

BOTANICAL STUDIES BY CHARLES KERRY

No. 1419, Woollybutt,
E. longifolia, Circumference,
33 ft. Height, 230 ft.



No. 2092, Wild Orange Tree, Capparis mitchellii. From
C. Kerry & Co.: Forest Flora : Photographs, M.L.Q634.9/K

BOTANICAL STUDIES BY CHARLES KERRY

No. 1418. Turpentine,
Syncarpia glomulifera,
Circumference, 30 ft.,
Height, 200 ft.



No. 2089 "Gidyah Trees", Gidgee, Acacia cambagei. From
C.Kerry & Co.: Forest Flora : Photographs, L.L.Q634 9/K.

least until the end of the century, and the skill of men like Edward William Minchen³⁸² was long respected and utilised, especially in the production of well-illustrated botanical works.³⁸³

iv. Experimentalists.

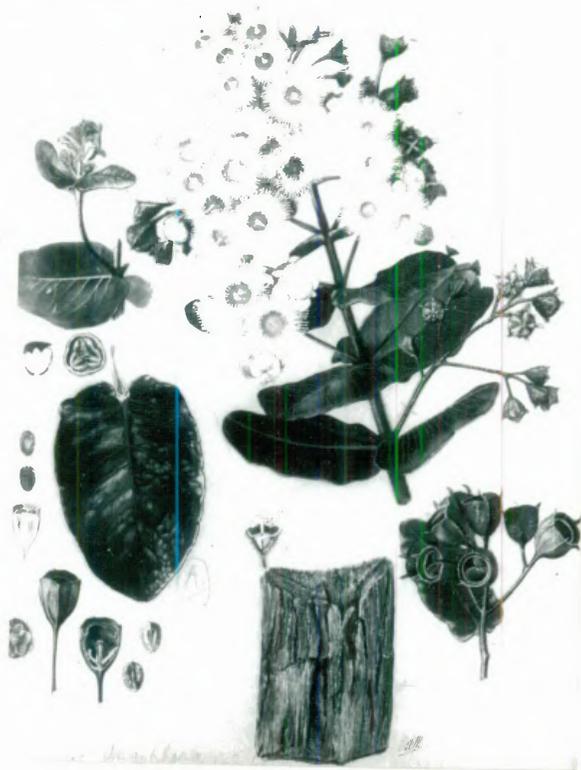
As shown elsewhere, the search for a staple item of export prompted a thorough examination of the bush during the early years of settlement. The Governors who administered the Colony before the answer was found in wool encouraged investigations and experiments which might promise a supply of plant fibre, dye-stuffs, tannin, gum or timber.³⁸⁴ In the best Antipodean tradition, one of the earliest and most industrious botanical experimentalists was a convict, John Hutchison,³⁸⁵ who in 1810 announced from a Portsmouth hulk that "experiments performed under a multitude of inconveniences not to be removed in a place of this description", had shown "Botany Bay Oak" to be "one of the most valuable woods in the British Empire".³⁸⁶ To some,

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- 382 E.W. Minchen (1852-1913) was born in Perth, but moved to Melbourne and came under the influence of Victorian artists during the 1860s. In 1874 he was appointed to the Victorian Lands Dept. as a lithographic artist. Coming to N.S.W., Minchen joined the Survey Branch in 1879. In April 1894 he transferred to the Government Printing Office, remaining there until his death in Oct.1913.
- 383 See photographs on p.639. For originals see E.W. Minchen : Botanical Sketches and Drawings, M.L.D31. See also J.H. Maiden (assisted by W.S. Campbell) : Flowering Plants and Ferns of New South Wales, Syd., 1895-1898.
- 384 See Thesis I, Chapter IV, and L.A. Gilbert : "The Bush and the Search for a Staple, 1788-1810" in Records of Aust. Academy of Science, I, 1, pp.6-17.
- 385 John Hutchison, a Halifax wool-stapler, was a man of "strong natural Mechanical Genius...esteemed one of the most experienced Bleachers" whose "researches in the Art of Dying (sic) have been attended with uncommon success". Various misfortunes prompted him "in an unguarded moment to subject himself to the Penal Laws of the Land" and in Aug.1810 he was sentenced for forgery. See W.H. Ireland's testimony in HRA, VII, p.543.
- 386 Hutchison's statement in HRA, VII, p.544. The oak (either Casuarina torulosa, C.glauca or C.cunninghamiana) which Hutchison used as dyewood, was apparently taken to England about 1802, for by the time of Hutchison's experiments the timber had been exposed to the weather "in this country for upwards of seven years". op.cit., p.543.

EDWARD WILLIAM MINCHEN AND HIS BOTANICAL ART.



EDWARD WILLIAM MINCHEN (1852-1913) whose "love of nature made him a most accurate and observant draftsman..." (W.A. Gullick, 1915, in ML. D31).



Dwarf Apple, Angophora cordifolia, c.1893.



Flax-leaved Tea-tree, Melaleuca linariifolia, c.1893.



White Mangrove, Aegiceras corniculatum, Lane Cove River, c.1893.

Originals coloured, ML. D31.

the approbation Hutchison received from the Society for the Encouragement of Arts, Manufactures and Commerce must have appeared to vindicate rather than to condemn the decision to transport Hutchison for life to the very source of his "valuable wood". He arrived at Port Jackson in the Guildford on 21 January 1812,³⁸⁷ warmly recommended to Macquarie's indulgence.³⁸⁸

Macquarie was happy to assist Hutchison "to procure an accurate account of some the Natural Products of New South Wales" so earnestly requested by Earl Bathurst,³⁸⁹ and he obligingly supplied Hutchison with "Copies of the Papers" which declared support for his experiments and indicated what was expected of him.³⁹⁰ Thus apprised of official favour, Hutchison plagued the Governor with requests for materials and equipment, including "several Demands of so extravagant a Nature" that Macquarie sought further guidance from London.³⁹¹ Hutchison conducted himself well, gained a conditional pardon and entered into partnership with Simeon Lord, but by April 1814, Macquarie was

much Inclined to believe that his Knowledge and Talents have been much over rated by the partiality of his Friends at Home...as to Scientific Principles, I apprehend he will be found very deficient...Mr. Hutchison is so very unsteady in all his pursuits, that I can scarcely believe his Researches of any Subject will be of the least Importance to the World.³⁹²

Simeon Lord had agreed, and the partnership was dissolved.³⁹³ Realising

387 HRA, VII, pp. 540, 646.

388 Hutchison had many supporters including Lord Liverpool, the Earl of Casselis, Under Secretary Robert Peel, Lord Bathurst, Lord Sidmouth, various members of the Society of Arts, and even the Prince Regent. HRA, VII, pp. 355, 540 et seq. This is clear evidence of the importance still placed upon the search for exportable commodities from the Australian bush.

389 Bathurst to Macquarie, 12 Nov. 1812, HRA, VII, p. 540.

390 Macquarie to Bathurst, 30 Apr. 1814, HRA, VIII, p. 210.

391 *ibid.*

392 Macquarie to Bathurst, 30 Apr. 1814, *op. cit.*, p. 211.

393 "All my experieiments (sic), Since I came here, was chiefly at Mr. Lord's". Thus Lord's impounding of Hutchison's "Observations" and "Chymical Agents" caused "great loss and almost ruien". (sic). Hutchison to J.T. Campbell, 10 Dec. 1813, HRA, VIII, p. 216.

by the end of 1813 that the "Usual Condescending goodness and consideration"³⁹⁴ of the Governor had been sorely strained, Hutchison submitted his first and only report on his "observations and Experiments on the Natural Productions of New South Wales" in March 1814. This long report, based on "some Thousands of Experiments on Woods, Roots, and Barks" was apparently received with quiet regret, and thereafter expressions of faith in John Hutchison's likely impact on colonial exports faded from official correspondence.³⁹⁵

Hutchison's experiments were chiefly concerned with the production of dyes, tans, bleaches, colouring pigments, lamp-black and potash, and with the processing of local wool, which he considered "the Softest, Kindest and most Elastic to Work of any I have ever put thro' my Hands".³⁹⁶ The continuing export of timber³⁹⁷ and the growing export of wool greatly reduced official encouragement to find bush materials upon which to base any new and uncertain industry, yet the enthusiasts continued their investigations and conducted their experiments.

The diminution of interest in N.S.W. on the part of the Society of Arts was not matched by the Royal College of Surgeons, whose questionnaire concerning the population, health, climate and natural resources of the various Colonies was sent to Governor Darling in May 1829.³⁹⁸ One of the questions was "What are the medicinal substances of the country, and how are they prepared?" Darling

394 Hutchison to Campbell, 10 Dec. 1813, op.cit., p. 217.

395 For the Report, see Hutchison to Macquarie, 31 Mar. 1814, HRA, VIII, pp. 220 et seq. Notwithstanding "the Want of a Mechanical Power, Chymical Apparatus, Agents, and Re-agents" (Hutchison to Campbell, 7 Dec. 1813, HRA, VIII, p. 213) Hutchison carried out an astonishingly diverse range of experiments using such plants as Blue Gum, E. saligna; White Gum, E. haemastoma; Smooth-barked Apple, Angophora costata; Green Wattle, Acacia decurrens group.

396 Hutchison's Report, HRA, VIII, p. 230. Hutchison added: "Wool I look upon as the Staple Commodity of the Country".

397 See Chapter IV.

398 Under Sec. Horace Twiss to Darling, 31 May 1829, HRA, XIV, p. 899.

referred it to James Bowman³⁹⁹ and Donald McLeod.⁴⁰⁰ McLeod was hesitant to commit himself since

this question requires much time and means and opportunities of making experiments before any definite answer can be given,⁴⁰¹

but he conceded that the "Gum of the Green Wattle"⁴⁰² and "a dedoction of the Bark of the Willow"⁴⁰³ were "popular Medicine in cases of Dysentary and Diarrhea" and "in high repute".⁴⁰⁴ Since "experiments have rarely been made" McLeod had long sought "to acquire a definite and distinct knowledge of the Medical substances of the Colony", but felt

far from being ready to give the results to the Public, because I am not satisfied with them myself.⁴⁰⁵

This search for "definite and distinct knowledge of the Medical substances" which had begun with Surgeons John White and Dennis Consideren of the First Fleet, continued throughout the nineteenth century and

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- 399 For James Bowman (1784-1846) Principal Surgeon and Inspector of Colonial Hospitals, see Aust.Dict.Biog., 1, pp.137-138.
- 400 Deputy Inspector of Military Hospitals, McLeod furnished a more substantial answer than Bowman. See NSW Gov.Desp.1830, Vol.17, ML. A1206, pp.251-256 and HRA, XV, pp.371-378, where some key words have been incorrectly transcribed--e.g. "Rinal" for "Kino"; "hostile" for "hastile".
- 401 McLeod in NSW Gov.Desp.1830, Vol.17, ML. A1206, p.254.
- 402 Acacia decurrens group.
- 403 Acacia longifolia.
- 404 McLeod in op.cit., p.253. He also referred to the early bush remedies prepared from the Sydney Peppermint, E.piperita and from the Grass Tree, Xanthorrhoea hastile.
- 405 McLeod in op.cit., p.255. See the "Bush Materia Medica" in Appendix VIII, pp.101-113.

far beyond.⁴⁰⁶ In 1834 the Medico-Botanical Society of London was interested to hear Dr Robert Mudie's "Observations on some Medicinal Products of Australian Plants". Mudie regretted that the Australian flora had "not been examined so minutely" as to add "to the materials of the healing Art", but this, he maintained, was partly due to the "vast improvement...in Chemistry" of the previous century which

had a natural tendency to mineralize the Pharmacopoeia and take off the attention of enquiring minds from the Medical properties of vegetables.⁴⁰⁷

Mudie claimed that

the principal Australian substances which present themselves to the enquiries of the Medical Botanist are chiefly Gums or Resins...and Oils,⁴⁰⁸

the latter "chiefly obtain'd from the Genus *Melaleuca*".⁴⁰⁹ There was

406 There were warnings against being too sanguine, e.g. that of J.D. Hooker, see introductory quotation to the "Bush Materia Medica" in Appendix VIII. Note however, the interesting, but little-known series of experiments in more recent times conducted by R.T. Dalrymple-Hay, first N.S.W. Forestry Commissioner, during his retirement, 1926-1943. In 1912, Dalrymple-Hay's brother-in-law, C.H. Cheesbrough, of Broke, near Singleton, draw attention to a species of Mintbush, *Prostanthera cineolifolia*, so named because of the high content of the essential oil cineol in its leaves. As this plant was already considered valuable in cases of influenza and pulmonary complaints, Dalrymple-Hay leased some land, near St.Albans, where it grew in profusion. He established a still and produced an ointment used to aid the treatment or healing of "cuts, sores, burns, bruises, etc..." It was "gradually extended to, and proved to be efficacious in the treatment of...catarrh...haemorrhoids, rodent and other ulcers...rheumatic joints, etc." The ointment was registered under the trade name of T.C.L. (apparently from "Thercinol"). The recipe was 1lb White petroleum jelly; $\frac{3}{4}$ oz. Paraffin Wax, reduced to liquid form, and 1 part of Thercinol oil to every 4 parts of the base liquid. This oil comprised $\frac{2}{3}$ of the essential oil from the plant + $\frac{1}{3}$ Tetrol. (Papers of R.T. Dalrymple-Hay, by courtesy of his daughter, Miss Margaret Dalrymple-Hay, 1965). See also Proc.Roy.Soc.NSW, 1912, pp.103-110. A bushfire burnt out the land and destroyed the still.

