship Harriet, Capt. James Jones.
146 His letter drafts clearly reflect this. As early as Jan. 1800, Banks had lamented that he was "chained" to his chair by gout. Dawson: Banks Letters, p.396.

Of course, the Governor might note that at the Cape things were much different:

> Lord Charles Somerset has given to Mr. Bowie the Collector there, The use of a waggon & oxen to perform his Journeys this at a small charge Certainly on the Colony, will Releve (sic) his accounts at home...

There was a credit side. Macquarie's "activity in Causing the Country beyond the blue mountains to be explord" had won "the approbation & gratitude of all Scientific Persons here...& we feel Certain that the interesting business of discovery will never cease", while the Colony had such a Governor. Could Macquarie make some enquiries concerning "the Duck billd duodruped"?[147] Does it really lay eggs? Banks would not credit "this most extraordinary anomaly" and some further information would be most welcome.[148]

Banks then turned to Cunningham[149], whom he congratulated on the "most valuable Collection of seeds & specimens the Fruits of your Journey beyond the blue mountains." Cunningham's "Conduct has given Perfect satisfaction & has ensured...a Continuation of the Friendship & Countenance of all here who are adicted (sic) to the study of Botany." Aiton was sowing the seeds and Brown, who was "Busily employd in Examining the specimens", would soon send "a List of his names" corresponding with Cunningham's numbers. Macquarie "very improperly" found fault with Cunningham "for Complaining of his Treatment", and the Governor had been informed that Cunningham had acted "agreeably to...instructions". Banks feared "there is some jealousy in your Governor in favour of his Colonial Botanist who you do not mention but who has I am informd sent home some Plants different from [those you sent (?)] ."[150] Kew Garden was already reflecting the diligence of Cunningham and Bowie, and

> When the seeds you have now sent home shall flower I think Kew will be in as high a state of Beauty & Scientific excellence as it ever was...

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147 the Platypus, Ornithorhynchus anatinus Shaw.
148 Banks to Macquarie, July 1818. Banks Papers, ANL, G026 (MF).
149 Banks to Cunningham, 7 Aug. 1818. Banks Papers, ANL, G026. (MF).
150 Part missing. The number of such species must have been small. The number mentioned in Cunningham's journal (i.e. about 518 spp.) and the number of Fraser's specimens sent to Bathurst ("upwards of 500") tally too closely for there to have been much difference in the two collections made on the same journey.

Meanwhile, Cunningham should take heart; Banks hoped that his letter to the Governor "will induce him to give you more encouragement than he has done", but even if not, "you will recollect that he is soon to come home & is likely to be Replacd by a more Scientific Governor."[151]

On 26 December 1817, Cunningham accompanied Lieut. King ashore when the Mermaid anchored in Twofold Bay. He noted the plants around the watering place[152] and while the casks were being filled, he made observations and collections, noting that "many Port Jackson plants present themselves",[153] and recording a score or so of species.[154] The following day, Mermaid sailed beyond New South Wales waters,[155] and did not return to Sydney Cove until 29 July 1818, by which time Cunningham had "made a very valuable and extensive collection of dried plants and seeds"[156] along the western and northern coasts.

Meanwhile, Charles Fraser was busy between the Surveyor-General's expeditions, preparing additional collections for Macquarie to send to Earl Bathurst. Just after Oxley's second expedition set out, Macquarie gave into the charge of Captain George Weltdon of the ship Lady Castlereagh, "several Cabins, Tubs and Cases of the most admired rare and choice Flowers, Shrubs and

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151 Banks to Cunningham, 6 Aug. 1818. Banks Papers. ANL. G026 (MF). It is interesting to note that Macquarie's successor, Sir Thomas Makdougall Brisbane (1773-1860) was indeed "a more Scientific Governor". He had studied astronomy since 1795, had his own observatory, and was elected a Fellow of the Royal Society in 1810, five years before he applied for the governorship of N.S.W. His long-standing application would have been known to Banks who no doubt supported it. By the time Brisbane was finally appointed in November 1820, Banks had been dead for some five months.

152 Yellow Marsh-flower, Villarsia exaltata and a floating fern, Azolla sp.

153 Cunningham Journal, in Lee: Early Explorers, p.311.

154 Including a Trigger Plant, Stylidium graminifolium; daisies, Helichrysum obcordatum and Olearia dentata; a tea-tree, Melaleuca armillaris; a saltbush, Rhagodia billardieri; Crinkle Bush, Lomatia ilicifolia; Drooping Sheoak, Casuarina stricta; Wild Geranium, Pelargonium australe; Platysace lanceolata; Alyxia buxifolia; Veronica derwentiana, together with species of Eucalyptus, Goodenia, Zieria, Pittosporum and Dianella. Lieut. King also recorded Azolla, Eucalyptus and Casuarina. P. P. King: Narrative of a Survey, ... Lond., 1827, Vol. I., pp.4-5.

