



JOSEPH HENRY MAIDEN, I.S.O., F.R.S., F.L.S.,
(1859-1925)

Government Botanist and Director of the Sydney
Botanic Gardens
1896 - 1924.

An untiring botanist who fully appreciated the value
of the history of his science.

Photo.: Mitchell Library.

BOTANICAL INVESTIGATION

OF

NEW SOUTH WALES

1811-1880

An examination of the means by which botanical knowledge of the area now known as New South Wales was gained and recorded during the seventy years from the publication of Robert Brown's Prodromus Florae Novae Hollandiae to the second year after the completion of George Bentham's Flora Australiensis.

A thesis submitted by Lionel A. Gilbert to the University of New England as requirement for the degree of Doctor of Philosophy, 1971.

PREFACE

"Much is said by those who first landed at Botany Bay and Port Jackson on the trees and plants and herbs of the new country, -- what I believe is now called 'the Flora'; but I do not remember a word in praise of its loveliness."

Anthony Trollope, 1873.¹

1. A. Trollope : Australia and New Zealand, Melb., 1873, p.143.

PREFACE

This investigation has arisen directly from an earlier one,¹ and it is indeed a continuation of it. A summary of the findings of that study is included in the Introduction, where the field of the present work is outlined. Although references will be made to the earlier thesis, material used previously is not presented again here.

The main sources of information include historical and botanical material, published and unpublished, in the Mitchell Library, Sydney; the Library of the National Herbarium, Sydney; the Library of the Australian Museum, Sydney; the Library of the N.S.W. Forestry Commission, Sydney; the Public Library of Victoria; the Library of New South Wales; the Archives Office of New South Wales; the Library of the National Herbarium, Melbourne; the National Library of Australia, Canberra; the Dixson Library at the University of New England; the Library of the Teachers' College, Armidale, and the Library of the Royal Botanic Gardens at Kew.

The interest which motivated the first investigation remains. In fact it has been intensified by the earlier research in which new issues and problems inevitably arose. But even a keen interest in a particular field of study is apt to wane at times especially when sources are difficult to locate or consult, or when their very existence is in doubt.

It is at such times that the encouragement and assistance received from others are most fully appreciated. Accordingly, I most gratefully acknowledge the kind help received from many people, among whom special mention must be made of the following:

The former Deputy Mitchell Librarian, Mrs Marjorie Hancock, the Associate Mitchell Librarian, Miss Suzanne Mourot, and the staff of the Mitchell Library, Sydney, for assistance readily and

1 L.A. Gilbert: "Botanical Investigation of Eastern Seaboard Australia 1788-1810 : an examination of the means by which botanical knowledge of the seaboard of eastern mainland Australia was gained so rapidly during the first twenty-two years of settlement." Submitted to the Department of History, University of New England, 1962. Hereafter this is referred to as Thesis I.

courteously given.

The Trustees of the Library of New South Wales for permission to include reproductions of portraits and other material in their care.

Mr R.F. Doust, Senior Archivist, N.S.W. Archives Office, for valuable references to papers held by the N.S.W. Archives Authority.

Mr R.T.M. Pescott, former Director of the Royal Botanic Gardens and National Herbarium, Melbourne, and Mr J.H. Willis, Assistant Government Botanist of Victoria, for a warm welcome and ready co-operation when working in the National Herbarium and Library of the Royal Botanic Gardens, Melbourne. Mr Willis's careful answers to many enquiries deserve special acknowledgement.

Mr Knowles Mair, former Chief Botanist, Royal Botanic Gardens, Sydney, for permission to work in the Herbarium and Library, and also to Dr Mary Tindale and Dr Joyce Vickery for helpful advice and information.

Mr Michael Lazarides and Mr Arthur Court, Australian Botanical Liaison Officers at the Royal Botanic Gardens, Kew, for obtaining valuable references from the manuscripts in the Kew Library.

Miss Phyllis Edwards and Dr William Stearn of the British Museum, and Dr Ronald Melville of Kew for helpful answers to enquiries.

The Archivist of the George-Augustus University, Göttingen, for sending microfilm material relating to the academic work of the Reverend William Woolls, and to Mr F. Holloway of the Department of German, University of New England, for arranging to have the very difficult manuscript transliterated and translated.

Vladimir Skalicky, of the Department of Botany, Charles University of Prague, for the loan of material relating to Franz Wilhelm Sieber, and for bibliographical advice.

The late Lady Stanham of Camden Park, for permission to examine papers of the Macarthur family on restricted issue in the Mitchell Library.