407 Mudie in ML. A2133.

408 *ibid.* See the "Bush Materia Medica" in Appendix VIII, pp.101-113.

409 *ibid.* "The Gums and Resins" were "chiefly obtain'd" from Xanthorrhoea, Acacia and Eucalyptus.

also a manna with medicinal possibilities.⁴¹⁰

Within the Colony itself, the first issue of the Sydney Magazine of Science and Art announced in 1857 :

No one imagines that the stores of Science⁴¹¹ are exhausted; our aim will be to explore her treasury, and to record the achievements of those master-minds that are daily compelling her to yield up her secrets for the benefit of the human race.⁴¹²

It seemed inconceivable that "Nature Bounteous Nature"⁴¹³ should not answer all of man's needs if he made the appropriate investigations. The needling point was that despite advances in science generally, the great expectations held for the discovery of all manner of Australian botanical elixirs, was not being realised sufficiently quickly or scientifically, notwithstanding an impressive, if largely unproved, "Bush Materia Medica" in which many settlers and a few physicians pinned their faith.⁴¹⁴ After all, as T.W. Shepherd, the forthright proprietor of the Darling Nursery pointed out in 1871,

410 See Appendix III.

411 used here to mean "Nature", it seems.

412 Syd.Mag.Sci. and Art, I, 1858 (1857), p.1. In April 1857, Carl Wilhelmi told Melbourne newsreaders that he was "convinced that the vegetable kingdom of Australia has as valuable properties as that of any other part of our globe, and it would be very desirable that greater attention were paid to the economic and pharmaceutical branches of botany than has heretofore been the case". Argus (Melb.) 22 April 1857. Wilhelmi, a native of Dresden, was one of Mueller's assistants who served as Acting Director of the Melbourne Botanic Gardens while Mueller was away with Gregory's Expedition, 1855-1856. He returned to Dresden in 1865. See Report Eleventh Meeting Aust.Assoc.Adv.Science, Adel., 1908, p.179; Report Thirteenth Meeting Aust.Assoc.Adv.Science, Syd., 1912, pp.236-237. Bentham acknowledged some of Wilhelmi's N.S.W. specimens in Flora Australiensis. See Appendix I.

413 John Hutchison's term in his Report of 31 Mar. 1814, HRA, VIII, p.231.

414 See Appendix VIII, pp.101-113.

it has often been suggested and is a very common and natural belief that nature always furnishes--in every country, a vegetable remedy, peculiar to itself, for every complaint that humanity may suffer from, of a character influenced by the climate or other features of that country. This feeling is, to a certain extent, inherent, and should lead us to search and strive to discover the qualities of our vast, interesting, and in many respects, remarkable flora.⁴¹⁵

Shepherd warned to his task. In 1872 he claimed that the Colony was failing the world if "means for ascertaining the qualities of our natural vegetation" were not more energetically devised, for

scientific and philanthropic men, in all civilized countries are awaiting, with anxious expectation, our exploration of our vast and promising fields. While we, apparently ignorant to that anxiety, or even of the existence of anything to explore, are positively not taking a single step in that direction. Long since we ought to have had in operation, some state machinery for this purpose. Not an indigenous crumb, shred, or minim, of bread, garment, or medicine, have we presented to the world...Where is our shame? Have we experienced any? No!⁴¹⁶

Shepherd's outburst emphasised a point he did not explicitly make, namely, that the taxonomists had virtually completed their major contribution. Plants had been discovered, named, and allocated positions in various "systems", thereby providing the terms of reference so essential for work in such fields as plant geography, plant morphology, plant physiology and biochemistry. The success of any chemico-analytical approach depended upon workers with formal training in chemistry, as demonstrated in Victoria by Mueller and Bosisto.⁴¹⁷ Mueller, a devout Lutheran, was partly motivated by the belief that every new application of plants to medicine marked the further fulfilment of scripture wherein St. John the Divine had spoken of

415 T.W. Shepherd in NSW Med.Gaz., II, 1871-1872, p.5.

416 op.cit., p.333.

417 See also Chapter III, p.185 and Chapter V, p.515. See also a recent work, Alfred Stirling : Joseph Bosisto, Melb., 1970.

"the tree of life" whose leaves "were for the healing of the nations".⁴¹⁸ During the 1870s and 1880s, amid considerable debate about the beneficial effects of Eucalyptus exudations and extracts,⁴¹⁹ some workers attempted to consolidate and to summarise knowledge gained in the bush and in the laboratory of the medical uses of plants.⁴²⁰

If Thomas W. Shepherd's remarks had been intended as a veiled attack on the shortcomings of his old enemy, Charles Moore, Director of the Sydney Botanic Gardens⁴²¹, they missed their objective, for Moore wholeheartedly agreed. As early as 1864 and as late as 1880, Moore appealed for similar action.⁴²² When Shepherd died in 1884⁴²³, he should have had the satisfaction of knowing that his challenge had been accepted in N.S.W. some three years before by a man with the necessary

418 Revelat. xxii, 2. Mueller : Eucalyptographia.

419 See for example, SMH, 3 Apr.1871; 23 July, 7 Aug. and 13 Aug. 1872; 19 Feb.1873; 7 Jan.1875; 7 May and 21 Aug.1877. Also W. Woolls : "On the Sanitary Properties of Eucalyptus", Victorian Naturalist, 1885.

420 e.g. T.W. Shepherd in NSW Med.Gaz., II and III, 1871-1873; Mueller's translation and expansion of G.C. Wittstein : The Organic Constituents of Plants and Vegetable Substances and their Chemical Analysis, Melb., 1878; F.H. Bailey : "The Medicinal Plants of Queensland", Proc.Linn.Soc.NSW, 1880; E.H. Rennie : "On the Acids of the Native Currant (Leptomeria acida)", Proc.Roy.Soc.NSW, 1880 and "Notes on the Sweet Principle of Smilax glycyphylla" (sic), Proc.Roy.Soc.NSW, 1886; W.Woolls : "Plants of N.S.W. having Medicinal Properties", Victorian Naturalist, 1887 ("Though New South Wales possesses many valuable remedies from the vegetable kingdom...yet the medical botany of the colony is only in its infancy, and little has been done in a scientific way to make known the uses of plants supposed to be efficacious"); J.H. Maiden : "Bibliography of the Chemistry of Indigenous Australian Vegetable Products", Report First Meeting Aust.Assoc.Adv.Science, Syd., 1889, pp.183-193.

421 For Shepherd's attack on Moore in 1854, see Chapter V, p.506.

422 See Chapter V, p.515.

423 SMH, 29 Aug.1884.

qualifications and energy, Joseph Henry Maiden⁴²⁴, whose first major work⁴²⁵ would have given great pleasure to the Darling Nursery's former proprietor.

In 1895, after fifteen years in the Colony, Maiden was prepared to admit

it is said that every plant has its use, if we can only find out that use, and no doubt there is a large amount of truth in this homely saying.⁴²⁶

Some saw this "truth" amply demonstrated in a single species⁴²⁷, while

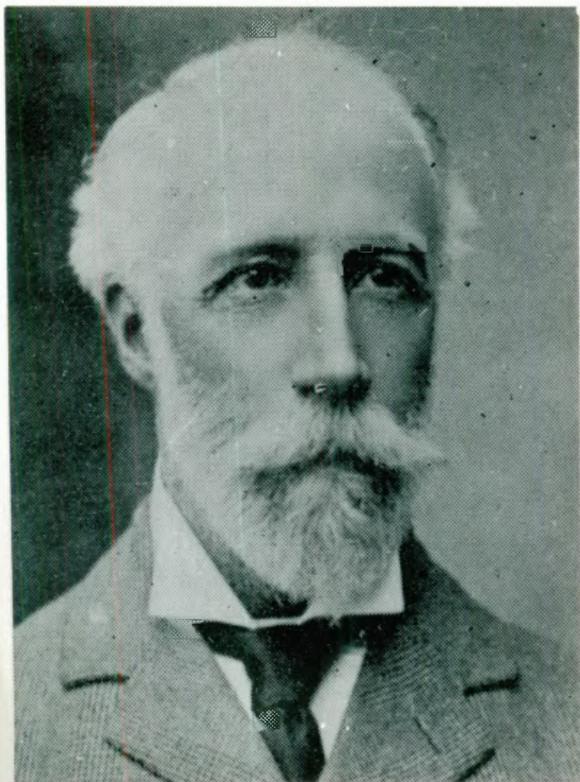
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- 424 Maiden, who has often been mentioned throughout this study, was born in London, 25 Apr. 1859. He demonstrated in chemistry at school and studied science at the University of London before coming to Sydney for health reasons in 1880. Maiden quickly familiarised himself with Australian plants by attending some of Charles Moore's lectures, meeting the Rev. Wm. Woolls, corresponding with Mueller and making regular excursions into the bush with Joseph James Fletcher (1850-1926), science teacher at Newington, 1881-1885, and secretary of the Linnean Society of N.S.W., 1886-1919. Fletcher made a special study of the Hawkesbury Sandstone flora. Maiden became successively Curator of the Technological Museum, consulting botanist to the Department of Agriculture and Forestry, Superintendent of Technical Education and Director of the Sydney Botanic Gardens.
- 425 J.H. Maiden : The Useful Plants of Australia, Syd., 1889. See Chapter V, pp. 515-516. This book did much to dispel the assertion still made in 1881 that despite the pioneer work of Mueller and Bosisto, the N.S.W. forests still provided for "the medical botanist...an almost virgin field of exploration". Franklyn : Australia in 1880, p. 27.
- 426 Maiden in Ag. Gaz. NSW, 1895, p. 668.
- 427 e.g. L.F. Woolrych of Cooma, who in 1899 claimed that a single species, E. obliqua "called here stringybark, will provide the selector's fence, gates, slabs for house, and bark for the roof, as well as firewood. The fluffy part of the bark is splendid for kindling purposes, and the inner bark makes excellent ropes, ties, and make-shift harness. The bark will also make good pipes for carrying water. The gum is often used as a medicine for sick fowls, and is also a good bush remedy for dysentery, as old bushmen have told me frequently; and it makes a good varnish when dissolved in spirits of wine". Ag. Gaz. NSW, 1899, p. 1166. Here was a "tree of life" indeed and interestingly this tree, also known as Messmate, was the first species of the genus described in 1788 by Charles Louis L'Héritier de Brutelles (1746-1800) from specimens collected in Tasmania by David Nelson on Cook's third voyage, 1777.

TWO CELEBRATED PUBLIC SERVANTS

JOSEPH HENRY MAIDEN (1859-1925) was trained in chemistry before taking up botany with the aid of Charles Moore and William Woolls. Curator of the Technological Museum, Sydney, 1881-1896, during which time he was also consulting botanist to the Dept. of Agriculture and Forestry (1892) and Superintendent of Technical Education (1894); Director of the Sydney Botanic Gardens, 1896-1924, in succession to Charles Moore. He was a prolific writer and keen supporter of the Royal and Linnean Societies of N.S.W.



Photo.: Ag.Gaz.NSW, 1901.



WALTER SCOTT CAMPBELL (1844-1935), pupil of William Woolls, 1855-1857, surveyor and draftsman in the Department of Lands, chief clerk in the Department of Agriculture and Forestry, 1893, chief inspector of Agriculture, and finally Director of Forests and Agriculture, 1903-1909. During his long retirement he devoted much time to his particular interests in history, botany and horticulture, thereby leaving valuable reminiscences and records of his researches.

Photo.: Ag.Gaz.NSW, 1901.

others sought it in a wide range of observations, collections and experiments, some of the results of which were publicised in the great Exhibitions already mentioned.⁴²⁸ Between 1855 and 1880 the two most regular contributors of plant materials to these Exhibitions were Henry Moss of Nowra and Enoch William Rudder of Kempsey⁴³⁰, amply

428 See Chapter IV, p.419.

429 H. Moss, innkeeper, became first mayor of Nowra in 1872 and served three more terms before his death in 1887. Among the plant materials he exhibited were Melaleuca bark (1855, 1867); fibre from Cabbage Tree Palm, Livistona australis and Burrawang, Macrozamia communis (1867); kino of Bloodwood, E.gummifera, "will make splendid dye and useful varnish" (1867); arrowroot prepared from Macrozamia communis (1867, 1870).