155 i.e. according to present boundaries, and hence beyond the range of this study.

156 King: op.cit., p.149. About 300 species--Cunningham to Robert Heward in J. H. Maiden: Sir Joseph Banks, Syd., 1909, p.145.

Plants of this Country."[157] These included "Gigantic Lillies"[158], "Rock Lillies"[159] and "Norfolk Pine Plants"[160], bound for the Emperor of Austria[161], Prince Leopold[162] and the Queen[163], to whom the Governor had "ventured to address a Proportion of these curious Productions" with the "request that your Lordship will have the goodness to Present my Dutiful Respects herewith to Her Majesty." Special care was taken with the selection for Prince Leopold as Macquarie had "learned from Colonel Addenbrooke that His Serene Highness wished to possess some of our most rare and choice Productions in this Kind."[164] To ensure that the living plants would receive ample care, Macquarie "Selected a Person named Alexander Colley", a convict "intelligent as to the manner of treating Plants", and granted him a pardon and "Free Passage, the better to secure his care and attention." It was a botanical disaster that after all this, the Lady Castlereagh should have been "Wrecked on the Coast of Madras."[165]

Allan Cunningham was examining Apsley Strait[166] when Oxley left Sydney on 20 May 1818 to trace the Macquarie River because of "the most sanguine expectation...that either a communication with the ocean, or interior navigable waters, would be discovered by following its course."[167] George Evans again went as second in command, and Macquarie

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157 Macquarie to Bathurst, 30 May 1818, HRA, IX, p.808.
158 Doryanthes excelsa.
159 Dendrobium speciosum.
160 Araucaria heterophylla.
161 Francis I (1768-1835).
162 Prince Leopold (1790-1865) son of Francis, Duke of Saxe-Coburg-Saalfeld; married May 1816 to Princess Charlotte (d.1817) daughter of George, Prince Regent; King of the Belgians, 1831.
163 Queen Charlotte Sophia, who died at Kew, 17 Nov. 1818.
164 Macquarie to Bathurst, 30 May 1818, HRA, IX, p.808.
165 Macquarie to Bathurst, 7 Feb. 1821, HRA, X, p.401.
166 between Melville and Bathurst Islands.
167 Oxley: Journals, p.209. Cf. Bathurst's despatch to Macquarie, 19 Aug. 1818, in which approval was given for Cunningham to receive £50 and Fraser £25 "as an acknowledgement of their Exertions" during the 1817 expedition. Oxley's account had "given rise to new Expectations that the River Macquarie...may lead to the Sea. It would be undoubtedly important that this point should be clearly ascertained...I cannot avoid recommending this as a fit Object of another Expedition." HRA, IX, p.829.

> directed Charles Frazer the Colonial Botanist, to join ...the Expedition...for the purpose of making Botanical Collections of all rare Trees, Plants, Shrubs, Flowers, and Seeds of Trees, Plants, &c. as he may discover... and as he is to be exclusively employed in making these Collections for His Majesty's Ministers at Home—and for the Government,

Oxley was

> to afford him every reasonable Assistance...to enable him to execute this Duty with effect and success; not suffering him to be interrupted in these Pursuits by employing him upon any Minor Duties unless absolutely necessary.[168]

Remembering the problem of private botanical enterprise in the earlier expedition, Macquarie enjoined Oxley

> to prohibit all other Persons Employed on the Expedition from interfering with Charles Frazer in making his Collections, by making similar Collections for Themselves and their Friends, which you are not to permit them to do...[169]

Clearly the Governor was more concerned with pleasing Earl Bathurst than the aged confidant of a sick King.

Oxley and the expedition's surgeon, John Harris reached Bathurst on 25 May and three days later the expedition proceeded to the advanced depot in the Wellington Valley where the boats were "in perfect readiness". Thus Oxley began to trace the Macquarie as he had the Lachlan, with a boat party, and a land party with the horses. He made frequent botanical references in describing this journey[170], and he continually referred to Fraser's excursions and collections. Following the river through Black Box and River Gum forests, and box and pine savannah country, the party reached a point near the present

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168 Macquarie's Instructions, 9 May 1818, Oxley Papers, ML. MSS5322, No.48, p.54.

169 ibid.