Miss Janet Cosh of Moss Vale, for essential information about her grandmother, Mrs Caroline Louisa Waring Calvert (née Atkinson),

and to Mr R.D. FitzGerald of Hunter's Hill, for information about his grandfather, Robert David FitzGerald.

Miss Margaret Dalrymple-Hay of Sydney for information about the work of her father, Richard Tycho Dalrymple-Hay.

Mr Marcel Auroousseau of Sydney, who placed at my disposal the whole of his Leichhardt material long before it was sent to England for publication. The Royal Society of New South Wales, the Linnean Society of New South Wales, and to Historical Societies throughout the State, for valuable assistance.

Mr V.C.N. Blight, N.S.W. Government Printer for permission to examine the resources of the Photographic Section of the Government Printing Office, and Mr A. Clifford, custodian of the photographic collection.

Sir Harold White, former National Librarian, and the staff of the Australian National Library, Canberra, for valuable assistance in locating references and in obtaining photographic material.

The Public Relations Officer, General Post Office, Sydney; Mr John Forsyth of the Research Branch of the N.S.W. Railways; and the Department of Main Roads for informative replies to queries.

Mrs Timonee Schaeffer, former librarian of Armidale Teachers' College and her successor Miss Nola Cummins, for obtaining a great number of essential references on inter-library loan, and the Libraries (especially the Public Library of South Australia and the Library of the National Herbarium, Sydney) which acceded to their requests.

The Librarian and staff of the Dixon Library, University of New England for access to the resources of the rare books collection and the microfilm library.

Mrs Edna Tucker of the Richmond River Historical Society, Lismore for locating many references for study in the Society's library.

Mr William Webster, F.R.P.S., Miss Shirley Dawson, A.R.P.S. and other members of the Photographic Department of the University of New England for preparing the illustrations from a variety of media.

Acknowledgements to many other people are made in the Appendices in Volume II, especially in that dealing with nineteenth century uses for native plants. Typing the oft-amended text has been a major task of which Miss Jan Eaton and Mrs Noeleen Urquhart have shared the major part. Thanks are also due to Mrs Pat Smith for preparing the Botanical Appendix from a rather difficult manuscript.

In the last decade considerable interest in the history of botany has been evident in England and the Continent. Botanical classics have been republished;² the history of Kew Gardens has been recounted,³ some English herbaria have been historically examined,⁴ and there has been some investigation of the botanical workers themselves--plant collectors,⁵ horticulturists⁶ and professional botanists⁷--and of the societies they established and supported.⁸

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- 2 e.g. the series entitled: Historiae Naturalis Classica, including such reprints as Carl Linnaeus: Genera Plantarum eorumque Characteres Naturales...5th Ed., (Stockholm, 1754) 1960; A.L. de Jussieu: Genera Plantarum secunda Ordines Naturales disposita...(Paris, 1789) 1964; J.J. Labillardière: Novae Hollandiae Plantarum Specimen, (Paris, 1804-6) 1966; and of particular Australian interest, Robert Brown: Prodromus Florae Hollandiae et Insulae Van Diemen, (Lond., 1810) 1960. Another reprint of Australian interest is J.D. Hooker: The Botany of the Antarctic Voyage of H.M. Discovery Ships 'Erebus' and 'Terror'...1839-1843..., (Lond., 1847-1860) 1963. The work compiled jointly by Hooker and Bentham has also been reprinted: Genera Plantarum, (Lond. 1862) 1965. The reprints have been made in Germany for English, German and U.S. publishers. In 1967 Bentham's Flora Australiensis was republished in facsimile through Anglo-Dutch co-operation.
 - 3 W.B. Turritt: The Royal Botanic Gardens, Kew, Past and Present, Lond., 1959.
 - 4 e.g. H.N. Clokie: An Account of the Herbaria of the Department of Botany in the University of Oxford, Lond., 1964.
 - 5 Kenneth Lemmon: The Golden Age of Plant Hunters, Lond., 1968. (The 'age' however, ends at 1836.)
 - 6 Ronald Webber: The Early Horticulturists, Lond., 1968.
 - 7 e.g. Mea Allen: The Hookers of Kew, 1785-1911, Lond., 1967.
 - 8 e.g. Harold R. Fletcher: The Story of the Royal Horticultural Society, 1804-1968, Lond., 1969.