430 E.W. Rudder (1801-1888) was born in Birmingham, Eng., the son of William Rudder, a brass founder. Coming to N.S.W. in 1834, he settled on the Macleay River. (Macleay R. Hist. Soc. records; JRAHS, 1921, pp.182 et seq and 1924, pp.144 et seq.). His exhibits included resin and kino from Xanthorrhoea, Eucalyptus and Angophora (1867); fibre from the Giant Stinging Tree, Dendrocnide excelsa (1867); "a collection of 215 samples of cloth and silk, dyed with colours extracted from different barks and trees found in the Kempsey District; many... seem highly suitable for... commerce", (1879). See Rudder's notebook containing records of experiments with dyewoods, ML.A1685. In May 1865 E.W. Rudder petitioned the N.S.W. Parliament for the conservation of the "indigenous vegetable productions of great value" on selected reserves "till their properties have been investigated". To support his case, Rudder sent his "specimens of dyes and fibres", but apparently no action was taken. V. & P. Leg. Assembly NSW, 1865, II, p.1089. Some of Rudder's family of fifteen had similar interests, notably Augustus Rudder (1828-1904) who became a North Coast forester, with a great knowledge of trees, timbers, barks and dyestuffs. According to J.H. Maiden, who "learned much from him", there were few who "had a wider knowledge of the North Coast forests than he", and to acknowledge this fact, Maiden named a North Coast Red Box, E.rudderi. Maiden in Proc. Roy. Soc. NSW, 1908, pp.117-118 and in SMH, 14 Dec.1904.

supported at different times by other enthusiasts.⁴³¹

It was appropriate that the success of the Sydney Exhibition of 1879-1880 should have prompted the establishment of a Technological, Industrial and Sanitary Museum based on the reliquiae of that Exhibition, and it was fortunate that J.H. Maiden should have appointed first curator in 1881. Following the loss of the collection in the Garden Palace fire, 1882⁴³², Maiden began to assemble a new display in a galvanized iron shed in the Outer Domain behind Sydney

431 Other exhibitors included Francis Adams, Sydney (Xanthorrhoea resin, 1855); Misses Marsh, New England (manna, 1855); Sir Alfred Stephen, Sydney (plant exudations, 1855); Dr Wm. Stephenson, Taree, (barks, fibres, 'gutta percha', 1855--see Appendix VII); Joseph Druit, Wee Waa (seeds from native fruits, 1855); J. Affritt Wilson, Penrith ('Native Cotton', i.e. coma of seeds of Parsonsia, 1855); Thomas Bawden, Clarence R. (fibre from Stinging Tree, Dendrocnide excelsa, 1862 and Lace-bark Tree, Brachychiton discolor, 1867); Edward S. Hill, Woollahra, (Tea-tree bark, 1862 and Pimelea fibre, 1867); Mrs. James Fowler Wilcox, Grafton (fibres of Dendrocnide excelsa, Brachychiton discolor and Hibiscus heterophyllus, 1867); T.W. Scott, Brisbane Water (Tea-tree bark, 1862); P. Snape, Stroud and H. Thompson, Camden (Acacia barks, 1862); Rev. Thomas Hassall, Berrima (Cabbage-tree hat, 1862); Isaac John Josephson, Sydney (Eucalyptus kino, 1867 and "Australian ointment...made from wild plants of the Colony", 1870); James Henry, Sydney ("Inventor and manufacturer of Henry's Colonial Ointment...consists principally of vegetables, mostly Colonial, and a little animal matter, carefully and scientifically combined...", 1870); R.B. Read, Randwick (extract, leaves and fruits of Smilax glycyphylla, 1876).

432 See Chapter V, p.518.

Hospital.⁴³³ By 1889 he had amassed "over 25,000 specimens", including "vegetable products", and a catalogue became necessary. Whilst preparing this, Maiden

decided to extend it, so as to include all Australian plants...known to be of economic value, or injurious to man and domestic animals.

The result was his notable Useful Plants⁴³⁴, which recorded not only Maiden's own rapidly-acquired, yet wide knowledge, but also knowledge, observations and beliefs from all over the country relayed by enquiring people who sent material to the Museum for identification or testing. It was the first synthesis of botanical knowledge at the utilitarian level.

433 In 1893 the Museum was moved to Ultimo, where it is now known as the Museum of Applied Arts and Sciences. In 1894 Maiden became Superintendent of Technical Education as well as Curator of the Museum. At the Museum, Maiden had two very able assistants - Henry George Smith (1852-1924) who, like Maiden, came to Sydney for health reasons, and joined the Museum staff in 1884; four years later, Richard Thomas Baker (1854-1941) a former science and art master at Newington, joined the staff. When Maiden left the Museum in 1896 to succeed Charles Moore as Director of the Botanic Gardens, the institution he had established was left in good hands. Smith and Baker wrote scores of books and papers, especially in the fields of plant chemistry and economic botany. Maiden's own output of papers and books was enormous, some of his finely illustrated books issued in parts, being too ambitious for continued Government approval, so that they remain splendid fragments. Maiden retired from the Gardens in 1924, and died at Turramurra on 16 November the following year. See A.H.S. Lucas in Proc.Linn.Soc.NSW, 1930, pp.355-370 (where are listed 180 scientific papers of which Maiden was author or co-author, published 1887-1927); also Proc.Linn.Soc.NSW, 1926, pp.iv-v; Proc.Roy.Soc.NSW, 1926, pp.4-7; SMH, 17 Nov.1925.

434 Maiden : Useful Plants, pp.v,ix. See also Chapter V, pp.515-516.

"...a reverence for God's works..."

Collectively, the clergy made a greater contribution to botanical knowledge than any other group of amateurs during the nineteenth century,⁴³⁵ notwithstanding the bitter controversy between some churchmen and scientists after the publication of Darwin's Origin of Species in 1859. During the first days of settlement, the Rev. Richard Johnson⁴³⁶ unwittingly set a precedent by collecting for Sir Joseph Banks. Apologising for his diminutive offering of botanical material, Johnson confessed that he was not

a Naturalist or a Botanist; otherwise, I doubt not, there is sufficient variety of shrubs, seeds, &c., to have collected a much greater quantity than I have done.⁴³⁷

Many of Johnson's clerical successors were happy to claim to be naturalists and botanists, not sharing the first chaplain's "want of Taste in things of this nature."⁴³⁸ The tradition of the clergyman-botanist⁴³⁹ became firmly established in N.S.W.⁴⁴⁰ during the nineteenth

435 The next most significant group comprised those associated with the Survey Branch of the Department of Lands in the latter part of the century, e.g. W.S. Campbell, Arvid Nilson, R.D. FitzGerald, A.T. Stopps, R.T. Dalrymple-Hay, E.W. Minchen, all mentioned elsewhere.

436 Rev. R. Johnson, B.A. (Cantab.) (1753-1827), first Colonial Chaplain, 1786-1800.

437 Johnson to Banks, 8 July 1788 in G. Mackaness (Ed.) : Some Letters of Rev. Richard Johnson, Syd., 1954, I, p. 20.

438 *ibid.*

439 There were also clergymen-scientists with other interests and from various denominations--e.g. geologists : Rev. W.B. Clarke (1798-1878), Ang.; Rev. John Milne Curran (1859-1928), R.C.; Rev. Walter Howchin (1845-1937), Meth. (Sth. Aust.); astronomers : e.g. Rev. Wm. Scott, Ang., Director of Syd. Observatory, 1856-1862 and warden of St. Paul's College, Syd. Uni., 1870, and entomologists : e.g. Rev. R.L. King (1823-1897), Ang., Rector of Parramatta and later Principal of Moore Theol. College (he also had botanical interests).

440 and not only in N.S.W. Note for example the work of Rev. Robert R. Davies (1805-1880), Ang.; Rev. Richard H. Davies, Ang., and Rev. Wm. Webb Spicer (1820?-1879) Ang., in Tasmania; Rev. Wm. Taylor Whan (1829-1901) and Rev. Francis R.M. Wilson (1832-1903), two Presbyterian ministers in Victoria; Rev. Benedetto Scortechini (1845-1886), a Roman Catholic priest described as "one of the best botanists who has ever lived in Queensland" (i.e. 1871-1884) (J.H. Maiden); Rev. Wm. Colenso (1811-1899), Ang. missionary in N.Z.

century and it persisted long after.⁴⁴¹

In the vanguard of the clergy who established this scientific tradition was the Rev. Charles Pleydell Neale Wilton⁴⁴² who in his first year in the Colony founded and edited the short-lived Australian Quarterly Journal of Theology, Literature and Science in which he advocated a vigorous investigation of natural history. Wilton saw in such pursuits the means not only of invigorating the intellectual life of the colonists, but also of demonstrating the creative power of God. He was pleased therefore to provide artist-parishioners like Dorothy Paty with plant specimens discovered during his pastoral duties.⁴⁴³

The decade which began in 1830 with the arrival in Sydney of the Rev. Thomas Sharpe⁴⁴⁴, was the most significant for the influx of

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- 441 Note for example Rev. W.W. Watts (1856-1920), Pres., custodian of mosses and ferns at Syd. Herbarium, 1909-1920; Rev. Herman Montague Rucker Rupp (1872-1956), Ang., custodian of orchids at Syd. Herbarium from 1939 until shortly before his death; Rev. E.N. McKie (1883-1948), Pres. minister at Guyra and an authority on Eucalypts; Most Rev. Joseph W. Dwyer (1869-1939) R.C. Bishop of Wagga, who collected widely, but especially around Temora; Rev. Colin Burgess, Ang., formerly of Leura and Haberfield, author of Blue Mountain Gums, Syd., 1963, now working in the herbarium of the Canberra Botanic Gardens.
- 442 Rev. C.P.N. Wilton, M.A. (Cantab.) (1795-1859) arrived in Sydney in April 1827 and was appointed Master of the Female Orphan School, Parramatta and the second Rector of St. Anne's Ryde. He resigned at the end of 1828 following quarrels with Archdeacon T.H. Scott, and in May 1831 commenced duty as the third, and last, Colonial Chaplain of Newcastle, where he spent the remainder of his life. Wilton was a Fellow of the Cambridge Philosophical Society founded by the two great clergymen-naturalists, J.S. Henslow and Adam Sedgwick in 1821. It was unfortunate that Wilton's Quarterly Journal should have survived only four issues. See Elkin : Diocese of Newcastle, p.37 and Aust. Dict. Biog., 3, p.613.
- 443 See this Chapter, p.616.
- 444 Rev. T. Sharpe, M.A. (Cantab.) (1798-1877) arrived as an Anglican deacon in 1830 and served as Catechist of the Hawkesbury, 1831-1836. Ordained priest by Bishop Broughton in 1836, Sharpe served as Chaplain of Norfolk Island, 1837-1840. In 1841 he was appointed to Bathurst where he remained until his death in Feb. 1877. (Australian Churchman, 10 Mar. 1877; information from Diocesan Archives, Bathurst by courtesy of Mrs. Ruth Frappell).

botanically-inclined clergymen. Sharpe's extant papers⁴⁴⁵ include a "Glossary of the Common Productions in the Natural History of New South Wales and Van Diemen's Land" with lists of vernacular and botanical names of plants, chiefly timber trees.⁴⁴⁶

Without doubt the most accomplished clerical botanist in
nineteenth-century

445 Papers of Rev. Thomas Sharpe, ML.A1502.

446 Sharpe Papers, ML.A1502, pp.221-223, 226. Sharpe's list included 10 spp. of Eucalyptus (e.g. Red, Blue, Flooded and Blackbutted Gums, Stringybark, Ironbark and Box); 3 spp. of "Beefwood", which he correctly distinguished as She-oak, Casuarina stricta, Swamp Oak, C.paludosa (i.e. C.glauca) and Forest Oak, C.torulosa; White and Red Cedar; Rosewood (i.e. Scentless Rosewood, Synoum glandulosum); Turpentine; Black and Green Wattle (Acacia melanoxylon and A.decurrens); "Currijong or Natives cordage tree, Hibiscus heterophyllus"; Cabbage Palm; "Arborescent fern tree", Cyathea australis, Dicksonia antarctica; "Fern root" (i.e. Bracken, Pteridium esculentum); "Coal River apple tree", Planchonella australis; "Plum tree, Diospyros australis"; "Pear Tree", Xylomelum pyriforme; "Gigantic Lily", Doryanthes excelsa; Waratah, Telopea speciosissima; "Rose", Boronia serrulata; "Fringed Violet", Thysanotus juncifolius. The list is particularly interesting for it reveals the early use of some vernacular names. Sharpe was clearly learning the botanical names of the plants he encountered and this was his private reference list.

N.S.W. was the Rev. William Woolls,⁴⁴⁷ who arrived soon after Sharpe.