170 Mentioning, for example, apple, dwarf gums, cypress, casuarina (generally shown as 'camarina' in the Journal owing to a printer's misinterpretation of the MS), box, blue gum, acacia, persoonia, xanthorrhoea, iron-bark, stringybark, black-butted gum, turpentine, orchids (including "the genera cymbidium and dendrobium of Swartz") and some species by name: e.g. Cupressus macrocarpa (= Callitris sp., not identifiable, perhaps C.hugelii); Sterculia heterophylla (=Brachychiton populneum, Kurrajong); Sclerolaena paradoxa (= Bassia paradoxa, Burr Saltbush); Acacia pendula, Myall or Boree; Polygonum junceum (=Muehlenbeckia cunninghamii, Lignum); Arundo phragmites (=Phragmites communis, Common Reed); Casuarina torulosa, Forest Oak; and some rainforest plants listed later.

site of Warren on 23 June, when

> some fine and singular plants...enriched our collection: it would seem as if nature here delighted in wasting her most beautiful productions upon the 'desert air', rather than placing them in situations where they would become more easily accessible to the researches of science and taste.[171]

Five days later, Fraser "ascended Mount Forster, on which he was fortunate enought to procure many plants seemingly new..."[172] On the 29th the party first contacted the Macquarie Marshes, abounding in the Common Reed, Phragmites communis, "which grew...six or seven feet above the surface"[173] thus making the course of the main stream virtually impossible to trace. Surrounded by an "ocean of reeds", Oxley in the light of his similar experience on the Lachlan believed he was "in the immediate vicinity of an island sea, or lake." As Evans had discovered the Castlereagh during an excursion to the east, Oxley decided to head for this new river and thus emerge from the reedy labyrinth. Crossing the Castlereagh on 2 August, they continued east, over the Warrumbungles[174] where "many new, and otherwise interesting subjects of the indigenous botany were discovered,"[175] and across the northern side of the Liverpool Plains, which were discovered and named, to the Peel and Cockburn Rivers[176] where the "hills furnished abundant employment" for Charles Fraser.[177] In the gorge country on the Apsley River, it was noted that

> the rocks were covered with climbing plants, and the glens abounded with new and beautiful ones. Our collector descended one of those nearest to us, and was amply repaid by the acquisition of nearly sixty most desirable plants, some of which appeared even to constitute new genera.[178]

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171 Oxley: Journals, p.230.
172 Oxley: op.cit., p.238. Near present Kiameron Homestead some 30 m. N.N.W. of Warren.
173 Oxley; op.cit., p.243.
174 Oxley's Arbuthnot Range. See photograph p.43.
175 including a Geebung, Persoonia sp.; Grass Trees, Xanthorrhoea sp.; Kurrajong, Brachychiton populneum and "two or three coast plants". Oxley: op.cit., pp.261-2.
176 just north of the site of Tamworth.
177 op.cit.,3 Sept. 1818, p.286.
178 op.cit.,10 Sept. 1818, p.294. The plants included orchids, probably Cymbidium canaliculatum and D.linguiforme. Oxley's "clematides or virgin's bower of which...three species apparently new were discovered" probably included Clematis fawcettii and C.microphylla var. leptophylla.

Between the site of Walcha and Mt. Seaview, the expedition ran into mountainous country where deep valleys, "the sides of which were clothed with stately trees"[179], forced many a detour.[180] Oxley recorded Fraser's descent "into one of the valleys" where the trees were

> in full flower, which gave these stately trees a richness and beauty I had never seen equalled. A great variety of other equally interesting plants was also found, some of them new species of timbers.[181]

Having ascended and appropriately named Mt. Seaview[182], Oxley proceeded down the Hastings Valley. On the upper reaches of the river he found that the

> valleys and hills are astonishingly rich in timber of various kinds, many new, and their botanic supplies were inexhaustible. Indeed our cargo now principally consists of plants.[183]

Near the confluence of the Hastings and Ellenborough Rivers, there was "a thick detached brush"[184] wherein

> was a quantity of fine red cedar trees, affording us reason to hope, that this valuable wood might, as we advanced to the coast, be found in yet greater abundance. The timber generally might be termed heavy, consisting of blue gum, stringy bark and iron bark, with fine forest oaks.[185]

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179 op.cit., 18 Sept. 1818, p.303.

180 e.g. by going south around the steep valley of Joyce's Ck., Oxley encountered "a forest of stringy bark and blue gum trees of immense size and great beauty"; there also grew tree ferns Cyathea australis. Oxley: loc.cit. The trees were probably the Broad-leaved Messmate, E.obliqua and the White, Manna or Ribbon Gum, E.viminalis.

181 op.cit., 20 Sept. 1818, p.306.