The same degree of historical interest in botany is not yet apparent in Australia, although there are encouraging signs. For example, the Council of the State Library of South Australia intends to reprint some of Mueller's works,⁹ and the research work into the history of Australian science being carried out in the Basser Library of the Academy of Science, Canberra, is reflected in the publications of Mrs Ann Mozley,¹⁰ and in the Academy's Records.¹¹

In New South Wales, popular guides to wildflowers begun by J.H. Maiden in the 1890s were revived by Florence Sulman nearly sixty years ago,¹² and quite technical works for prescribed areas¹³ and for particular plant groups¹⁴ have answered clearly existing needs. In 1968, the late R.H. Anderson's The Trees of New South Wales went into its fourth edition, the late W.D. Francis's Australian Rain-forest Trees

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- 9 Iconography of Australian Salsolaceous Plants, Melb., 1889-91.
Iconography of Candolleaceous Plants, Melb., 1892.
Iconography of Australian Species of Acacia and Cognate Genera, Melb., 1887-1888.
 - 10 e.g. "Check List of Publications on the History of Australian Science", Aust.Jour. of Science, 1962 and 1964, and A Guide to the Manuscript Records of Australian Science, Canberra, 1966.
 - 11 Records of the Australian Academy of Science, Vol. I, No. 1, Dec. 1966, contains a paper based upon a chapter of Thesis I, L.A. Gilbert: "The Bush and the Search for a Staple, 1788-1810."
 - 12 F. Sulman: A Popular Guide to the Wild Flowers of New South Wales, Syd., 2 vols., 1913-1914. Note the current "Jacaranda" wildflower books, and the botanical guides in the "Periwinkle" series. Among the latter, Mervyn Millett's Australian Eucalypts, Melb., 1969, contains a brief historical introduction with biographical notes on Banks, Brown, the Hookers, Bentham, Mueller, Maiden and Blakely. Note also T.Y. Harris: Wildflowers of Australia, which went into its sixth edition in 1966.
 - 13 e.g. N.C.W. Beadle, O.D. Evans & R.C. Carolin: Handbook of the Vascular Plants of the Sydney District and the Blue Mountains, Armidale, 1962; J.H. Leigh & W.E. Mulham: Pastoral Plants of the Riverine Plain, Melb., 1965 and N.T. Burbidge & Max Gray: Flora of the Australian Capital Territory, Canberra, 1970.
 - 14 e.g. N.T. Burbidge: Australian Grasses, Syd., 1966-1970. The late Rev. H.M.R. Rupp's The Orchids of New South Wales, Syd., 1943 was republished in 1969 with a supplement to bring it up to date. The current revival of interest in native orchids is also reflected in several other well-illustrated works.

was republished in 1951, and again in 1971, forty-two years after its initial appearance. Apart from a work on George Caley¹⁵ and the publication of Banks's journal,¹⁶ nothing significant has appeared in the field of botanical history. In fact, except for sundry papers in journals,¹⁷ no work devoted entirely to the history of botany in New South Wales has ever appeared.

Between 1896 and 1924, Joseph Henry Maiden, then Government Botanist of New South Wales and Director of the Sydney Botanic Gardens, made some historical research into the careers of his predecessors and of certain botanical workers in various parts of Australia. Maiden was also interested in the history of the Botanic Gardens, and we owe to him the preservation of many letters and documents, either as transcripts or in their original form. The debt to Maiden in this study is clear enough in the acknowledgements to sources which, but for his interest, would surely have been destroyed. A notable example of this is the collection of papers relating to the Sydney Botanic Gardens, actually ordered for destruction, but now in the Archives Office of New South Wales.¹⁸ In some instances, Maiden recorded, without comment, the text of letters and other documents extant in his time. An attempt is made here to interpret these records, to consider their implications in their wider historical context, and to relate them to material of which Maiden apparently had no knowledge.

Field excursions associated with research into the collecting places of explorers and early botanical workers, the country penetrated

15 J.E.B. Curry (Ed.): Reflections on the Colony of New South Wales--George Caley, Melb., 1966.

16 J.C. Beaglehole (Ed.): The Endeavour Journal of Joseph Banks, 1768-1771, Syd., 1962.

17 The most important of these is J.H. Maiden: "Records of Australian Botanists," Proc. Roy. Soc. NSW, 1908, pp.60-132. More recent papers have appeared in The Australian Orchid Review, and in the Proceedings of some learned societies, e.g. J.H. Willis's paper on the botany of the Burke and Wills Expedition, Proc. Roy. Soc. Vic., 1959. A paper incorporating some material from this study was read before the Royal Australian Historical Society, Sydney on 27 May 1969. See L.A. Gilbert: "Plants, Politics and Personalities in Nineteenth Century New South Wales", JRAHS, 1970, pp.15-35.