447 Rev. W. Woolls, A.L.M., Ph.D. (Gott.), F.L.S. (1814-1893) was born in the parish of St. Lawrence, Winchester on 5 May 1814, the 19th child of Edward Woolls, a mercer, and his wife Sarah. At his mother's death on 29 June 1830, William was thrown on his own resources, for the father had died in Feb. 1823. After unsuccessfully seeking a cadetship with the East India Co., Woolls decided to emigrate to N.S.W., and he sailed in 1831, with Viscount Goderich's recommendation for employment. (HRA, XVII, p.32). Governor Bourke accordingly proposed a clerical position at the Parramatta Factory, but Woolls's moral poem, "The Voyage to New South Wales" reputedly won Archdeacon Broughton's recommendation that the youthful poet might prove a valuable assistant to the Rev. Robert Forrester, first headmaster of the newly-established King's School, Parramatta. Woolls taught at King's from 1832 until about 1836, and after a short time in journalism and private tuition, he joined W.T. Cape's Sydney College as classics master. Following a dispute with the College committee, he resigned, and returning to Parramatta, opened his own private academy in "Harrisford" where the King's School had been conducted prior to 1836. Some years later Woolls moved to "Newlands", which in 1908 was acquired by King's and renamed "Broughton House". Both buildings still (1971) stand. All the while Woolls maintained a steady output of literary and botanical articles for various journals and papers. In 1872 he retired from teaching, and in the following year was ordained by Bishop Frederic Barker--a step the Rev. Samuel Marsden had urged him to take nearly 40 years earlier. Woolls served as Incumbent of Richmond, 1873-1883, becoming Rural Dean of the district. After retirement he lived at Burwood, where between 1 May 1887 and 5 March 1893, he conducted, or helped to conduct, some 385 services in St. Luke's Church, Concord-Burwood. Early in the morning of 14 March 1893, Woolls died at his home, "Linburn", Burwood, just nine days after delivering his last sermon in St. Luke's. His funeral the next day in St. John's Cemetery, Parramatta, was largely attended by clergy, two members of Parliament, and "a large number of friends and relatives and old pupils", including two valued botanical friends, Henry Deane and J.H. Maiden. Woolls married thrice: 1. to Dinah Catherine Hall, who died 12 July 1844, aged 29, leaving a baby son who died four months later. Two other children of the marriage also died young--Emily, d. 3 Mar. 1861, aged 18 and Harriet Catherine who married C.B. Lowe of Mudgee, d. 2 Sept. 1863, aged 24; 2. to Ann Boag (1845) d. 7 Mar. 1861, aged 50; 3. to Sarah Elizabeth Lowe (1862) who survived her husband, d. 5 Sept. 1909. Heaton: Dictionary of Dates, pp. 228-230; Johnstone: History of King's School, pp. 51-52, 92, 127; P. Mennell: Dictionary of Australasian Biography, Lond., 1892, p. 522; Hampshire County Archives; SMH, 15 and 16 Mar. 1893; Ag. Gaz. NSW, 1893, p. 311; Proc. Linn. Soc. NSW, 1893, p. 669; Registers of St. John's Church, Parramatta; Service Books, St. Luke's Church, Concord-Burwood.

THE BOTANICAL INCUMBENTS OF LIVERPOOL.



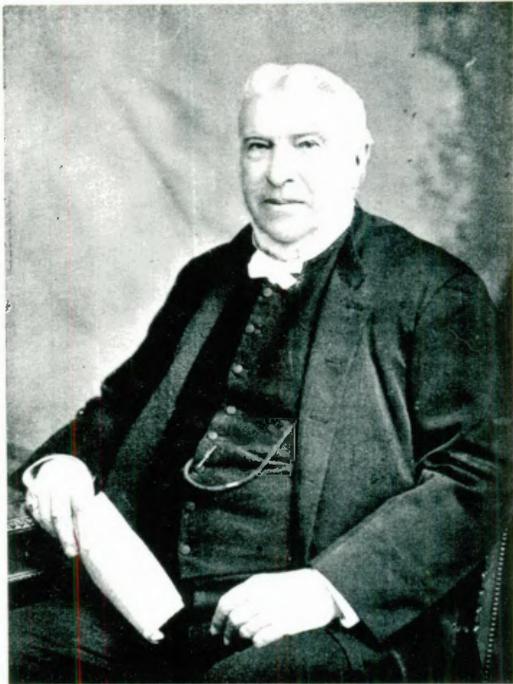
REV. RICHARD TAYLOR, M.A. (1805-1873) came to N.S.W. under the auspices of the Church Missionary Society en route to take up missionary work in New Zealand. During his incumbency of St. Luke's, Liverpool, 1836-1838, he carried on an energetic ministry, travelling widely over the large parish, and to the Hunter River and Bathurst. He was struck by "the very good variety of plants" immediately he landed, and quickly endeavoured to learn more about them. His observations on the Permian plant fossils of the Newcastle Coal Measures showed considerable geological insight which anticipated the work of the Rev. W.B. Clarke, who, like Taylor, was greatly influenced by the Rev. Adam Sedgwick, Professor of Geology at Cambridge.

REV. JAMES WALKER, M.A. (1794-1854) Headmaster of the King's School, Parramatta, 1843-1847, and Incumbent of Liverpool from January 1848 until his death in October 1854. Walker made a little-known but crucial contribution to the progress of botanical knowledge in N.S.W. In a most significant "succession", Walker passed on much of his botanical knowledge to William Woolls, who in turn greatly influenced Joseph Henry Maiden.

Photos: L.G., from portraits in St. Luke's vestry, by permission of the Church authorities, Jan. 1971.

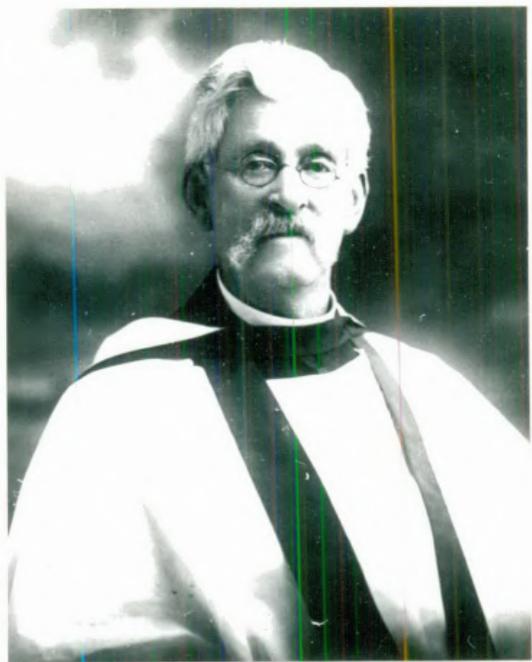


BOTANICAL CLERGYMEN.



REV. WILLIAM WOOLLIS, A.L.M., Ph.D., F.L.S. (1814-1893), pioneer teacher, Rector of St. Peter's Church of England, Richmond, 1873-1883. One of the most competent amateur botanists to work in N.S.W. during the 19th century.

Photo: Proc.Roy.Soc. NSW, 1908.



REV. THOMAS VERRIER ALKIN, M.A. (1839-1921), Rector of St. Peter's Church of England, Campbelltown, 1876-1904. A pioneer in botanical education in New South Wales.

Photo: by courtesy of National Herbarium, Sydney, and Mitchell Library.



REV. JULIAN EDMUND TENISON-WOODS, F.L.S. (1832-1889) Roman Catholic missionary and Church administrator. His wide knowledge of natural history, including botany, well qualified him for Presidency of the Linnean Society of N.S.W., 1879-1881. Photo: Linn.Soc. NSW.



REV. ROBERT COLLIE, F.L.S. (1839-1892), Presbyterian minister at Newtown, Sydney from his arrival in 1876 until his death. He collected a considerable herbarium, and made a study of the effect of bushfires upon the distribution of species. Photo: Proc.Roy.Soc.NSW, 1908.

Although much of his important botanical work was done before the age of fifty-nine when he took orders in the Anglican Church in 1873, Woolls remained a leading amateur botanist for the next twenty years, and it seems appropriate to assess his contribution with those of other clergy. For over sixty years Woolls worked in the vicinity of Sydney as teacher, journalist⁴⁴⁸, clergyman and botanist. Between 1843 and 1847 Woolls "first imbibed a taste for Australian botany" from the fourth headmaster of The King's School, the Rev. James Walker⁴⁴⁹, whom he considered an "eminent scholar and naturalist" and "certainly one of the most learned men who ever came to these colonies".⁴⁵⁰ Walker's contribution to the

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- 448 Woolls contributed to J.D. Lang's Colonist, to Robert Lowe's Atlas, the Australian Temperance Magazine, and to religious journals. Some of his early literary efforts were published separately in Sydney during the 1830s. His shorter botanical articles appeared chiefly in the Sydney Morning Herald, the Victorian Naturalist, the Horticultural Magazine and Proc.Linn.Soc.NSW. During the 1860s, Woolls applied unsuccessfully on at least three occasions for a position in either the Public or Parliamentary Library. In the third application he quoted Mueller's praise for his botanical collections and publications to support his case. Woolls to Henry Parkes, undated note, c.1867, Parkes Correspondence, Vol.2, ML.A1677-2, pp.310-313.
- 449 Rev. J.Walker, M.A. (Oxon.) (1794-1854) arrived from England in 1841 under the auspices of the S.P.G. and went to George Town, near Launceston. He moved to King's as headmaster in April 1843, and also administered the Parish of Marsfield, North Parramatta, where he and Woolls worked to establish All Saints' Church as a memorial to Marsden. Walker was chairman of the meeting of 5 June 1844 called to consider a Marsden memorial. (Sharpe Papers, ML.1502,p.167). In 1844 Woolls published his Short Account of the Character and Labours of the Rev. Samuel Marsden "for the express purpose of raising funds" for the church. Walker served briefly as first incumbent of All Saints' before his formal appointment to St. Luke's, Liverpool where he remained until his death in October 1854. Walker's outside interests also included the Liverpool Provisional Railway Committee which he joined in 1848. (See Railway Papers I, ML.A281).
- 450 Woolls in SMH, 19 Aug.1872; see also Cumberland Mercury, 20 Mar.1886.

botanical knowledge of N.S.W. is little-known⁴⁵¹, but crucial, for by motivating Woolls to take up botany, he indirectly inspired many others, including W.S. Campbell⁴⁵² and J.H. Maiden.⁴⁵³

From the 1840s until his death some fifty years later, Woolls worked tirelessly, despite periods of intense personal sorrow⁴⁵⁴, to gain and to promote a wider knowledge and appreciation of Australian plants. In 1856, two years after Walker's death, Woolls "had the happiness to attract the favourable notice" of Mueller⁴⁵⁵, and thus began an enthusiastic, frequent and fruitful correspondence which ended in March 1893 with a telegram wherein Mueller declared himself "inexpressibly grieved" at the death of his "dear friend".⁴⁵⁶

The boarding school known as "Mr. Woolls's Private Academy" must have been extraordinary among the dozen or so such schools

451 Apparently he left no written or published records of his work. See W.Woolls : Plants Indigenous in the Neighbourhood of Sydney... Syd., 1880, p.3. There is a reference to him in connection with cases of animal poisoning being attributed to Indigofera in Syd. Mag.Sci. and Art, I, 1858, p.109.

452 See W.S. Campbell : "Recollections of the Rev. Dr.Wm. Woolls", in Vic. Nat., 1932, pp.135-140.

453 See R.H. Cambage's obituary of J.H. Maiden, SMH, 17 Nov.1925 : "Some of his early botanical lessons were learnt from the late Rev.Dr.William Woolls (sic) for whom he always retained the most affectionate memories". See also Maiden's own statement that he had been one of Woolls's "friends and pupils" (Proc.Roy.Soc.NSW, 1908, p.132). Maiden was, as pointed out, originally trained as a chemist. Note also Woolls's obituary, probably by Frederick Turner, in Ag.Gaz.NSW, 1893, p.311 : "...many of his school pupils, animated by his great love of botanical research, have, in their later years, become ardent amateur botanists".

454 Woolls lost his first wife and only son within 4 months in 1844 (about the time he took up botany) and his second wife and a young daughter within 4 days in Mar.1861. His remaining child died in Sept.1863. See biographical footnote above.