182 where they found "blue gum and stringy bark, and forest oak of the largest dimensions", while in the gorges were "all the trees which are usually found in places of a similar description in the district of the Five Islands (with the exception of the red cedar)..." Oxley: Journals, 23 Sept. 1818, pp.311-12.

183 Oxley: op.cit., 26 Sept. 1818, p.314.

184 Oxley himself has a footnote at this point where Fraser has supplied the names, given here with current equivalents: "Many very beautiful shrubs inhabit these shaded thickets, of which the following may serve as a specimen. Tetranthera dealbata, Brown's Prodr. [=Litsea dealbata]; Cryptocarya glaucescens Br. [=Silver Sycamore or Native Laurel] genera of laurinae [=Family Lauraceae]. The Australian sapota fruit, Achras australis, Br. [=Black Apple or Wild Plum, Planchonella australis] Cargillia australis, a date plum [=Black Plum, Diospyros australis]; Myrtus trinervia of Smith [=Scrub Stringybark or Scrub Turpentine, Rhodamnia trinervia] and Ripogonum album Br." Oxley: op.cit., 29 Sept. 1818, p.316.

185 ibid.

More Red Cedar, Toona australis was noted further down the valley in "brushes" or rainforest patches between which "was open forest with good grass, casuarina or beefwood, and large timber."[186] These brushes "which lined the banks of the river" obliged Oxley to keep to the south so that he passed "under the high rocky peaked hill" which Fraser ascended.[187] Red Cedar became more frequent in the rainforests of the lower Hastings. After crossing King Creek[188], the valley was followed "over an excellent and rich country; alternately thick brush and clear forest" to Port Macquarie.[189] To the south Oxley travelled through fine hardwood forest country past the Three Brothers[190] and Camden Haven[191] to Cape Hawke[192], thence to Port Stephens[193] whither a boat was sent to convey the party to Newcastle.

Fraser had travelled through a wide variety of landscape on this journey, ranging from saltbush plains to sub-tropical rainforest. His difficulties in transporting material, especially over mountain ranges and across numerous coastal streams were great indeed. Certainly Oxley was pleased with his work:

> Mr. Charles Fraser, the colonial botanist, has added many new species to the already extended catalogue of Australian plants, besides an extensive collection of seeds, &c.; and in the collection, and preservation, he has indefatigably endeavoured to obtain your excellency's approval of his services.[194]

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186 Oxley: op.cit., p.318.
187 Broken Bago Mountain, near Wauchope.
188 named King's River after Lieut. P. P. King.
189 Oxley: op.cit., 8 Oct. 1818, pp.327-9. It is interesting that Fraser collected Corkwood, Duboisia myoporoides at Port Macquarie. (Benth.: Fl.Aust. IV, p.474). A drug industry using this plant was established in the district some 140 years later.
190 in the vicinity of which "the timber was chiefly black butted gum, stringy bark, turpentine tree, and forest oak." Oxley: op.cit., p.331. i.e. E.pilularis, E.eugenioides (et al. spp.) Syncarpia glomulifera and Casuarina torulosa.
191 where "the points nearest the sea", were "covered with Banksia integrifolia, of large dimensions, fit for any kind of boat timber." op.cit., p.334.
192 where William Blake, the harness-mender, was speared when he "entered the brushes...on the north side, with the design of cutting a cabbage palm." op.cit.,26 Oct. 1818, p.342. A thicket of Livistona australis still exists near Tuncurry School. See photograph p.60.
193 On 5 Nov. 1818 George Evans and three men went on to Newcastle to seek aid from the Commandant, Capt. Wallis.
194 Oxley to Macquarie, Port Stephens, 1 Nov. 1818. op.cit.,p.387.

The result was that in March 1819, Macquarie advised Earl Bathurst that he was sending by the Shipley

> three Cases containing all the rare and Choice Plants discovered and Collected by Mr. Charles Frazer, the Colonial Botanist, during the...last Expedition of Discovery under Mr. Oxley...

