

Ferdinand Mueller in Western Australia in 1877, with notes on his later contributions to the Western Australian flora

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Abstract

Dowe, J.L. Ferdinand Mueller in Western Australia in 1877, with notes on his later contributions to the Western Australian flora. *Nuytsia* 34: 157–178 (2023). Baron Ferdinand von Mueller, Australia's most productive botanist of the mid–late nineteenth century, was especially enamoured with the flora of Western Australia, and wrote about its 'marvellous exuberance', 'typic singularity' and 'endemism'. He botanised in Western Australia on three occasions: in 1856 in the Sturt Creek area during Augustus Gregory's North Australian Exploring Expedition; in 1867 in the Porongurup Range and Stirling Range and around Albany; and in 1877 with excursions from Champion Bay to Shark Bay and from Perth to Albany. Although he considered that most of Australia's plant taxa had been described by the late 1870s, he remained attentive for novelties, especially those that were rare or from remote, under-botanised areas, especially in Western Australia. Many of Mueller's later publications consolidated aspects of nomenclature, systematics, biogeography, economics, horticulture and utilisation of the flora of Western Australia.

Introduction

Ferdinand von Mueller (1825–1896) was Australia's most productive and prominent botanist of the latter half of the nineteenth century. As government botanist for the colony of Victoria 1853–96, his ambition was to elucidate the flora for the entire Australian continent. However, his most productive taxonomy involved two states (then colonies), Victoria and Western Australia. As government botanist for Victoria this was an expected outcome for that colony as he was based in Melbourne. For Western Australia, particularly the south-west region, it was a matter of deep interest, astonishment and intrigue as the flora there was of a significantly different character and composition compared to much of the rest of the continent (Mueller 1886a). As early as 1867, Mueller (1867: 10) articulated the botanically unique aspects of the south-western parts of Western Australia, writing that 'no part of Australia has the marked peculiarities of its vegetation so strongly expressed, and no part of this great country produces so rich an assemblage of species within a limited area, as the remotest south-western portion of the continent'. Later in his career and summarising botanical endeavours in Western Australia, Mueller (1896a: 195) expressed that the flora exhibited 'a marvellous exuberance of plants, different in species, and often gay or odd in aspect', and reiterated that the greatest proportion of Australia's endemic plants occurred 'within a triangle formed by a line of demarcation drawn from the south of Sharks Bay to the west of the Great Bight; and within this space are chiefly located those species which are exclusively restricted to the West Australian territory'. This area was subsequently recognised as the South-western Botanical Province (Beard 1980), a designation that remains current.

The first assessment of Mueller's work on the Western Australia flora was provided by Diels (1906: 56) writing that Mueller's 'receptive sense strongly felt the aesthetic peculiarity of this flora. Its creations filled him with devotion ... there is something touching about reading the words that close his last short description of Western Australian vegetation; they seem like saying goodbye to a circle of friends you have grown fond of'. Diels work was in German and two English translations are available, partly by Carr in 1981 and fully by Grieve *et al.* in 2007 (see Diels (1981) and Diels (2007) respectively).