455 Woolls in SMH, 19 Aug.1872; see also Woolls : Plants Indigenous Sydney, p.4

456 Telegram, Mueller to Maiden, in SMH, 16 Mar.1893.

functioning in Parramatta by 1840.⁴⁵⁷ By the mid-fifties, Woolls had an assistant who taught "such subjects as arithmetic, writing, spelling, and so on, while Mr. Woolls taught...history, geography, Latin, etc" in a "conversational" manner, using "the distribution of various species and orders of plants to explain geography, and also to some extent, history".⁴⁵⁸ On Wednesday and Sunday afternoons, on Saturdays, and after 4 p.m. when school concluded on other days, boys of the Academy were apt to be invited to accompany Woolls on a bush walk or picnic to the Parramatta River, Duck Creek, Elizabeth Farm ("General Macarthur's bush"), North Rocks, the grounds of Old Government House, or "up the well-known valley of Toongabbie".⁴⁵⁹ Woolls became a familiar figure during these excursions when his

eager lads scampered up hill and down, through gully and creek, gathering specimens of grasses and flora of the district; vieing with each other, to be first to return to their friend with the plants he was in quest of...⁴⁶⁰

In the evenings, "the boys assembled in the dining-room" to read or do homework, while Woolls, with the harvest of his excursions

generally sat at a table in one of the corners, working away very hard at botanical matters; and there he remained until very late at night.⁴⁶¹

It was perhaps little wonder that Mr. Woolls's Academy "never lacked scholars and was always well filled."⁴⁶²

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- 457 J.Jervis : The Cradle City of Australia, Syd., 1961, p.92. Gov. Gipps considered Woolls's institution one of the best "private Schools" in the Colony. See Gipps to Stanley, 17 Dec. 1842, HRA, XXII, p.426.
- 458 W.S. Campbell in Vic.Nat., 1932, p.136. "Woolls was rather distinctive in that he was one of the few to proclaim the case for a liberal, general education, pleading the value of knowledge as such". A. Barcan : A Short History of Education in New South Wales, Syd., 1965, p.78.
- 459 See "The late Rev. Dr. William Woolls... In Memoriam, By one of his 'Old Boys'," in the Australian Record, 25 Mar. 1893, and W.S. Campbell : op.cit., p.138.
- 460 Aust. Record, loc.cit.
- 461 W.S. Campbell : op.cit., p.138.
- 462 op.cit., p.135.

In October 1857 Woolls joined the Australian Horticultural and Agricultural Society⁴⁶³ which he addressed the following year on "the Botany of the Parramatta District".⁴⁶⁴ He also joined the Cumberland Mutual Improvement Society, and in 1868 gave the inaugural address in which he drew attention to the importance and satisfaction, not only in "the mere acquisition of knowledge" but also "in communicating our knowledge" to others.⁴⁶⁵ In the latter pursuit, few did more in nineteenth century N.S.W. than William Woolls. The boys at his academy, the societies abovementioned, the Linnean Societies, first of London and then of N.S.W., the great company of general news-readers and even the Parramatta Church Society, were treated to a seemingly never-ending feast of botanical addresses, papers and book-reviews⁴⁶⁶, while Woolls maintained a vigorous and mutually instructive botanical correspondence with his special friends--Mueller, Louisa Calvert, the Scott sisters, E.P. Ramsay, R.D. FitzGerald and Henry Deane--and many others. Specimens which he collected, or which were referred to him, often went to Mueller, and through him to Bentham, who acknowledged Woolls more than 500 times in Flora Australiensis.⁴⁶⁷

Woolls's botanical investigations were astonishingly wide, especially for one who for many years did not travel far from Parramatta. He compiled plant censuses, often paying particular attention to exotic

463 Syd. Mag. Sci. and Art, I, 1858, p. 107.

464 Woolls : A Contribution, pp. 1-12.

465 Woolls : Vegetable Kingdom, pp. 6-7.

466 Woolls reviewed various Australian botanical classics in SMH, notably Bentham's Flora Australiensis, Mueller's Fragmenta and FitzGerald's Australian Orchids. Despite the fact that sometimes there were delays since "the Parliamentary news & the Bishop's addresses much be attended to first", the press maintained a steady output of Woolls's articles. See Woolls to Henry Deane, 20 May 1884, Deane Papers, ANL. MS 610, Series 4.

467 See Appendix I.

species and to the means by which they were introduced⁴⁶⁸, and wrote regional botanical studies of Parramatta, the North Shore⁴⁶⁹, Berrima and Mittagong, Kurrajong and Mt. Tomah⁴⁷⁰, Ash Island, and, in 1872, after his first visit to the interior, the "Botany of the Castlereagh District". Using Helena Forde's specimens, he wrote "Plants on the Darling"⁴⁷¹, and in a similar manner he described collections sent from the Dawson River and the Darling Downs in 1866.⁴⁷² Woolls wrote on indigenous food plants suitable for cultivation; he attacked the practice of over-clearing the land, "the murderous practice of ring-barking"⁴⁷³, and the pride which deterred Europeans from learning valuable botanical lessons "from our sable brethren".⁴⁷⁴

Woolls was especially interested in the genus Eucalyptus, orchids and ferns, and he tried to arouse interest in such lower plants as algae and lichens. When some of his papers were collected in book form

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- 468 See "Notes on Introduced Plants occurring in the Neighbourhood of Sydney", Journal of the Linnean Society (Lond.), 1869, pp.35-42. Woolls listed about 100 spp. with some account of how they may have been introduced. He noted that some weeds "follow the railway into the interior" while in some cases, e.g. Paddy's Lucerne, Sida rhombifolia and Couch Grass, Cynodon dactylon, there was doubt as to whether they are indigenous or not. At that time, Woolls's observations had "not extended beyond fifty or sixty miles from Parramatta". The paper was written in Sept. 1866, and read in London three months later.
- 469 This was prepared "at the request of my friend the Rev^d W.B. Clarke" and sent to the Linnean Society of London. Woolls to Richard Kippist, Secretary, Linn.Soc., 18 Dec.1860, Papers of Linnean Soc. of London, ML.FM4/2699.
- 470 SMH, 14 Mar. 1861 and 24 July 1861.
- 471 Woolls : A Contribution, pp.192-202. Not having seen the plants actually growing, Woolls did not choose to entitle this article "The Botany of the Darling"-- a nice distinction for the time.
- 472 op.cit., pp.128-136.
- 473 See Chapter III, p.185.
- 474 Woolls : A Contribution, p.211. See also Woolls : Vegetable Kingdom, pp.96,175.

in 1867⁴⁷⁵ and 1879⁴⁷⁶, these plant groups received particular emphasis. He had no patience with those who held the traditional view of "our despised gum-trees". He was fascinated by them, and W.S. Campbell, one of the "eager lads" who attended the academy, 1855-1857, appreciated even as a boy of twelve, the soundness of his master's method of enquiry:

When taking his walks...Mr. Woolls looked out for men chopping wood. There were several 'old hands', who were engaged at that sort of work...I liked to listen to the conversation concerning wood, and the frequent quaint information supplied, as to the blackbutt, mahogany, woollybutt, stringybark, bloodwood, and others that were being operated upon. Then enquiries were made from carpenters building houses as to the lasting qualities and other particulars concerning Eucalypts. Thus a great deal of information was gathered...⁴⁷⁷

By 1867, Woolls had published much of this information on his favourite trees⁴⁷⁸ even daring to relay some of it to Bentham, whose arrangement of the genus Eucalyptus in Flora Australiensis he considered unsatisfactory to anyone who had studied certain species actually

475 William Woolls : A Contribution to the Flora of Australia, Syd., 1867, dedicated to Mueller, a collection of papers which had appeared chiefly in SMH and Horticultural Magazine.

476 William Woolls : Lectures on the Vegetable Kingdom with special reference to the Flora of Australia, Syd., 1879, dedicated "To the Reverend of President and the Members of the Cumberland Mutual Improvement Society", a selection of Woolls's lectures to that Society.

477 W.S. Campbell in Vic.Nat., 1932, p.138.

478 SMH, 26 Aug.1867; Woolls : A Contribution (1867), pp.212-246.

growing in the bush⁴⁷⁹, an experience denied to Bentham. In 1880, Woolls contributed to the Linnean Society of N.S.W. a series of five papers on Eucalyptus,⁴⁸⁰ thereby clearly justifying Mueller's contention that his "unrivalled knowledge of the Eucalypts of New South Wales

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- 479 Journal of the Linnean Society (Lond.) 1869, p.141. Woolls was intrigued by the problem of arranging species of Eucalyptus according to a "natural" system with practical "key" based upon some clear and constant botanical feature. He saw the disadvantages of the early "artificial" method by which species were grouped according to "the length of the operculum or lid of the flowerbuds" (A Contribution, p.214) and he also saw serious flaws in Bentham's primary arrangement of the 135 species then recognized, according to anther shape and structure, into five basic "series". (Benth.: Fl.Aust., III, pp.189-193). Woolls enthusiastically supported Mueller's "cortical system" which divided eucalypts into six primary groups according to bark, e.g. Leiphloiae ("Smooth barks"), Hemiphloiae ("half barks"), Pachyphloiae ("stringybarks"), Schizophloiae ("ironbarks"), etc. However, Mueller finally decided that a modified "antheral" system was preferable. Woolls traced the history of attempts to classify the Eucalypts in an interesting paper in Proc.Linn.Soc.NSW, 1891, pp.49-66. In 1934, W.F. Blakely in his A Key to the Eucalypts arranged "500 species and 138 varieties" in primary series according to anthers, but extreme variability within the genus has ensured, in J.H. Willis's words, that "no satisfactory classification of Eucalyptus has yet been devised". (Aust.Encyc. 3, p.406). R.H. Anderson in The Trees of New South Wales, showed how a practicable dichotomous key could be based upon bark, habit, leaf, anthers, operculum and fruit. Others have included as well the number of flowers in the umbellate inflorescence as a criterion of classification. (See Beadle et al.: Handbook Vascular Plants, pp.266 et seq.). No single botanical feature is sufficiently constant throughout the genus to enable all species to be classified according to it. Variability of individual plants within a species and hybridisation between some of them, have increased the complexity of the problem. Some workers have placed a growing reliance upon the form of fruit, while strongly urging the necessity to consider other features as well (e.g. G.M. Chippendale : Eucalyptus Buds and Fruits, Canberra, 1968). In 1962, Carr and Carr even proposed the complete segregation from Eucalyptus of many species under Symphomyrtus, a generic name suggested by J.K. Schauer in 1844. This proposal has not won the approbation of all taxonomic botanists.
- 480 "Species of Eucalyptus in the County of Cumberland, their Classification, Habitat and Uses", Proc.Linn.Soc.NSW, 1880, pp.288-293; 448-457; 463-469; 488-492; 503-510.

renders his judgment concerning them one of authority".⁴⁸¹ Yet Woolls was no pedantic controversialist. Rather he tended to shrink from controversy, merely stating his opinion and letting matters stand at that. His own amateur studies, his respect for the knowledge of tradesmen, ex-convict timber-cutters, professional botanists, especially Mueller, and fellow amateurs, enabled Woolls to appreciate the vastness of the field to be investigated. Although not awestruck by the problems of botanical investigation confronting both amateur and professional, he certainly appreciated their complexity. In January 1871, he addressed the Horticultural Society at length on this very matter, pointing out that "as the works of nature are without limit", difficulties in investigating them were inevitable. In botany, these included difficulties of classification, amply demonstrated by efforts to classify members of the genus Eucalyptus and the Family Leguminosae. Woolls pointed to the tremendous scope for investigation of the lower plants, and to the effects of soil and climate upon the modification of species and upon their geographical distribution. He pointed to the old problem of defining a species and suggested other fields of botanical study, but hoped that he had not inadvertently deterred

any one from pursuing botanical investigations and of cooperating in the great work of developing the vegetable resources of Australia.⁴⁸²

After all, "the greater difficulties...we have to encounter, the greater will be the honour to overcome them". Whether the results of one's efforts were spectacular or otherwise, it was all worthwhile, for

481 Mueller : Eucalyptographia (1879) under E.acmenioides. Woolls had correctly refused to accept Bentham's view, based on herbarium specimens, that this tree (White Mahogany) was a mere variety of Blackbutt, E.pilularis. (Benth.:Fl.Aust., III, p.208). Woolls also noted some interesting points about the naming of trees--e.g. he recorded that Messmate, E.obliqua, closely resembling a stringybark, prompted the remark "that if the tree were not stringy bark, it was certainly 'messmate' to it". (A Contribution, p.109)

482 SMH, 6 Jan.1871.

the study of organic life in any of those beautiful forms which the Creator...has impressed upon them, must exercise an elevating and hallowing influence on our minds, and the effects of our researches, how humble soever they may be, will remain as some portion of the material on which science may hereafter erect a symmetrical and enduring superstructure.⁴⁸³

Woolls appreciated that "the more we know, the more remains to be known",⁴⁸⁴ for "in the study of the Creator's works, there is no finality."⁴⁸⁵ He believed that "everything around is full of Deity".⁴⁸⁶ At best, any system of classification was designed simply to enable one "to take a rational, consistent, and comprehensive view of the vegetable kingdom",⁴⁸⁷ a view with which few would argue even to-day. Although possessing an unswerving faith in God, and a passionate interest in natural science, Woolls suffered no schizophrenia. He was perturbed that

the revelation of Holy Writ, the traditional opinions of ages, and the common sentiments of mankind, are coolly put aside for the new-fangled theory of evolution,⁴⁸⁸

and why?

It is simply because very loose and inaccurate opinions have sprung up in reference to the origin of species.⁴⁸⁹

Woolls held that the term "species",

includes those plants which are so similar to each other that we may reasonably suppose them to have had one common origin,⁴⁹⁰

483 *ibid.* See also Woolls : A Contribution, pp.116-117.