These cases were addressed to Prince Leopold, the Emperor of Austria and Bathurst himself, and were given into the care of the Governor's former aide, Lieut. John Watts, 46th Regt.[195] Paintings by John Lewin of eight of Fraser's specimens accompanied the collection[196], and so did a request from Fraser for "Certain Books treating on the Science of Botany"[197]--a request which Bathurst and the Lords Commissioners of the Treasury approved.[198] Bathurst was pleased to express his "sincere achnowledgement" of this material, adding that the collections addressed to him were assigned "to the different Public Establishments in this Country, to which he considered that they would be most acceptable."[199]

In July 1819, Macquarie sent yet another shipment of "Australian Seeds and Plants"[200]--the result of further work by Fraser[201]--which was entrusted to Captain Thomas Raine,[202] who would "have the honor of delivering them at Downing Street."[203] To compensate for the loss of material sent on the Lady Castlereagh in June 1818, the Governor despatched a further collection of "Plants, Seeds and Geological productions" for George IV, the Emperor of Austria, Prince Leopold and Earl Bathurst, in the hope that they would "prove Acceptable to the Royal and Illustrious personages, for Whom I

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195 Macquarie to Bathurst, 23 Mar. 1819, HRA, X, p.84.
196 Macquarie to Bathurst, 25 Mar. 1819, HRA, X, p.138. The drawings included four plants: "A Splendid Tree of the Proteaceae"; a species of Styphelia; an Acacia of the Liverpool Plains, and a species of a "Genus non descrip't."
197 Fraser asked for W. T. Aiton: Hortus Kewensis, Lond., 1810-13; Robert Brown: Prodromus Florae Novae Hollandiae...Lond., 1810; and C. H. Persoon: Synopsis Plantarum, Paris, 1805. HRA, X, p.136.
198 Goulburn to Macquarie, 17 July 1820. HRA, X, p.317.
199 Goulburn to Macquarie, 24 Mar. 1820. HRA, X, p.297. It seems therefore that Bathurst himself was not inclined to keep botanical novelties but gave them to botanical institutions, probably including Kew, and thereby supplementing, or competing with, the work of the Banksian collectors.
200 Macquarie to Bathurst, 22 July 1819, HRA, X, p.195. This material was for Bathurst, "The Emperor of Austria, Prince Leopold, and Monsr. Thouin of Paris."
201 Macquarie to Bathurst, 18 July 1819. HRA, X, p.177.
202 master of the ship Surry.
203 Macquarie to Bathurst, 22 July 1819. HRA, X, p.195.

OXLEY'S EXPEDITION, 1818

Above: Typical coastal heathland near Cape Hawke. Oxley and Fraser would have traversed this country in October, 1818.

Left: The thicket of Cabbage Tree Palm, Livistona australis, near Tuncurry School. It was in such a thicket close by that Oxley's harness-mender, William Blake, was speared on 26 October, 1818. (See p.58).

Photos.: L. G., June 1969.

have had the honor to procure them."[204] These collections were sent aboard H.M.S. Dromedary in the charge of "John Richardson (now a free man by Absolute Pardon) a Gardener by Profession."[205]

Macquarie's administration not only saw exploration of the country to the west of Sydney Town. Macquarie, who had visited Jervis Bay in November 1811,[206] sent Assistant-Surveyor George W. Evans to make a survey of the Bay in April 1812. Having landed and surveyed the southern and northern sides of the bay, Evans led his party on an arduous journey north-west across the Shoalhaven.[207] Evans noted "the finest forrest land I yet have seen". Ascending the foothills of the Cambewarra Range on 7 April, Evans struggled

> through the thickest Brush I ever saw: in some places we were under the necessity of creeping through the Vines; the largest timber I ever met with grows on their sides, they are Chiefly Gum, and a Tree with large Folage, with a smooth Bark, Cedars & Iron Wood, the Ridges are also full of underwood...[208]

The rigors of travelling through such rainforest made Evans decide the following day that he "must make the Coast." He felt

> at a loss for words to describe what we have gone through, we are all blood from the bites of Leiches, the Vines and Bous has almost striped us Naked...The land we passed over is very poor, yet bears exceeding lofty Trees and Cedars; not a Blade of Grass is to be seen, the Brush[209] prevents the rays of the Sun reaching the Ground, which is quite thick with Rotten leaves, sticks, and Trees quite decayed that causes a most disagreeable smell... I alted for the Night on a Point of Ground full of Cabbage Trees and free from underwood.[210]

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204 Macquarie to Bathurst, 7 Feb. 1821, HRA, X, pp.401-2.

205 Macquarie to Capt. Skinner, 5 Feb. 1821, CSIL, Bundle 15, pp.231-233, N.S.W. Archives, 4/1748. Apparently not the same John Richardson, gardener, who worked at the Botanic Gardens in the 1820s, and who accompanied both Oxley and Mitchell.

206 The Lady Nelson sheltered in Jervis Bay en route to Van Diemen's Land. Macquarie: Journals of Tours, pp.46-9.

207 at a point a little west of the site of Nowra.

208 G. W. Evans: Journal of an Expedition overland from Jervis Bay to Mr. Broughton's farm near Appin, ML. C709. See also Evans's Memorial to Gov. Brisbane, 1825, HRA, XI, p.646, where date is given as 1811.