Mueller (1879: 2), on botanising in Western Australia, wrote that he 'had only on three occasions the opportunity of traversing portions of the vast extent of West Australia, and then only for a few weeks each time'. The first, in 1856, was during Augustus Gregory's North Australian Exploring Expedition to which Mueller was appointed botanist (Cohn 1996; Dowe & Schweizer 2022). This expedition was sponsored by the British Government and the Royal Geographical Society, London, and was undertaken by Mueller after obtaining leave of absence from his position of government botanist of Victoria (Cohn 1996). The expedition sailed from Sydney to arrive at Victoria River (18 July–15 Sept. 1855) before exploring much of the Victoria River catchment and nearby areas (15 Sept. 1855–21 June 1856) and then travelling eastward through inland northern Australia to reach Brisbane (21 June–Dec. 1856) (Gregory 1857, 1858). The expedition's movement into Western Australia was only for a short distance when they travelled for about 300 km from the Northern Territory border into Western Australia whilst exploring Sturt Creek to as far inland as the permanent brackish Lake Gregory of which Sturt Creek is the primary source mainly fed by monsoonal rain events. The lake has no outlets. Gregory (1858: 46) wrote that the exploring party, for this excursion, included himself, as well as 'Mr. H. Gregory [brother Henry Churcham Gregory], Dr Mueller, and Charles Dean [stockman]'. On 21 February, 1856, Gregory (1858: 53) wrote that 'according to our longitude by account we have this day passed the boundary of Western Australia, which is the 129th meridian'. Soon after reaching Lake Gregory on about 5 March, the expedition retraced Sturt Creek and exited Western Australia by 20 March. Mueller returned from the North Australian Exploring Expedition with many thousands of specimens (Mueller 1856, 1857a–c), but it is not possible to positively identify those that were collected in Western Australia, although those labelled with 'Sturt's Creek' are obvious contenders (see AVH 2022). Although the headwater of Sturt Creek is in the Northern Territory, about 70% of its length is in Western Australia. Geographic names introduced by Gregory for places in Western Australia include Sturt [as Sturt's] Creek (22 Feb., for explorer Charles Napier Sturt), Mt Wittenoom (22 Feb., most likely for John Burdett Wittenoom, clergyman and educator in Perth), Mt Mueller (2 Mar., for Ferdinand Mueller), Mt Wilson (5 Mar., for expedition geologist James Spottiswood Wilson) and Denison Plains (17 Mar., for William Denison, Governor of New South Wales 1847–55, to whom Gregory reported).

Mueller's second visit to Western Australia was in 1867 when he departed Melbourne on 28 September for King George Sound,¹ and arrived there about 5 October. It was reported that 'his state of health rendered a brief absence from the colony necessary, and it is stated that he was obliged to take this step so suddenly that he had no time to obtain the necessary permission from the minister in charge of his department'.² From Albany, he travelled to Porongurup Range, Stirling Range and intermediate and nearby locations. He departed King George Sound for Melbourne on 9 November, arriving there on 14 November.³ In the field, Mueller was accompanied by George Maxwell, writing to Bentham that 'I took Mr Maxwell along with me and camped out a good deal'.⁴ George Maxwell (1804–1880) had

¹*The Empire* (Sydney). Melbourne. 4 Oct. 1867, p. 4.

²*The Herald* (Melbourne). No title. 1 Oct. 1867, p. 2.

³*The Leader* (Melbourne). Shipping. 16 Nov. 1867, p. 14.

⁴F. Mueller to George Bentham, 3 Nov. 1867. Home *et al.* (2023+).

been collecting botanical specimens in Western Australia since the 1840s and worked with collectors such as James Drummond, William Harvey and Augustus Oldfield (George 2009; Henderson 2011). Although there is only limited surviving correspondence between Mueller and Maxwell, they evidently worked productively together. In an obituary, Mueller (1880: 433) wrote that ‘encouraged by myself he [Maxwell] undertook several extensive journeys over then untrodden ground, eastward as far as the Great Bight, and thus found many new plants, and enabled us to extend the known limits of the range of many rare species, as recorded in the *Flora Australiensis*’. Maxwell’s productivity makes him one of the most significant botanical collectors active in Western Australia during the nineteenth-century. In regard to other field assistance provided to Mueller, he noted in a letter to Western Australian colonial secretary Frederick Barlee that ‘Sir Alexander Campbell has been most kind to me, and so were the few settlers, which in my line of travel I could visit’.⁵ At the time, Sir Alexander Thomas Cockburn-Campbell was Resident Magistrate, Deputy Treasurer and Sub-collector of Customs at Albany, positions he held from 1861 until his death in 1871. Mueller’s recorded collection localities include King George Sound, Mondurup Peak, Stirling Range and upper Kalgan River.

Mueller’s third visit to Western Australia was during October–December 1877, and is the primary subject of this paper. With regard to previous research on this visit, only broad and otherwise unconnected aspects have been published and it is an event in Mueller’s career that required further examination (pers. comm., Arthur Lucas, Mueller Correspondence Project). This work aims to provide an account of that excursion, examining his itinerary, taxonomic results and personal interactions.