484 Woolls : Vegetable Kingdom,p.59. See also Woolls in SMH, 24 July 1861 : "...in matters of science...the progress is slow and tedious, and each step makes a man more and more sensible of the worlds which yet remain to be conquered..."

485 Woolls : Vegetable Kingdom,loc.cit. Woolls thus agreed with Dr John Lindley that it was accordingly useless, and indeed, impious, to search for a perfect system of classification.op.cit.,p.167.

486 Woolls : op.cit.,p.113. Cf. W.S. Macleay to Robert Lowe, Viscount Sherbrooke, May 1860 : "I am myself so far a Pantheist that I see God in everything..." Proc.Linn.Soc.NSW,1920,p.601.

487 op.cit.,p.169.

488 op.cit.,p.128.

489 *ibid.*

490 SMH, 6 Jan.1871, see also Vegetable Kingdom,p.135.

but this by no means dismissed any thought of an act of creation. He saw that species had to be considered in all their internal gradations, and that species could be too readily declared as "new" in the absence of specimens of intermediate forms. Although many species exhibited wide variation, Woolls could see no grounds for believing in the transmutation of species, and their ultimate origin, whatever their varieties and affinities, was, for him, irrefutably explained by a remark once made to him by William Sharp Macleay, who simply stated, "I believe, sir, that God Almighty created species". Mueller and the Rev. W.B. Clarke "held similar opinions", and Woolls required no further substantiation of the opinions he already held.⁴⁹¹ There was no point "making religion and science antagonistic to each other" when one could so clearly

see the harmony that exists between the book of Nature
and the book of Revelation, or... 'To look through
nature up to nature's God.'⁴⁹²

It followed that "the Great Architect of the Universe created nothing in vain".⁴⁹³ If therefore man had not discovered a plant's "especial purpose in the economy of nature", it was due to his ignorance, and not "to any other cause".⁴⁹⁴ The task of science was to reveal God's plan to Man and provision for Man. For Woolls, botanical investigation was a teleological exercise, an effective way of accepting a theological challenge. In accepting the challenge himself, Woolls motivated many others, especially through his ability to bring the opinions, and discoveries of Brown, Lindley, Hooker and particularly of Mueller, to

491 Woolls : Vegetable Kingdom, p.140. Woolls considered species "fixed and immutable", although "in many instances subject to great variation". (op.cit., p.104). He conceded that extinct species were revealed in the fossil flora which so intrigued the Rev. W.B. Clarke, but this did not move Woolls to accept Darwinism.

492 Woolls : op.cit., p.162, also p.186.

493 Woolls : A Contribution, p.100, also p.138.

494 op.cit., p.138. See also Woolls : "Specimens of Plants collected ...by the Rev.R. Collie, F.L.S." in Proc.Linn.Soc.NSW, 1889, p.324, where the same view is reiterated.

popular notice in readily comprehensible terms, with local references in accessible publications.

In September 1869, at Mueller's suggestion, Woolls forwarded some of his published work⁴⁹⁵ and a proposal for a botanical dissertation to the Georg-Augustus University of Göttingen.⁴⁹⁶ In the following month he sent his curriculum vitae and his dissertation, Species Plantarum Parramattensium secundum ordines naturales..., the first Australian botanical study to be formally presented to a university by a colonist. After further representations from England by Woolls's brother-in-law, H.W. Arney⁴⁹⁷, and correspondence between members of the University,⁴⁹⁸ Woolls was admitted in absentia on 11 February 1871 to the degrees of Master of the Liberal Arts and Doctor of Philosophy⁴⁹⁹, an achievement duly noted in the press when the testamur was received.⁵⁰⁰ William Woolls, schoolmaster of Parramatta, thus became the first graduate in N.S.W. botany. The University promptly published his dissertation⁵⁰¹, with its English preface, Latin plant lists and annotations⁵⁰², and the author's confession, "I am not a Botanist by profession...".

Woolls published two more significant works to set the seal on his reputation as a leading amateur botanist. In 1880, he published a

495 He sent a copy of A Contribution and his lecture on "The Progress of Botanical Discovery in Australia" (later published in Vegetable Kingdom, pp.25-60).

496 Woolls to Prof.Clebsch, 1 Nov.1869, letter in Archives of University of Göttingen. He also sent £50 in fees.

497 Hector W. Arney to Prof.Clebsch, 24 June 1870, letter in Archives of University of Göttingen. Woolls's first submission to the University was not accepted because of some formality over postage.

498 At least two such letters (virtually 'examiner's reports') are still preserved in the Archives of the University.

499 Woolls was admitted to the degree "Philosophiae Doctorem et Artium Liberalium Magistrum". See photocopy of the testamur on p.670.

500 SMH, 24 May 1871.

501 The BL. copy has numerous corrections made by the author.

502 Woolls stressed the physical and climatic aspects of the Parramatta area, relying on two clerical friends for information-- Rev. W.B. Clarke for geology, and Rev. R.L. King for rainfall records.

WILLIAM WOOLLS'S DOCTORAL TESTAMUR

QUOD. FELIX. FAUSTUMQUE. SIT

AUSPICIIS. ET. INDULGENTIA
AUGUSTISSIMI. ET. POTENTISSIMI. PRINCIPIS. AC. DOMINI
DOMINI



GERMANORUM. IMPERATORIS
BORUSSORUM. REGIS
DOMINI. NOSTRI. LONGE. CLEMENTISSIMI

ACADEMIAE. GEORGIAE. AUGUSTAE
PRORECTORE. MAGNIFICO

RICARDO. GUILIELMO. DOVE

URIS. UTRUSQUE. DOCTORE. ET. PROFESSORE. PUBLICO. ORDINARIO
COLLEGII. QUOD. DE. IURE. RESPONDET. ASSESSORE
REGII. CONSISTORII. SUPERIORIS. PROVINCAE. HANNOVERAE. COLLEGA. EXTRAORDINARIO
SOCIETATIS. HISTORICO-THEOLOGICAE. LIPSENSIS. SOCIO. ORDINARIO

ORDINIS. PHILOSOPHORUM. H. T. EX-DECANUS. ET. PROMOTOR. LEGITIME. CONSTITUTUS

GUILIELMUS. MÜLLER

ORDINIS. HANNOVERANI. EX. ERNESTO. AUGUSTO. APPELLATI. EQVES. IN. SECUNDA. CLASSE
PHILOSOPHIAE. DOCTOR. ET. PROFESSOR. PUBLICUS. ORDINARIUS
SOCIETATIS. LITERARIAE. QVAE. LEGIONE. BATAVORUM. FLORET. SODALIS
MUSEI. GERMANICI. NORIMBERGENSIS. E. CONSIGLIO. LITERATORUM

VIRUM. PRAENOBILISSIMUM. ET. DOCTISSIMUM

GUILIELMUM. WOOLLS

BELGAM

PROPTER. INSIGNEM. BOTANICES. SCIENTIAM. DISSERTATIONE. SCRIPTA. LIBRISQUE. ALIIS. EDITIS. APPROBATAM

DIE. XI. M. FEBRUARII. A. MDCCCLXXI

PHILOSOPHIAE. DOCTOREM. ET. ARTIUM. LIBERALIUM. MAGISTRUM

CREAVIT

HUIUSQUE. REL. HAS. LITERAS. TESTES

SIGILLO. ORDINIS. PHILOSOPHORUM

MUNIRI. VESSIT.

TESTAMUR from the University of Göttingen admitting William Woolls to the degrees of Master of the Liberal Arts and Doctor of Philosophy, 1871 - the first degrees taken by any colonist in N.S.W. botany.

Photocopy by courtesy of the
University of Göttingen.

regional botany of Sydney⁵⁰³ (listing 1108 indigenous flowering plants and ferns and 127 species of exotics) and five years later, a short flora of the whole Colony.⁵⁰⁴ Introducing the latter work, Woolls drew attention to the Colony's geographical regions each with its particular plant ecology; to the work of some botanical pioneers, notably Brown; to the principal characteristics of the major plant families, and to the processes by which "a great destruction of native plants" had been effected. He made appeals on behalf of his beloved Eucalypts and of the edible plants of "the Flora of the interior" grazed "perpetually" by "2 $\frac{1}{2}$ millions of horred cattle and between 35 and 36 millions of sheep". He concluded in his usual way, with a tribute to Mueller, "the greatest of Australian botanists", by now ignominiously "placed in a somewhat anomalous position of Government Botanist without a botanical garden".⁵⁰⁵ Melbourne's Baron had no greater champion in New South Wales.

Wearied by Woolls's constant promotion of Mueller's opinions from the neighbouring Colony, Charles Moore, who had just published A Census of the Plants of New South Wales,⁵⁰⁶ did not welcome the appearance of another work, especially from an amateur. Woolls was justifiably piqued, and revealed his feelings to one of his botanical friends, Edward Pearson Ramsay :

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- 503 Wm. Woolls : Plants Indigenous in the Neighbourhood of Sydney... Syd., 1880, in which there is a tribute to Rev. James Walker.
504 Wm. Woolls : The Plants of New South Wales...with an introductory essay and occasional notes, Syd., 1885. For Woolls's manuscript of this work, see ML. MSS 873, comprising eight exercise books.
505 This was an allusion to Mueller's position after 1873 when he was relieved of the directorship of the Melbourne Gardens.
506 Syd., 1884.

I suppose you saw Mr. Moore's attack on my little book. As I have never interfered with him, I cannot understand his motives. He speaks of both our books as 'compilations' & 'similar', but if you compare them, you will find, that whilst his is copied word for word from Bentham & Mueller, mine has a long original essay & copious notes, whilst I have followed a different system of classification & recorded all new plants to present date.⁵⁰⁷

No doubt the appearance in 1884 of another edition of Woolls's "Remarks on the Flora of the Blue Mountains" appended to a Government publication, The Railway Guide of New South Wales,⁵⁰⁸ did nothing to improve the relationship.

A true amateur, Woolls hoped that his delight in investigating the bush, and some of his motives in so doing, could be appreciated by others :

I would urge upon all persons the great importance of taking up some branch of natural history to amuse their vacant hours...if a young person, who is engaged in any ordinary occupation, would devote some portion of his leisure hours to the study of the vegetable kingdom, entomology, conchology, zoology, or any other branch of natural history, he would not only find a never-failing fund of amusement, but he would be doing something in his day and generation to develop the works of the Creator, to illustrate their marvellous beauties, and to impress on his mind facts worthy of remembrance.⁵⁰⁹

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- 507 Woolls to Ramsay, 12 Dec.1885, E.P. Ramsay : Letters Received, 1865-1893, ML.MSS 563/3.pp.248-249. E.P. Ramsay (1842-1916) established the Dobroyde Nursery in 1867, and was curator of the Aust.Museum,1874-1894. See Aust.Encyc.,7,p.386. Woolls and Ramsay had regular botanical correspondence from the 1870s. On 17 Nov. 1873, Woolls acknowledged Ramsay's guinea "towards our dear friend's monument" (i.e. Louisa Calvert's memorial plaque in St. Peter's, Richmond). "We have some distinguished names on the list," wrote Woolls, "but you are the only Australian amongst them". Ramsay : Letters, op.cit.,p.227. Ramsay also had a long and voluminous correspondence with Mueller. See Ramsay : Letters Received, 1862-1891, ML. MSS 562,pp.1-624.
- 508 Woolls's article, written for the benefit of "tourists, excursionists, and others" appeared in the first edition of The Railway Guide in 1879 and in subsequent editions, 1884 and 1886. It was illustrated by some of Harriet Scott's plant drawings. See also Woolls to Mueller, 12 Dec.1879, letter in Melbourne Herbarium.
- 509 Woolls : Vegetable Kingdom, p.184.