18 See the Principal Librarian's note in NSW Archives 4/7577.

(x)

by pioneer settlers, the uses to which bush materials were put, the forests favoured by timber cutters, and other ecological aspects of this history, are represented by photographs which illustrate the text. Excursions were made along the entire coast, from Tweed Heads to Twofold Bay; along the Murray River and to various parts of the tablelands; to the McPherson Ranges, the Blue Mountains and the Snowy Mountains; to the Riverina and to the Darling; to the Barrier Range, and to the far north-western and the far south-western areas of the State. In thus searching for explorers' tracks and sampling ecological diversity, I often had the company of one or other of two colleagues, Mr Peter Metcalfe and Mr Robert Ross, whose interest and indulgence I am pleased to acknowledge.

"In discoursing on the Native Plants of Australia, it will be my endeavour to illustrate, first, the material uses to which some are, or may be, applied, either as supplying food or clothing for man, fodder for his flocks and his herds, timber for his ships, houses, implements, and utensils, or chemical and other properties useful in his manufactures. And second, the more refined moral and intellectual applicability of others, to add beauty and richness to our flower gardens, to add grace and grandeur to our parks, plantations and landscapes, and to increase our knowledge of the varied and beautiful phenomena of the vegetable world, by throwing light upon the science of botany, a science which I am inclined to believe is yet in its infancy, notwithstanding the wonderful progress made within the present century. To successfully fulfil such an endeavour, must appear a herculean task, and so I feel it. It is far above the capacity of any one man to master all this, and it is far above my capacity to really master even a portion of so vast an enquiry. I therefore enter upon it with considerable diffidence, convinced of my utter inability to do it the justice it deserves. Feeling this diffidence, I am nevertheless impelled to do what I can, encouraged by the conviction that however little information may be given, yet the intention will meet with your approval, and the shortcomings with your consideration and indulgence..."

Thomas William Shepherd to the Horticultural
Improvement Society, 1855.¹

1 Sydney Magazine of Science and Art, August 1857, p.51.

SUMMARY

The geographical and chronological limits of the field of enquiry are set and the problems to be investigated are stated in Chapter I. The overall purpose of this study is to investigate the means by which botanical knowledge of the area now known as New South Wales was gained and recorded during the seventy-odd years between the publication of the two classic works of Australian botanical literature--Robert Brown's Prodromus, published in 1810, and George Bentham's Flora Australiensis of which the final volume was published in 1878. The course of the investigation is indicated by a series of problems which form the bases of the enquiry made during the subsequent five chapters. These problems demand enquiry into the scientific, political, economic and utilitarian factors which directly or indirectly promoted the botanical investigation of New South Wales during this period; the same problems also involve enquiry into the personalities and personal relationships associated with that investigation.

The second Chapter reviews the botanical significance of the exploration of New South Wales after 1810 by both private and government-supported expeditions. The source of official policy which determined the botanical activities of explorers is sought and the implications of that policy are examined. Explorers who gave special attention to botanical matters are given appropriate attention, both in Chapter II and in the associated Appendices.

Sometimes the expansion of settlement occurred as a direct result of exploration, and sometimes exploration and settlement were simply different aspects of the same process of population dispersal. Either way, the settlers were obliged to investigate the bush environment and to establish some kind of relationship with it. According to the ecology of the country, one settler's "bush environment" was apt to be quite different from that experienced by others. The impact of the settlers upon the bush, whatever its ecology, was necessarily violent at the outset and for long afterwards. The bush environment was, and indeed continues to be, vastly modified. In Chapter III, the nature

of this impact and the changing relationship between the settlers and the bush are investigated. In this close association between settlers and bush may be discerned the origins of the traditional "bush legend." The basis of this legend is most clearly seen in the remarkably diverse needs which the settlers virtually forced the bush to fulfil. Evidence of the most intensive empirical investigation of the plants of the various ecological areas is provided in Appendix VIII which is considered an essential, if anecdotal, extension of Chapter III, and also of Chapter IV. .

The trees of the new environment not only made the greatest impression upon the settlers, but also provided many of the basic necessities of bush life. The timber trees and the men who made a special study of the cutting, preparation, use and testing of timber, are considered in Chapter IV, and an assessment is made of the contribution of such activities to botanical knowledge.

In Chapter V, the history of the Sydney Botanic Gardens, the Colony's single botanical (and oldest scientific) institution is traced in some detail in order to determine the official and personal factors which led to its establishment and to ascertain how its nature, purpose, function and contribution developed between the incumbencies of Charles Fraser and Charles Moore.