Ferdinand Mueller’s interest in the Western Australian flora

At the age of 52 years, Mueller travelled to Western Australia in October 1877, with a number of specific tasks in mind: to visit Shark Bay ‘to see how far there the southern and the tropical forms of plants are meeting’,⁶ and to improve his well-being, ‘to re-establish my fluctuating health, which suffered much under the cruel and undeserved oppressions, to which I was a victim since several years’.⁷ In respect to potential botanical ‘discoveries’ he was restrained, writing that ‘few actual novelties could be expected to occur after the longer searches made by Drummond and others’ (Mueller 1878a: 151), in reference to the plant collections made in Western Australia by collectors since the commencement of European exploration.

Although there is no evidence that Mueller undertook the 1877 excursions with any prior commitment of support of the Western Australian government, he appears, whilst there, to have been encouraged to complete a report on the forest resources of the colony. On his departure in late December, he wrote to Western Australian colonial secretary Roger Goldsworthy: ‘After my return to Melbourne, and when again at the command of all my working material, I shall commence to furnish some data on the scientific aspect of the timber resources of your colony and on some other objects of vegetable wealth of this country, by which means I trust to offer some slight tribute in return for the unexpected advantages, which I have enjoyed through the generous action of the West Australian Government’.⁸ More on this, and other results and publications, is discussed below.

Although the Western Australian Government appears not to have initially endorsed Mueller’s trip to Western Australia, he nevertheless received support in the form of transport (horses) and guides

⁵F. Mueller to Frederick Barlee, 28 Oct. 1867. Home *et al.* (2023+).

⁶F. Mueller to George Bentham, 10 Oct. 1877. Home *et al.* (2023+).

⁷F. Mueller to Joseph Hooker, 5 Oct. 1877. Home *et al.* (2023+).

⁸F. Mueller to Roger Goldsworthy, 27 Dec. 1877. Home *et al.* (2023+).

during all the excursions. It has not been possible to determine what, if any, direct involvement the Western Australian government had in initially supporting Mueller's visit to Western Australia in 1877. It appears that he undertook the Champion Bay to Shark Bay excursion on his own volition but with personal support from government surveyor and friend John Forrest. However, the excursion from Perth to Albany appears to have had some official support by the Western Australian government.⁹ For this excursion, Mueller was granted an extension to his leave.¹⁰ Mueller (1879: 2) noted that the excursion was 'carried out under special facilities, liberally afforded by the West Australian Government'. Overall, co-ordination of Mueller's field travels was overseen by Forrest who had connections with other government services and facilitated land and sea transport, horses, personnel and accommodation. Mueller noted that this assistance was essential to the success of the excursion. In a summarising letter to Western Australian colonial secretary Roger Goldsworthy, Mueller wrote: 'it is my pleasurable duty, to express my deep gratitude to your government for the interest evinced in my researches and the great support given to my recent travels in your colony'.¹¹ He went on to list those officials who contributed to the success of the excursions. The persons involved are discussed below when relevant to Mueller's itinerary.

By the late 1870s, Mueller's taxonomic productivity and the description of new taxa had been waning and by the time he undertook the trip to Western Australia in 1877 he was primarily dealing with consolidation of the floristic research thus far achieved for Australia. A graph illustrating Mueller's descriptions of new taxa over time is presented in Figure 1, and illustrates the decline in novelties following very active taxonomy in the early years of his career. His contribution to *Flora Australiensis* had come to a conclusion with publication of the seventh and last volume in 1878 (Bentham 1878). The number of undescribed taxa available to Mueller throughout Australia was declining as a result of continent-wide settlement. Although Mueller reiterated the lack of potential of new discoveries in Western Australia on a number of occasions, he nevertheless reaffirmed the great floristic diversity in Western Australia by describing many species in the latter decades of his life, some based on his own collections as well as those, for example, by John and Alexander Forrest (Mueller 1881, 1883), H.S. King (Mueller 1886b), J.D. Batt (Short 1997) and resident amateur collectors including many women (Archer & Maroske 1996; George 2009; Maroske & Vaughan 2014). He remained active in soliciting interested persons to collect specimens on his behalf, especially in remote areas. One newspaper, in 1883, reported on Mueller's appeals to settlers in Western Australia, in which he urged 'inland and northern and far eastern settlers to induce the natives to bring, in baskets, specimens of all sorts of plants, to be dried at the stations and forwarded to me by post ... perhaps I may not live many years to carry on my investigations and I should like so much to give the finishing stroke for the elaboration of the rich and varied flora of Western Australia before I pass away'.¹² In a later report Mueller was specific in the locations that were of interest to him. He wrote in 1885: 'I want, particularly, plants from near the sources of the Murchison River, also from far east of York, as well as from Eucla, Fraser Range and other distant eastern localities in your vast colonial territory'.¹³ In respect to particular plants, Mueller wrote in 1889: 'Of about 50 W.A. acacias the fruits are not yet known; sprigs therefore of these kinds of plants would be very welcome, as those would help gradually

⁹F. Mueller to Graham Berry, 12 May 1878. (Home *et al.* 2023+).