As teacher on a bush excursion around Parramatta, or as Rural Dean of Richmond riding through the bush to conduct service at Sackville Reach or Pitt Town, Woolls was always the observant amateur botanist.⁵¹⁰ On his death, formal obituaries appeared in the press and in the Proceedings of learned societies, but the warmest tribute was paid by one of his "old boys":

His life was a bright study for the hundreds of boys who passed through his school...Many, if not all, will be grateful for the good fortune which brought them in contact with this noble and gentle man, and recall his kindly treatment...⁵¹¹

Nothing could be more appropriate than the efforts by some of the present generation of Parramatta schoolchildren to have his tomb in St. John's Cemetery restored nearly 80 years after his death.⁵¹²

Before and after his own ordination, Woolls was naturally interested in the work of botanically-inclined clergy, some of whom doubtless caught their enthusiasm from him. The Rev. Thomas Hassall, the "galloping parson" of Denbigh⁵¹³, collected specimens for Woolls⁵¹⁴, and his son, the Rev. James Hassall⁵¹⁵, collected timbers with William Macarthur⁵¹⁶ and took "a pleasure in conducting his friends through the wildest and most intricate parts of the bush..."⁵¹⁷ Woolls, who

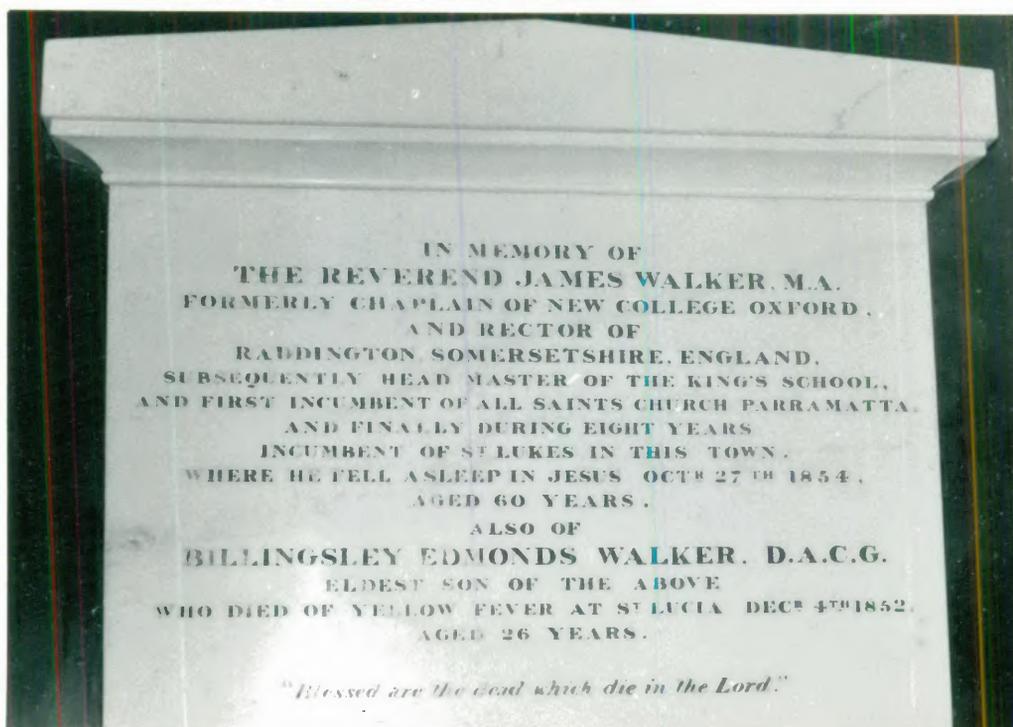
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- 510 See for example the botanical observations in his letters to Henry Deane, 1884-1893, Deane Papers, ANL. MS 610, Series 4.
- 511 Aust. Record, 25 Mar. 1893. Cf. W.S. Campbell in Vic. Nat., 1932, p. 140: "a good, kind-hearted man and great worker".
- 512 The Parramatta Advertiser, 27 May 1971, advised that history pupils of Macarthur Girls' High School had undertaken to raise \$400 to have the tomb restored.
- 513 For Rev. T. Hassall (1794-1868) see Aust. Dict. Biog., 1, pp. 522-523.
- 514 Woolls : A Contribution, p. 71.
- 515 Rev. J.S. Hassall (1823-1904), a "bush parson" like his father, served a term as Incumbent of Berrima and Chaplain of the Gaol.
- 516 See Chapter IV, p. 417.
- 517 Woolls : A Contribution, p. 106. In 1864, the Rev. J.S. Hassall was guide to Charles Moore and Edward S. Hill when they "penetrated the Scrub" in the Berrima district, where Hassall indicated certain trees of special interest, probably in connection with the collection of timbers for the Paris Exhibition, 1867. (See Chapter IV, p. 417). Hill to Macarthur, 29 Sept. 1864, Macarthur Papers, Vol. 42, ML.A2938, pp. 42-43.

was teaching at King's when young James was a pupil there⁵¹⁸, became one such friend, who established a botanical correspondence with him, and hoped that one of his discoveries might be named Eucalyptus hassalli.⁵¹⁹

Woolls also found a friend in the Rev. William Branwhite Clarke, "father of Australian geology"⁵²⁰, who arrived in 1839 and served briefly as the second headmaster of The King's School. Clarke was appointed to the Committee of Superintendence of the Sydney Botanic Gardens in 1840⁵²¹, and in the following year he established the Church of England Clerical Book Society which became "the repository of the largest collection of British scientific journals and works of scientific interest in Australia".⁵²² Clarke's botanical interests were largely palaeontological, but he encouraged Woolls to study the living flora of areas such as the North Shore whereof a study of the geology had been made, and Woolls certainly came to appreciate and proclaim that "geology has much to do with the distribution of plants".⁵²³ As already shown,⁵²⁴ in 1876 Clarke, then Vice-President of the Royal Society of N.S.W., sparked off a heated debate, especially with Charles Moore, when he addressed the Society on "Effects of Forest Vegetation on Climate", soundly attacking ruthless ringbarking and destruction of forests, and forecasting that the country would "become year after year more and more arid and waterless", while "the clamour...already...begun" for timber would become louder.⁵²⁵ Woolls heartily supported him.

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- 518 While Woolls was still at King's, probably in 1833, young James and his father joined the Headmaster, Rev. Robert Forrester, Woolls, and George Macarthur on a trip to Illawarra, that mecca of the early botanical collectors. Woolls was thus introduced to rainforest vegetation very soon after his arrival, and this was doubtless a significant experience for him. See Hassall : Old Australia, p.21.
- 519 Woolls to J.S. Hassall, 22 Oct. and 2 Nov. 1864, Hassall Correspondence, Vol.2, ML.A1677-2, pp.1099-1106; 113-115. The tree was identified as a form of Black Sally, E.stellulata, and so the matter of naming the species did not arise.
- 520 For Rev. W.B. Clarke, M.A. (Cantab.) (1798-1878) see James Jervis in JRAHS, 1944 and Ann Mozley in Aust.Dict.Biog., 3, pp.420-422. See also Woolls's tribute in Vegetable Kingdom, pp.21-24.
- 521 See Chapter V, p.480.
- 522 A. Mozley in Victorian Studies, June 1967, p.417.
- 523 Woolls to Henry Deane, 2 Aug. 1884, Deane Papers, ANL.MS 610, Series 4. See also Woolls's introduction to Species Plantarum Parramattensium and Plants of N.S.W.
- 524 See Chapter III, p.246, 249.
- 525 Proc.Roy.Soc.NSW, 1876, pp.179-214.

MEMORIALS TO CLERGYMEN-BOTANISTS



PLAQUE erected to the memory of the Rev. James Walker in St. Luke's Church, Liverpool. His gravestone stands near the tower of the church.

Photo.: L.G., Jan. 1970.



TOMB of the Rev. William Woolls in St. John's Cemetery, Parramatta. Restoration work is being currently carried out under the auspices of pupils of Macarthur Girls' High School, Parramatta.

Photo.: L.G., Jan. 1970.

Other clergy with whom Woolls had botanical associations included three more Anglicans--the Rev. Robert Lethbridge King⁵²⁶, the Rev. Gustavus Archibald Clunes Innes⁵²⁷ and the Rev. Thomas Verrier Alkin⁵²⁸; a Roman Catholic missionary and administrator, the Rev. Julian Edmund Tenison-Woods⁵²⁹ and a Presbyterian minister, the Rev. Robert Collie.⁵³⁰ Although King's interest in natural history was chiefly entomological⁵³¹, he collected plants for Woolls⁵³² and made a study of the Eucalypts.⁵³³ Innes collected inland Eucalypts for

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- 526 Rev. R.L. King, B.A. (Cantab.) (1823-1897), son of Admiral P.F. King, graduated from Cambridge in mathematics in 1845. Subsequently he was Curate of St. Philip's, Sydney, 1847-1855; Rector of Parramatta, 1855-1867; Principal of Moore Theological College, 1868-1878. He also served at Gladesville and at Miller's Point; Archdeacon of Cumberland, 1881-1895; on Committee of Aust. Museum, 1848-1853 and Trustee, 1853-1858. He died at Stanmore 24 July 1897 (not 1898 as stated in Aust. Dict. Biog., 2, p.63) Proc. Linn. Soc. NSW, 1897, pp. 814-815; SMH, 26 July 1897.
- 527 Rev. G.A.C. Innes, B.A. (Syd.) (1838-1880), son of Major A.C. Innes of Port Macquarie and grandson of Alexander McLeay. After a short curacy at St. Philip's, Sydney, he went to the Lachlan district in 1863, thence to Orange in 1865; Rector of O'Connell-Rockley, 1868-1870. Later moved to Victoria, becoming Archdeacon of Hamilton, where he died from diphtheria, 9 Apr. 1880.
- 528 Rev. T.V. Alkin, M.A. (Cantab.) L.C.F. (1839-1921) served at Gympie before spending a short period in Grafton during 1874. Rector of St. Peter's, Campbelltown, 1876-1904.
- 529 For Rev. J.E. Tenison-Woods, F.G.S., F.L.S. (1832-1889) see Proc. Linn. Soc. NSW, 1889, pp. 1301-1309; Proc. Roy. Soc. NSW, 1890, pp. 2-10; and P. Serle : Dictionary of Australian Biography, Syd., 1949, II, pp. 506-508.
- 530 Rev. R. Collie, F.L.S. (1839-1892) arrived in N.S.W. in 1876 and served at the Presbyterian Church, Newtown until his death. See SMH, 19 and 20 Apr. 1892; Proc. Roy. Soc. NSW, 1892, p. 14 and 1908, p. 98.
- 531 A. Musgrave : Bibliography of Australian Entomology, Syd., 1932, p. 175.
- 532 Woolls : A Contribution, p. 64.
- 533 Writing from Parramatta to one of the Macleays, 31 Dec. 1857, King advised : "I am still studying the 'Eucalyptus'. I find that they require very careful comparison, inter se, and in different stages and from different localities. I think however that we have 32 well-defined species in the district... Dr Mueller's system of classification by bark is certainly a very natural one--in the bush. But it is a puzzler in the herbarium..." Papers of Linnean Soc. of London, ML. FM4/2699. Woolls and Mueller argued against Bentham from the opposite viewpoint. They did not want a system which was a "puzzler" in the bush. See also King's observations on Port Jackson Mallee, E. obtusifolia in Woolls : Vegetable Kingdom, p. 119.

Woolls⁵³⁴, and Alkin's work was of particular interest to him since it concerned the botanical training of youth. Soon after taking up duty at Campbelltown, Alkin "published and circulated a small handbook of directions for the formation of a Hortus Siccus".⁵³⁵ This action was warmly commended by the President of the Linnean Society, and by Woolls, who praised Alkin not only

for the neat manner in which he has placed his specimens on paper, and...for the plain and practical hints...he has published,

but also for pointing out that "the collection and drying of plants" was both "an amusement" and a means of instilling "into the youthful mind a reverence for God's works".⁵³⁶ In 1886, Alkin published a large broad-sheet entitled "A Floral Chart to Guide Beginners in the Examination of Flowering Plants".⁵³⁷ This was to be a guide to the dissection and examination of flowers so that students could record the results of observations on the Floral Schedule, a summary of the main points of flower structure devised by Rev. J.S. Henslow.⁵³⁸ Woolls commented on this first botanical teaching aid published in N.S.W. in a letter to Henry Deane :

Our friend Mr. Alkin has just printed what he calls a Floral Chart. The size is inconvenient⁵³⁹, but it would be suitable to hang upon schools as a guide to teachers in giving elementary instruction in Botany. As a general rule, I think it best to rush in medias res and work out details afterwards, but of course Mr. Alkin's plan is the best for systematic teaching.⁵⁴⁰

534 Woolls : A Contribution, p.64.

535 W.J. Stephens in Proc.Linn.Soc.NSW, 1878, p.160. I have not managed to trace a copy of this booklet.

536 Woolls : Vegetable Kingdom, p.185.

537 A copy is in H.L. (581.4/A). It was printed by Turner and Henderson, Sydney, N.D. (but 1886). The chart listed the main parts of a flowering plant with their functions, and introduced botanical terms (e.g. calyx, sepal, corolla, petal, stamen, filament, anther, pollen, pistil, ovary, style stigma, etc.) in directing attention to the floral structure.

538 For Rev. J.S. Henslow, see a later reference.

539 It measured about 18" X 26", printed on one side only.

540 Woolls to Deane, 25 June 1886, Deane Papers, ANL. MS 610, Series 4.

Woolls apparently saw the danger of such an academic approach destroying spontaneous enjoyment in botanical pursuits. Alkin not only instructed his young parishioners in botany, but made some botanical discoveries on his own account, as Woolls observed.⁵⁴¹

Tenison-Woods encouraged Woolls's work, not only by direct suggestion⁵⁴², but also by his own prolific output of widely-acclaimed scientific publications.⁵⁴³ He too was interested in the Eucalypts⁵⁴⁴, and he encouraged the compilation of local floras for they would help determine "the real character of Australian vegetation". In June 1879, Tenison-Woods claimed :

At present our knowledge does not go much further than an enumeration of species. The geographical distribution has hardly been touched upon.⁵⁴⁵

The important, yet largely-overlooked problems of the range and prevalence of species would not be resolved until

a very large number of local floras have been published...when botany shall have become a more popular study...⁵⁴⁶

Another pressing need was for a

complete Herbarium for New South Wales, the oldest colony of all...we have not a single good public collection of our native plants of this colony.⁵⁴⁷

541 Proc.Linn.Soc.NSW, 1881, p.767.

542 Tenison-Woods in Proc.Linn.Soc.NSW, 1879, p.117. See also Woolls : Plants Indigenous Sydney, p.3.

543 For a list of these, 1857-1888, see Proc.Roy.Soc.NSW, 1890, pp.5-10, and Proc.Linn.Soc.NSW, 1889, pp.1301-1306. These works dealt chiefly with geological, palaeontological and zoological subjects, but there was a series of "Botanical Notes on Queensland", and, with F.M. Bailey, Tenison-Woods compiled "A Census of the Flora of Brisbane", thereby practising what he advocated.