209 It is interesting to note Evans's use of "Brush" meaning Rainforest. The term is still widely used in this sense.

210 Evans: loc.cit.

Proceeding east just north of the site of Berry, Evans made the coast and followed it north to the present site of Wollongong, then turning inland, he followed a ridge past Mt. Kiera, and finally reached William Broughton's farm at Appin on 17 April 1812, noting "Cedar and Sacifas" on the way.[211]

In 1815, Dr. Charles Throsby of Glenfield, "decidedly one of the best if not...the very best bushman in the colony",[212] led a small party to Appin, thence to "the top of the mountain range" from which they cut "a track down the mountain...at Bulli". Finding "abundance of grass and water.. they lost no time in returning to Liverpool."[213] Throsby continued his explorations, "actuated by no...view beyond that of finding grass for my cattle then in a state of want."[214] In August 1817, accompanied by Hamilton Hume, he penetrated the difficult Bargo Brush[215] to the country around the Wingecarribee River,[216] and in the following March, Macquarie sent Throsby and Surveyor James Meehan[217] to find an overland route to Jervis Bay. Thwarted by the Shoalhaven gorges, Throsby went downstream and ultimately reached Jervis Bay, while Meehan went inland to discover Lake Bathurst and the Goulburn Plains.[218] At the falls on Currambene Creek near Jervis Bay, Throsby noted that the forest country was "better calculated for agriculture than grazing, from the number of Wattle trees and tall indigo, timber thick, but not heavy, gum and Ironbark." He also noted "a range of tolerable good forest, timber Box..."[219] Red Cedar was also seen on this journey, but the search was mainly for good grass. Meehan skirted the shores of Lake Bathurst

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211 Evans noted considerable quantities of Red Cedar, Toona australis on this journey. The "Sacifas" would have been Sassafras, Doryphora sassafras.

212 Wentworth's opinion in his Statistical Account of the British Settlements in Australasia...3rd Ed., Lond., 1824, Vol. I, p.171.

213 It was another drought year in the County of Cumberland. Charles Throsby Smith: "Reminiscences of Forty-two Years' Residence in Illawarra", c.1865. MS. Illawarra Hist. Society.

214 Throsby to Macquarie, 3 Mar. 1821. Throsby Papers, 1810-21, ML. A 1940.

215 Bargo Brush, like Wombat Brush south of it, was not a "vine-brush" or rainforest, but a thick mixed eucalyptus forest. See photo on p.25.

216 Perry: First Frontier, p.98.

217 They were accompanied by Hamilton Hume, who with his brother John Kennedy Hume, had apparently explored part of the Wingecarribee in 1814. R. H. Cambage: "Exploration between the Wingecarribee, Shoalhaven, Macquarie and Murrumbidgee Rivers", JRAHS, 1921, p.217.

218 Perry: op.cit., p.98.

219 Throsby's Journal, 2 April 1818, quoted by Cambage, op.cit., p.225. The box was likely Grey Box, E.moluccana.

before turning north to the Goulburn Plains, and east towards his starting point. He found "some short Gum trees and Honey Suckle growing"[220] where "two large rushy marshes" joined the Lake.

At the end of April 1819, Throsby with Joseph Wild[221] and others, crossed the Wollondilly and went north, passing just west of the site of Oberon to Bathurst, thereby establishing a line of communication between the Governor's new outpost in the west and Throsby's "New Country", south-west of Sydney. In March 1820, Throsby, with Hamilton Hume and William Macarthur[222] made an excursion to Lake Bathurst and the Goulburn Plains. Just a year later he set out in search of the Murrumbidgee of which the aborigines had spoken. He crossed the Molonglo and Queanbeyan Rivers and finally located the Murrumbidgee some fifteen miles south of the site of Canberra.[223] Throsby's last important expedition was in November 1821, to Jervis Bay, after which he was "decidedly of the opinion that a good road may be cut from Sydney to that harbour."[224]

Joseph Wild ("tho' an illiterate man, is very useful, intelligent in the woods"[225]) on one excursion discovered Lake George, to the west of Lake Bathurst, in August 1820. He found it "brackish,...very beautiful" and surrounded by "box and blue gum with a little stringybark."[226] In October, Macquarie himself came to see this new discovery and progress on the road then being constructed to Bathurst from the south.[227] Three parties converged on the Lake. Throsby travelled from Glenfield with a preparation and reception party; the Governor and his suite[228] came from Sydney, and Mr. Commissioner John Thomas Bigge and his entourage, including John Oxley and Charles Fraser, arrived from Bathurst. The southern and western shores were examined,

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220 Probably Cabbage Gum, E.pauciflora and Ribbon Gum, E.viminalis and Banksia marginata.