¹⁰Roger Goldsworthy to Graham Berry, L77/12831, unit 1011, VPRS 3991/P inward registered correspondence, VA 475 Chief Secretary's Department, Public Record Office, Victoria. Post Office Telegraphs. From Perth: Western Australia, 21/11/77.

¹¹F. Mueller to Roger Goldsworthy, 27 Dec. 1877. Home *et al.* (2023+).

¹²*The West Australian* (Perth). Occasional notes. 24 July 1883, p. 2.

¹³*The Inquirer and Commercial News* (Perth). Letters to the editor. 17 June 1885, p. 5.

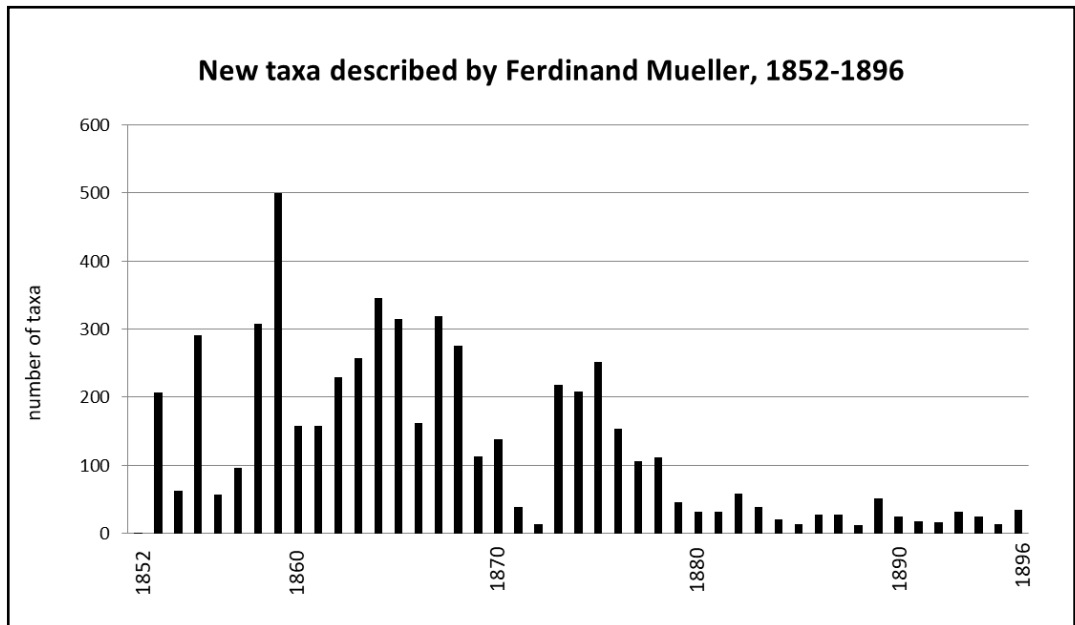


Figure 1. Timeline of new taxa described by Ferdinand Mueller, 1852–1896. Lists of taxa with author as “F.Muell.” were generated from the *International Plant Names Index* based on all years between 1852 and 1896, accessed Dec. 2022. New combinations were deleted from the lists.

to complete the atlas of acacias, of which 130 plants have already appeared’.¹⁴ In his *Iconography of Australian species of Acacia and cognate genera*, Mueller (1887–1888) included 36 species from Western Australia, but noted that ‘no plant has been admitted into these pages, of which the material for detail-analysis was not fully extant’, thus his interest in obtaining full material of those Western Australian species yet to be illustrated.