Whether made through such institutions as the Botanic Gardens, or through learned societies, with the aid of patronage or without it, contributions to botanical knowledge are dependent upon the enthusiasm and application of individual investigators. In Chapter VI the roles of these enthusiasts and their impact upon botanical knowledge are assessed. They are found to be an extremely diverse group of people, largely amateurs, some professional, largely resident, some itinerant. Their work often suffered through the lack of means of having it placed upon permanent and accessible record and communicated to others. This problem was ultimately resolved by the public press, the journals of learned societies and the development of a specifically Australian botanical literature. Mueller's Fragmenta and Bentham's Flora Australiensis contain records not only of the indigenous plants of Australia, but also of a veritable army of amateur volunteers. Flora Australiensis, termed here "the Grand Synthesis", is given special attention, for

without some appreciation of the ways in which this monumental work was contemplated and compiled, the full significance of the period reviewed could not have been assessed. Flora Australiensis marks the culmination of Australian botanical endeavour in the nineteenth century, yet it was not published in Australia, nor did its author ever visit Australia. The reasons for this extraordinary situation are duly considered. The final volume of Flora Australiensis was published in March 1878, and this would have been a convenient point at which to end this study, but it was considered better to extend the period to 1880, for by then some assessment of the impact of Bentham's work could be made. This year also marked the arrival of Joseph Henry Maiden whose work meant the beginning of a new phase in the botanical investigation of New South Wales.

Towards the end of the seventy years surveyed there is discerned some degree of alarm at the overall effects of European colonisation upon the vegetative environment. Those who investigated the flora with lens and scalpel became appalled at what was being achieved with axe and fire. The resultant activities of the few people whom we would now call conservationists, receive some attention at the conclusion of Chapter VI.

In the conclusion, Chapter VII, the initial problems are reiterated and answered in the light of the evidence presented, and some indications are given of the subsequent nature of botanical investigation of New South Wales, of the personnel involved and of the issues which they were to face in making their particular contribution.

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- IV Plants collected during Mitchell's First Three Expeditions, 1831-1836, and described by Dr John Lindley as new species, 1838.
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ABBREVIATIONS

<u>Ag.Gaz.NSW</u>	<u>The Agricultural Gazette of New South Wales.</u>
ANL	The National Library of Australia, Canberra.
<u>Aust.Dict.Biog.</u>	<u>Australian Dictionary of Biography.</u>
Benth.: <u>Fl.Aust.</u>	G. Bentham : <u>Flora Australiensis.</u>
BT	Bonwick Transcripts, Evidence of Bigge Enquiry, Mitchell Library, Sydney.
<u>Contrib.Nat.Herb.NSW</u>	<u>Contributions from the New South Wales National Herbarium.</u>
<u>E.</u>	<u>Eucalyptus</u> (unless the immediate context clearly indicates otherwise)
<u>HRA</u>	<u>Historical Records of Australia, Series I.</u>
<u>HRNSW</u>	<u>Historical Records of New South Wales.</u>
<u>JRAHS</u>	<u>Journal and Proceedings of the Royal Australian Historical Society.</u>
L.G.	the author (used only in photograph captions).
MF (and FM)	microfilm
ML.	The Mitchell Library, Sydney.
<u>Monitor</u>	The <u>Monitor</u> and the <u>Sydney Monitor.</u>
NSW CSIL	N.S.W. Colonial Secretary's In-letters.
NSW CSOL	N.S.W. Colonial Secretary's Out-letters.
<u>Proc.Roy.Soc.NSW</u>	<u>Journal and Proceedings of the Royal Society of New South Wales.</u>
<u>Proc.Linn.Soc.NSW</u>	<u>The Proceedings of the Linnean Society of New South Wales.</u>
RRHS	The Richmond River Historical Society, Lismore.
<u>SMH</u>	The <u>Sydney Herald</u> and the <u>Sydney Morning Herald.</u>
<u>Syd.Gaz.</u>	The <u>Sydney Gazette and New South Wales Advertiser.</u>
Thesis I	L.A. Gilbert : Botanical Investigation of Eastern Seaboard Australia, 1788-1810. B.A. Hons. Thesis, Dept. of History, University of New England, 1962.
<u>V. & P.</u>	<u>Votes and Proceedings.</u>

Note : Unless otherwise stated, "See photograph on p.---" and "See Chapter --, p.---" both refer to this study.