221 Joseph Wild(e) (1773?-1847) Throsby's ex-convict servant, and companion on several explorations, had "accompanied Robert Brown in his botanical researches in N.S.Wales and V. D. Land", J. Backhouse: A Narrative of a Visit to the Australian Colonies, Lond., 1843, pp.437-8.

222 youngest son of Capt. John Macarthur, and a keen amateur botanist, of whom more later.

223 Perry: op.cit., p.99.

224 Syd. Gaz., 15 Dec. 1821.

225 Throsby's description of his bushman-servant. Throsby to Macquarie 4 Sept. 1820, quoted by Cambage, paper cited, JRAHS, 1921, p.261.

226 Letter written for Wild by Sylvester Hall, 28 Aug. 1820, op.cit., p.260.

227 Wild was the construction overseer.

228 including James Meehan, Rev. Robert Cartwright and Major Antill.

the water was now found to be fresh, and the nearby country was described by Macquarie as "composed of open forest, plains, and meadows...the soil generally good, fine herbage..."[229] Fraser's Lake George specimen of Blown Grass, Agrostis avenacea probably collected on this occasion, was indicative of the pastoral expectations held by the assembly for the newly discovered land.[230]

By this time, Surveyor James Meehan had led a small expedition from Wild's hut on the south side of the Wingecarribee, inland south of the site of Crookwell, and north across the Lachlan and Belubula Rivers, past the site of Orange to Wellington and beyond, then south-easterly to Bathurst.[231] He noted pine trees on the hills,[232] "black-butted gums"[233], "green wattle brush"[234], and manna, "the same that Mr. Evans found"[235]. Much reduced by the time they reached Bathurst these men were eating boiled nettles and drinking mint tea.[236]

Discovery of the Clyde River by Lieut. Robert Johnston early in December 1821[237] prompted an expedition[238] to seek an overland link between Lake George and Bateman's Bay early in 1822. The party went south to the Queanbeyan River, turned east to find "a most beautiful plain"—probably the Molonglo Plain—and then into "very mountainous country, very thickly wooded and very scrubby" where grew "iron and stringy bark, box, oak and gum."[239] Inland from Bateman's Bay were found "beautiful plains with very fine grass"

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229 Macquarie: Journals of Tours, 28 Oct. 1820, p.159. It was well that this group had something to celebrate. Throsby had been reported to Bathurst by Macquarie in 1817 as "discontented", and Oxley as "intriguing & discontented", HRA, IX, pp.500-501, and Mr. Commissioner Bigge no doubt aroused the Governor's usual suspicions. Fraser and Wild doubtless found something in common in discussing the vegetation.

230 Benth.: Fl.Aust., VII, p.579 under Deyeuxia forsteri.

231 Meehan left the Wingecarribee on 14 April 1820, and reached Bathurst on 22 May. Cambage: op.cit., pp.247, 256.

232 Black or Red Cypress, Callitris endlicheri.

233 probably Ribbon or Manna Gum, E.viminalis which has a dark base—certainly not the coastal Blackbutt, E.pilularis.

234 probably wattles of the Acacia decurrens group.

235 this again suggests E.viminalis. For Evans's manna, see HRA, VIII, p.613, and Appendix III.

236 Entries in Meehan's notebook, May 1829, quoted in Cambage, op.cit., p.257. The plants would have been the Native Nettle, Urtica incisa and one of the Native Mints, Mentha australis, M.diemenica, or M.satureioides. Cf. the use of mint tea during Oxley's first expedition

237 Syd. Gaz., 8 Dec., 1821.

238 Kearns, Marsh, Packard (or Packer) and an aborigine. William Kearns had previously accompanied Throsby to Jervis Bay in Nov. 1821.

239 near Braidwood. Cambage, op.cit., p.282, where MS Journal quoted.

and "stringey[240] and Iron Bark[241], Gum, Box[242], Oak[243] and Apple[244] tree on the sides of the Hills next the Sea Coast, the Trees are very straight and good for building."