An event demonstrating Mueller’s single-minded interest in acquiring specimens of Western Australian plants was related by the English artist Marianne North, who visited Australia in 1880–1881. North travelled extensively in southern Queensland, New South Wales, Victoria, Western Australia and Tasmania, producing 80 paintings (depicting *c.* 200 spp.) of Australian plants mostly in habitat, and which are now on permanent exhibition in the Marianne North Gallery at Royal Botanic Gardens Kew, U.K. (Dowe 2020). She completed 22 paintings of Western Australian plants. In her book *Recollections of a Happy Life being the Autobiography of Marianne North* (North 1892), she wrote that when she visited Mueller in Melbourne after her visit to Western Australia, she showed him her paintings of which Mueller, in a letter to Joseph Hooker, wrote: ‘This evening I saw Miss North after her voyage to West Australia, and bid her Adieu, as she will start for Tasmania in a few days. Her paintings of W.A. vegetation are grand. I particularly admired your fathers *Euc. macrocarpa*; you probably have this brilliant [sic] species at Kew, as I sent seeds repeatedly’.¹⁵

It was during their meeting that North also showed Mueller specimens of flowers of *Eucalyptus macrocarpa* Hook., collected by her in Western Australia at Toodyay. She wrote: ‘Baron von Mueller was excited over my paintings of the *Nuytsia* [*Nuytsia floribunda* (Labill.) R.Br. ex G.Don] and the *Eucalyptus macrocarpa*, which he had named [correctly W.Hooker], but had never seen in flower.

¹⁴*The West Australian* (Perth). The flora of Western Australia. 2 July 1889, p. 3.

¹⁵F. Mueller to Joseph Hooker, 15 Jan. 1881. Home *et al.* (2023+).

When I showed him the bud with its white extinguisher cap tied over it, which I was saving for Kew, he said, “Fair lady, you permit I take that” and calmly pocketed it!’. This specimen [MEL1612940] is held in the herbarium of Royal Botanic Gardens Victoria (Maroske 2014).

After 1877, new taxa from Western Australia were published by Mueller in a broad range of publications, including the final volumes of *Fragmenta phytographiae Australiae*, *Southern Science Record*, the *Chemist and Druggist with Australasian supplement*, *Victorian Naturalist* and in his account of the collections made by King (Mueller 1886b). As taxonomic novelties were less forthcoming in Australia, Mueller paid particular attention to the floras of New Guinea and the Pacific islands, for which he described many new species through the 1880s and early 1890s (see Churchill *et al.* 1978).

In addition to material for taxonomic work, Mueller remained alert for species that were of horticultural potential. Whilst in the Shark Bay area he hoped to collect seeds of *Verticordia oculata* Meisn., intending to propagate the species and to send living plants to Kew (Mueller 1878a). Mueller described the species as ‘the most beautiful plant in its own delicacy of all Australia’¹⁶ and ‘a princess among Australian flowers’ (Mueller 1896a: 197). However, obtaining seeds of *V. oculata* proved difficult and propagation even more so, and to cultivate the species was to be Mueller’s ‘greatest triumph (gained by me) in ornamental culture’.¹⁷

Mueller persisted with this aspiration, writing in 1889 to Dr Charles Bolton Elliott of Champion Bay: ‘For a series of years, dear Dr Elliott, I have vainly endeavoured to obtain living plants or germinable seeds of the true *Verticordias* from the Sandplains between the Geraldine Mine [north of Northampton] and the Greenough River [east of Geraldton]. As this tract is within your official area, you might likely know some people there who about Easter would send you fresh a few branches of each of these two *Verticordias*, wrapped up at once. If these were forwarded speedily [sic] by post from your place enveloped in some air and water tight substance they would likely remain suple [sic] and retain sufficient sap so that I might make the first experiment of getting these two most beautiful plants of W.A. to grow from cuttings under a bell-glass with bottom heat here. Perhaps I could be supplied also with shrivelled flowers which about Easter ought to have formed their tiny seeds within’.¹⁸ Dr Charles Bolton Elliott (c.1851–1904) was government medical and quarantine officer in Geraldton.¹⁹