544 See Proc.Linn.Soc.NSW, 1878, p.20 and Woolls : in Proc.Linn.Soc.NSW, 1891, p.65.

545 Proc.Linn.Soc.NSW, 1879, p.117. Tenison-Woods overlooked the pioneer work of Brown and J.D. Hooker in the field of plant geography. He was probably directing his remarks to local investigators.

546 Proc.Linn.Soc.NSW, 1880, p.482.

547 ibid.

Clearly Tenison-Woods, then President of the Linnean Society, was not impressed by the efforts so far of Charles Moore, Director of the Botanic Gardens, then President of the Royal Society.

In 1887, the Rev. Robert Collie addressed the Royal Society on "The Influence of Bush Fires on the Distribution of Species"⁵⁴⁸ thereby winning the support of fellow conservationists, like Woolls, whom he accompanied on bush excursions.⁵⁴⁹ Like many other clergy, Collie in his "spare moments...studied botany enthusiastically"⁵⁵⁰ and promoted "the union of science and religion".⁵⁵¹

Three other clergy who arrived in the 1830s should be noticed James Backhouse⁵⁵², the Rev. Richard Taylor⁵⁵³ and the Rev. George

548 Proc. Roy. Soc. NSW, 1887, pp.103-107.

549 Woolls to Deane, 2 May 1888, Deane Papers, ANL.MS 610, Series 4. In 1889, Woolls wrote an account of some W.A. specimens collected by Collie. See Proc. Linn. Soc. NSW, 1889, pp.317-324.

550 H.C. Russell in Proc. Roy. Soc. NSW, 1892, p.14.

551 Rev. Robert Steel in SMH, 20 Apr.1892.

552 James Backhouse (1794-1869), nurseryman, naturalist and Quaker missionary, began work with a chemist and druggist, but the contraction of tuberculosis made an outdoor occupation desirable. He worked for two years in a Norwich nursery, and in 1816 James and his brother Thomas purchased Telford's Nursery at York, where valuable experience of Australian plants was gained. James married in 1822, was admitted as a minister in the Society of Friends in 1824, and in Sept.1831, now a widower, he joined George Washington Walker on a missionary voyage to Australia on behalf of the Society. For six years they travelled widely in all colonies, including Norfolk Island. Walker ultimately settled in Tasmania, but Backhouse returned to York where with his son James, he resumed the nursery business. See Backhouse : Narrative, and Extracts from the Letters of James Backhouse...Lond., 1838, also Aust. Dict. Biog., 1, pp.45-46 and Serle : Aust. Biog., I, pp.32-33.

553 Rev. R. Taylor, M.A. (Cantab.) F.G.S. (1805-1873) was ordained deacon after graduating B.A. in 1828. In June 1829 he was ordained priest. He contacted the Church Missionary Society in 1834 and was accepted for missionary service the following year. He chose the New Zealand station, and with his wife and family sailed for Sydney on 18 Feb.1836. Arriving twelve days after the sudden death of Rev. Richard Hill and only five days after Marsden had enthroned W.G. Broughton in St. James's, Sydney as Bishop of Australia on 5 June 1836, Taylor was asked by the new Bishop to take "an occasional Service at Parramatta or St. James". This, and other appointments, notably to St. Luke's, Liverpool, kept Taylor in the Colony for nearly three years. He finally sailed for New Zealand on 19 Feb.1839, and except for two visits to England, served the mission there for the rest of his life. He died at Putiki, 10 Oct. 1873, and was buried on a high point of Wanganui Cemetery, in the presence of "a very large number of people" both Maori and European. See A.D. Mead : Richard Taylor, Missionary Traveller, Wellington, 1966, p.12; J.G. Woon : Wanganui Old Settlers, Wanganui, 1902, pp.61-63; Richard Taylor : MS Diary, Alex. Turnbull Library, Wellington, N.Z. (Photocopy in possession of Prof. A.P. Yarwood, University of New England).

Edward Weaver Turner.⁵⁵⁴ Backhouse first arrived in Port Jackson on 20 December 1834, and three days later, having sought an interview with Governor Bourke and called on Alexander McLeay, he made the first of many excursions to the North Shore. During the next two years or more, Backhouse travelled widely within the Colony, visiting townships, scattered settlers, hospitals, road-gangs, gaols, and other Government institutions, "solely for the purpose of discharging a religious duty".⁵⁵⁵ While Backhouse sought out needy souls among settlers, convicts and aborigines, he received warm hospitality in parsonages, homesteads⁵⁵⁶ and huts from Sydney to Parramatta and west to Bathurst and Wellington; north to Newcastle, Maitland, Port Stephens and Port Macquarie; south-west to Liverpool, Campbelltown and Goulburn, and south to Illawarra, Wollongong and Shoalhaven. He left Port Jackson for the last time on 12 March 1837.

In Backhouse's Narrative stern admonitions against drinking, gambling, flogging--and against placing too much faith in formal religion--were liberally interspersed with the astute botanical observations of a competent field naturalist. As a trained nurseryman, he recognized at sight many species of the dry sandstone country around Port Jackson and of the lush rainforests of Illawarra and the lower Hunter. He doubtless also had an eye for likely horticultural novelties. The specimens collected and the observations made during his long journeys enabled Backhouse to compile some botanical works which remain unpublished. These included "An Enumeration of Plants Noticed...on Visits to Moreton Bay and Lake Macquarie in the Third and Fourth

554 Rev. G.E. Turner, B.C.L. (Oxon.) (1810-1869) arrived in Sydney in 1838. He was Incumbent of St. Anne's, Ryde (a parish vacated by Rev.C.P.N. Wilton some ten years earlier) from March 1839 until a fall from his horse led to his death on 10 Jan. 1869. See Chapter V, pp. 488, 499, 508-509, also Hort. Mag., VI, 1869, pp. 41-42, and Proc. Roy. Soc. NSW, 1908, p. 126.

555 Backhouse : Narrative, p. xv.

556 including those of the Macleays, the Dumaresqs, Alex. Berry, Charles Throsby, Charles Sturt, John Jamison.

Months, 1836".⁵⁵⁷ Lest such a work should appear to belie the stated purpose of his journeys, Backhouse prefaced it by declaring :

As my objects in visiting the Penal Settlement at Moreton Bay, and the Missionary Station on Lake Macquarie,⁵⁵⁸ were not of scientific research; but, of the fulfilment of a religious duty, my rambles were only such as relaxation, and exercise for preservation of health, required; or, as detention consequent upon adverse winds, or, as walking some journeys afforded opportunity for...⁵⁵⁹

Backhouse listed 249 species of plants, often with commendable descriptions of habit, habitat and uses. With a nurseryman's eye he discerned what might be termed "horticultural varieties" within some species regarded as botanically identical, and he was therefore obliged to coin his own specific names in many cases, indicating the authority as "JB.Mss." or simply "JB".⁵⁶⁰ In modern parlance, he was in matters taxonomic, a "splitter". Backhouse also compiled "Plants of Norfolk Island"⁵⁶¹ and "Botany of New South Wales"⁵⁶² in which he again described and named certain plants he considered were new species.⁵⁶³

In the midst of his philanthropic labours, Backhouse amassed a "considerable herbarium",⁵⁶⁴ and Bentham acknowledged his N.S.W. specimens over one hundred times in Flora Australiensis.⁵⁶⁵ For Backhouse as for many more orthodox clergy, such specimens displayed

the power and wisdom of the Creator. The more the works of creation are understood, the more the evidence of infinite wisdom and power in the Creator is seen.

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- 557 Papers of Linnean Soc. of London, ML.FM4/2699.
558 i.e. Rev. Lancelot Threlkeld's establishment at "Ebenezer" (Toronto).
559 Papers of Linnean Soc. of London, loc.cit.
560 e.g. he listed five species of Mistletoe, Loranthus spp. including "L.Walkeri (JB.Mss)...first detected by my friend & companion Geo. Washington Walker".
561 Papers of Linnean Soc. of London, ML.FM4/2699.
562 2 Vols. MS.folio, over 200 pp.each, in library of Royal Botanic Gardens, Kew.
563 See the description of his "Clematis humilis JB." reproduced from the Kew manuscript on p.683.
564 J.D. Hooker's term--see below.
565 See Appendix I.

There was, however, cause for regret that "among those who study them, too many make them their idols, instead of giving God the glory".⁵⁶⁶

Backhouse corresponded with Sir William Jackson Hooker of Kew and with Sir James Edward Smith, founder of the Linnean Society. He also kept in touch with Alexander McLeay, sending plants for the Elizabeth Bay garden which impressed him so much.⁵⁶⁷ Joseph Dalton Hooker thought highly of Backhouse's journals, his "considerable herbarium" and "copious MS. notes".⁵⁶⁸ Backhouse was a sincere, austere man, whose contribution to botanical knowledge through the collection, cultivation and observation of native plants was quite significant. It is regrettable that while the value of his philanthropic work was clearly recognized, his stern sense of duty, and probable fear of puritan criticism, should have caused him virtually to apologise for his scientific work. It was well that in 1845, W.J. Hooker and W.H. Harvey named a myrtaceous genus Backhousia in honour of one who was such a strong advocate of humility and whose purely botanical work remained unpublished.

The Rev. Richard Taylor arrived in Sydney on 12 June 1836 and two days later made his first excursion "as far as Woolloomoolloo".

Taylor was

was interested with the very good variety of plants we met with in our walk almost all of which were so entirely different from any we were accustomed to though I have seen many of them in the green houses of England.⁵⁶⁹

566 Backhouse : Narrative, p.237; also Extracts from Letters, Part II, p.56.

567 Backhouse to McLeay, 20 Nov.1843, ML.FM4/2699. Backhouse sent a list of 72 plants being "Contents of a Ward's Case sent to Alex^r McLeay" and hoped in return to receive some "plants of Acrostichum grande" which "grows at Lake Innes, Port Macquarie" (near the home of McLeay's daughter, Mrs. Margaret Innes). Backhouse suggested that "young ones not much bigger than a crown piece" might be transported successfully in a Wardian Case. The references are to the large Stag-horn Fern, Platyocerium grande. In 1837, Backhouse, "remembering thy wish to increase thy collection of Eucalypti", had sent McLeay seedlings of E.globulus from Van Diemen's Land. ML.FM4/2699.

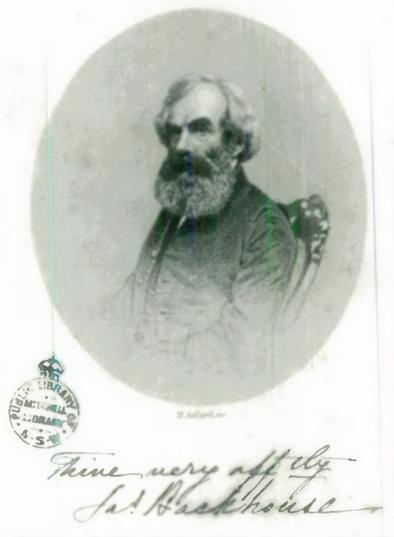
568 Hooker : Introductory Essay, pp.cxxv-cxxvi.

569 Taylor : Diary, p.153. 14 June 1836.

James Backhouse (1794-1869), nurseryman,
naturalist and Quaker missionary. Photo:
Mitchell Library.

Below: Backhouse's description of "Clematis
humilis JB.", now known as Clematis
microphylla var. leptophylla.

From J. Backhouse: Botany of New South
Wales, MS., Royal Botanic Gardens, Kew.



Clematis humilis JB.

Flowers branched, dioecious, of an ochraceous
colour. Leaves biternate, or bipinnate ~~FF~~:
divisions linear-ovate, base attenuated.

This small, half climbing species, attaining
to from 2 to 3 ft. in height, I noticed first
sharply in a sequestered branch of
Wellington Valley, growing on the grassy
edge of a natural ditch, at the foot of a
tree, among grass. I afterwards met with
it in a situation somewhat similar, near
St. Sabinus in the district of St. George's, on
the Hunter River; and it was among the
specimens brought by Major Mitchell
from the southern part of N.S. Wales.
Port. Jackson. Port Phillip. about
Adelaide. South Australia. Possibly
distinct?