In May 1823, Joseph Wild, who had accompanied Charles Throsby Smith and J. Vaughan to the south of Lake George in 1820, now accompanied Captain Mark John Currie and Major John Ovens to the same area, and beyond to the Murrumbidgee and Monaro Plains. Currie made some general botanical observations.[245]

These expeditions to the south and south-west of Sydney made in the days of Macquarie and Brisbane, were concerned largely with the search for grass, water and stock routes, along which droving could be done in times of fodder shortage. There is also evidence that care was taken to watch for Red Cedar and other useful timbers. Except where Charles Fraser was involved specimens collected were probably few, but considerable knowledge was gained of the extent and nature of different ecological regions which included rain-forest, wet and dry sclerophyll forest and savannah woodland. To some, the sight of a break in the trees was a relief. For example, James Meehan, when describing part of the Goulburn Plains:

> ...met a very extensive plain...without trees on, is in gently sloped hills, a great part good. The landscape is beautiful, being surrounded by a chain of grassy forest hills. To a person in the habit of seeing nothing but forest or brush land such an extent of clear land must be very novel and delightful.[246]

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240 e.g. White Stringybark, E.eugenioides, Yellow Stringybark, E.muellerana.

241 possibly Gully Ash, E.smithii, and/or Mountain or Black Ash, E.sieberi, both of which resemble ironbarks.

242 e.g. Blue Box, E.baueriana; Bosisto's Box, E.bosistoana; Coastal White Box, E.quadrangulata.

243 Forest Oak, Casuarina torulosa.

244 e.g. Apple-topped Gum, E.angophoroides; But But or Apple, E.stuartiana, or Black Gum, E.aggregata.

245 e.g. Between Bong Bong and the Wollondilly, they "passed through a country partly brush and partly forest"—an interesting distinction between rainforest and eucalyptus forest; on the Murrumbidgee there was "fine forest country", and "bullrushes" were noted; there were "several pine-trees of about two feet diameter growing on stony ranges"; and "rotten forest country" at the south end of Lake George. M. J. Currie: "Journal of an Excursion to the Southward of Lake George...", in B. Field: Geographical Memoirs on New South Wales, Lond., 1825, pp.369-380.

246 6 April 1818, Cambage, op.cit., p.235.

The natural extension of all this exploration was to penetrate the country right to the southern shores. Thus in October 1824, Hamilton Hume and William Hovell with six men, proceeded from Appin through Wombat Brush to Hume's station at Gunning near Lake George, thence to the south-west, across the Goulburn Plains, Yass Plains, Murrumbidgee and upper Murray, and ultimately to Corio Bay. The redoubtable Dr. William Bland, who edited the explorers' journal[247], recorded

> the names given by Messrs. Hovell and Hume to plants and other Botanical productions met with in their journey are here retained; no specimens of plants having been collected by those Gentlemen, from which alone their more precise denominations could have been ascertained.[248]

Clearly Bland appreciated the problem of satisfactorily identifying species from general descriptions and vernacular names, although he would have had some respect for the knowledge of Hume, an experienced native-born bushman. Bland referred to the "manna Tree"[249] on Hume's station, and to "a species of pine...on some of the highest mountains south of Lake George; the wood of which promises to be highly useful."[250] On the Yass Plains, the explorers noted "clumps of the Native Honeysuckle, sure indications of a loose, light, good soil"[251], and along the north side of the Murrumbidgee they found stringybark, box, "manna gum" and river oak. The botanical observations were general, and comparatively few of the plants mentioned can be even tentatively identified.[252] Near the site of Albury, they found the banks of the upper Murray,

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247 Wm. Bland (Ed.): Journey of Discovery to Port Phillip...by Messrs W. H. Hovell and Hamilton Hume in 1824 and 1825, Sydney, 1831.

248 Bland's Preface in op.cit., p.iv.

249 Bland referred to it as E.mannifera "not much unlike the box, and produces large quantities of a white sweetish substance...which falls from it during the winter in large quantities, a little after sunrise." Bland: op.cit., p.4. Very likely it was indeed E.mannifera, but E. rubida and E.viminalis are also manna-producing species in the area. See Appendix III.

250 Bland: op.cit., p.5. Probably Red or Black Cypress, Callitris endlich

251 op.cit., p.6. Banksia sp, usually considered to indicate poor, sandy s

252 e.g. Country "thinly wooded, but well covered with good grass"; "thickly wooded, and almost without grass"; "fine natural meadows"; "in the hilly ranges...the box and stringybark"; "in the limestone districts...the honey-suckle and a small species of blue gum"; "timber always good, continues to improve...a species of mountain gum, of the finest description"; "woolley, and black-butted gums and...a sort of box-gum" (probably Woolly-butt, E.longifolia, and Ribbon Gum, E.viminal were the first two species). Reference was also made to "the cow-pasture box" (perhaps E.bosistoana) and to "two small conical hills, usually barren,...but conspicuous for the number, variety, and beauty, the shrubs and plants--and those at the time in full flower--with which they were covered."