Mueller’s drive to account for Australia’s floristic diversity continued despite the personally perceived and real obstacles that he was experiencing. Mueller’s reference to his declining health and grim emotional circumstances were included in a number of proposals as to why he undertook the Western Australian excursions in both 1867 and 1877. One of the impacts on his health was his controversial dismissal as director of the Melbourne botanic gardens in 1873 (Cohn & Maroske 1996), an outcome that he felt was unjust and that became a persistent grievance (Hay 2021). He remained embittered by the actions of those public servants and nurserymen who ‘conspired’ to remove him as director, although he remained, after dismissal as director of the botanical gardens, as government botanist at an unchanged salary. Another significant impact was the death in 1876 (11 Feb.) of Dr Eduard Wehl, the husband of Mueller’s sister Clara and Mueller’s brother-in-law. Eduard’s death left Clara in a precarious position as eight of their fifteen children were then under the age of 14 years, with the youngest not quite three months old (Dowe *et al.* 2020). Mueller visited Clara in South Australia in

¹⁶F. Mueller to William Thiselton-Dyer, 19 Aug. 1892. Home *et al.* (2023+).

¹⁷F. Mueller to William Thiselton-Dyer, 28 Aug. 1889. Home *et al.* (2023+).

¹⁸*The West Australian* (Perth). The flora of Western Australia. 2 July 1889, p. 3.

¹⁹*The Geraldton Express and Murchison and Yalgo Goldfields Chronicler*. Death of Dr. Elliott. 13 May 1904, p. 7.

February 1876 to assist with Eduard's estate and to put in place some financial support for her and her family. He later provided money for the education of some of the children,²⁰ as well as including them as beneficiaries in his Will.²¹

Mueller's itinerary and outcomes in Western Australia, October to December 1877

Mueller's Western Australian itinerary presented here was formulated mainly on correspondence accessed via the *Correspondence of Ferdinand von Mueller* (Home *et al.* 2023+), newspaper reports and shipping notifications, mostly accessed through the Trove newspaper search facility (Trove 2022). There were miss-matches of dates between some reports and in those instances the timetable is determined on the most probable outcome. There are also significant gaps in the available data and caution is necessary in interpreting some itinerary dates and events.

Mueller departed Williamstown (Melbourne) on R.M.S.S. *Siam* on the afternoon of 4 October 1877 bound for King George's Sound via Glenelg (Adelaide).²² On arrival at Glenelg on the morning of 6 October,²³ he was taken to *Hotel Europe* (Grenfell Street, Adelaide) where the German Club, chaired by his friend Friedrich Krichauff, provided an address of welcome in which they spoke of his attainments in botanical science and his proposed visit to Western Australia to further his research.²⁴ Mueller departed Glenelg on the evening of the same day on R.M.S.S. *Siam*.²⁵

Mueller arrived in Albany on 10 October.²⁶ The following morning (11 Oct.) he boarded S.S. *Rob Roy* and sailed for Perth,²⁷ via Torbay, Busselton and Bunbury, and arrived at Fremantle on 15 October.²⁸ It was reported that S.S. *Rob Roy* had 'made an unusually long passage, having been compelled, by stress of weather, to anchor under West Cape Howe, for about forty-two hours'.²⁹ From Fremantle, Mueller was taken to Perth by Mr. John Forrest, 'by whom he was introduced to many of the citizens on his arrival'.³⁰

Mueller reboarded the S.S. *Rob Roy* on the following day (16 Oct.), and sailed to Champion Bay.³¹ It was reported that 'the object of his visit is to determine the northerly limits of the flora of this colony, for which purpose he has started for the Upper Murchison and Sharks Bay. The Baron is accompanied by a mounted trooper and a native constable, placed at his disposal by the local Government'.³² The date and time of his arrival at Champion Bay are not known, nor are his immediate movements. The

²⁰F. Mueller to Louise Wehl, 29 Sept. 1884. Home *et al.* (2023+).

²¹Ferdinand Mueller's last will and testament, 17 June 1894. Home *et al.* (2023+).

²²*The Australasian* (Melbourne). Arrived. 6 Oct. 1877, p. 14.

²³*The Evening Journal* (Adelaide). Latest news. 6 Oct. 1877, p. 2.

²⁴*The Evening Journal* (Adelaide). Latest news. 8 Oct. 1877, p. 2.

²⁵*The Sydney Morning Herald*. Adelaide. 9 Oct. 1877, p. 5.

²⁶*The Western Australian Times*, Arrival of the colonial mail. 12 Oct. 1877, p. 2.

²⁷*The Herald* (Fremantle). Governor Robinson. 13 Oct. 1877, p. 3.

²⁸*The Herald* (Fremantle). Mail news. 20 Oct. 1877, p. 3.

²⁹*The Herald* (Fremantle). Mail news. 20 Oct. 1877, p. 3.

³⁰*The Inquirer and Commercial News* (Perth). St. George's Vestry. 17 Oct. 1877, p. 3.

³¹*The Herald* (Fremantle). Shipping report. 20 Oct. 1877, p. 2.

³²*The Western Australian Times*. Abstract of news. 30 Oct. 1877, p. 2.

mounted trooper was Corporal Oliver Llewellyn Jones (1848–1933) (George 2009).³³ Jones accompanied Mueller on his travels to Shark Bay and back to Champion Bay. It appears that Jones remained at Champion Bay after Mueller's departure for Perth. Jones went on to collect for Mueller including type specimens from Gascoyne River (for example, *Acacia sclerosperma* F. Muell., [MEL2089466], *Acacia cibaria* F. Muell., [= *Acacia brachystachya* Benth.] [MEL724434] and *Tribulus forrestii* F. Muell., [MEL79403]). Some collections are labelled with Jones as the collector in November 1877 and may have been collected after Mueller returned to Perth on 16 November. Jones has collections dated as 1878 and 1879 at Irwin and Greenough Rivers and then at Gascoyne River and the vicinity of Shark Bay 1880–1885 (AVH 2022). There are no collections known outside these years. The name of the 'native constable' is not known or any details about his involvement.

From Champion Bay, Mueller travelled to the Murchison River and onto Shark Bay and the Peron Peninsula. Mueller wrote: 'I rode from the Murchison River across to Shark's Bay: no habitation for 100 miles, and no water for 70 miles. A large number of the Murchison River plants were traced by me to Peron's Peninsula, Shark's Bay' (Mueller 1878a: 151). With regard to the vegetation, Mueller wrote: 'As I anticipated I did not observe much novelty, but I was able to trace numerous species over a much wider geographic area, than that previously known, and I had also many opportunities of improving the diagnosis of numerous species'.³⁴ Mueller (1883: 4) wrote that he could only spend two days at Shark Bay because of 'prior arrangements for early forest services in the South'. Mueller also made collections from the Irwin and Greenough rivers, but whether he visited those locations prior to, or after he returned from Shark Bay cannot be determined on the available data.

During his travels to Shark Bay, Mueller received support from Andrew Jameson Ogilvie (1855–1906) for whom he named *Lasiopetalum ogilvieanum* F. Muell. (Table 1). In the protologue for the name, Mueller (1881: 108) wrote: 'I mentioned this evidently rare species to my friend A.J. Ogilvie, who kindly supported my journey from the place of discovery of this plant to Shark Bay'. Nothing is recorded about their meeting or what kind of support was provided by Ogilvie. Ogilvie was a prominent pastoralist in the Murchison River/Shark Bay region.³⁵

Based on a collection made by Mueller in the Murchison River to Shark Bay area, he named *Lhotskyia harvestiana* F. Muell. [= *Calytrix harvestiana* (F. Muell.) Craven] to acknowledge the support he received from Lieut.-Colonel Edward Douglas Harvest, writing that he (incorrectly as 'William' Harvest by Mueller) 'has lately most kindly assisted my phytological journeys' (Table 1). Harvest was acting governor of Western Australia, 7 September 1877 to 12 November 1877, during the interval between the departure of Sir W.C.F. Robinson and the arrival of Sir Harry St. George Ord.³⁶

Available data (AVH 2022; MELISR) indicate that Mueller collected about 160 specimens during the Champion Bay to Shark Bay excursion, of which 16 represented new taxa (Table 1).

Mueller departed Champion Bay on about 15 November to arrive in Fremantle on 17 November.³⁷ In Perth, he was the guest of John Forrest.³⁸ On 20 November, Mueller and Forrest travelled to Northam

³³F. Mueller to Oliver Jones, 1 Jan. 1880. Home *et al.* (2023+).

³⁴F. Mueller to James Hector, 1 Jan. 1878. Home *et al.* (2023+).

³⁵*The Geraldton Express*. Local and general. 12 Oct. 1906, p. 2.

³⁶*The Western Australian Times* (Perth). Succession of governors in West Australia. 6 June 1879, p. 7.

³⁷*The Herald* (Fremantle). Shipping report. 24 Nov. 1877, p. 2.

³⁸*The Inquirer and Commercial News* (Perth). Telegraphic news. 21 Nov. 1877, p. 3.

by horses provided by the police department.³⁹ It was reported in a newspaper that: ‘...we had a flying visit in Northam from Baron Von Mueller, the celebrated botanist, who was accompanied by Mr. John Forrest. The Baron, who arrived in the evening and left in good time on the following day, was able to collect some seeds of our trees which he was anxious to obtain’.⁴⁰ Mueller and Forrest departed Northam on 21 November, travelling ‘beyond York’ together.⁴¹ Similar to Mueller’s travels to Shark Bay, official assistance was provided in the form of horses and guides and with the order from Superintendent of Police Matthew Smith to Sub-inspector William Piesse that at Northam ‘should he [Mueller] require a horse to ride or a constable to guide him anywhere let him have them’.⁴² On 23 November, Mueller and Forrest travelled to the ‘Fluted Gum Forest a few miles from Jurinceme’.⁴³ The Fluted Gum refers to *Eucalyptus salubris* F.Muell., ‘of the West-Australian colonists, so called on account of the broad longitudinal often twisted impressions or wide blunt longitudinal ridges of the stem’ (Mueller 1879–1884, decade 9, 8th plate), but the place name, partly illegible, has not been identified. Whilst Forrest returned to Perth soon after, Mueller remained in the area but was in Perth by at least 26 November according to dated correspondence (Mueller 1878a). One new species, *Eucalyptus salmonophloia* F.Muell., was described by Mueller (1878b) based on a collection from Upper Swan River with the epithet given ‘in allusion to the smooth grey and somewhat purplish bark of an oily lustre’ (Mueller 1879–1884, decade 9: 7th plate) (Table 1).

On about 30 November, Mueller commenced his excursions in the south. His intention was to ‘travel on a new line to Geography Bay [sic], and thence to the hilly country about Point Entrecasteaux [sic] and Point Nuyts, where the back ranges have never yet been traversed by any naturalist’ (Mueller 1878a: 151), and ‘to examine generally the country lying between Cape Leuwin [sic] and King George’s Sound’⁴⁴ before returning to Melbourne.

After leaving Perth, Mueller travelled via Serpentine River (1 Dec.), Pinjarra (3 Dec.), Harvey River (5 Dec.) and Collie River to arrive in Bunbury on about 6–7 December (AVH 2022). At Pinjarra, Mueller engaged with Captain Theodore Fawcett (1832–1898), commanding captain of the Pinjarra Mounted volunteers. The volunteers were a corps founded by Fawcett and active from 1862 until 1882 (Wieck 1962). A collection of *Xanthorrhoea* [MEL2216303, 3 Dec. 1877] has a label in Mueller’s hand that reads: ‘Brought by Capt Fawcett’s aboriginal, stem thick, (arboresc) Peduncle 2 foot. Spike short. Supposed to be distinct from *X. preissii*, with which it seems to grow intermixed’. It is not known if Mueller had other interactions with Fawcett or the indigenous person who supplied the specimen.

Mueller had another intention when he visited Bunbury. This was to examine a block of land that he had purchased. The block had originally been granted by Western Australian Governor Robinson to surveyor Ernest Giles for his contribution to exploration in Western Australia and Giles subsequently sold it to Mueller.⁴⁵ It was a 2000 acre (809 hectare) block in the Bunbury/Geographe Bay area. The exact boundaries of the land have not been established although Mueller later referred to it as taking

³⁹Matthew Skinner Smith, Superintendent of Police, Perth, to Captain William Roper Piesse, Northam. Police Department, Chief Office, Perth, Nov. 20th 1877, draft transcript provided by Mueller correspondence project.

⁴⁰*The Western Australian Times* (Perth). Country news. 7 Dec. 1877, p. 3.

⁴¹F. Mueller to Roger Goldsworthy, 27 Dec. 1877. Home *et al.* (2023+).

⁴²Matthew Smith (Perth) to William Piesse (Northam), Police Department, Chief Office, Perth, Nov. 20th 1877, draft transcript provided by Mueller correspondence project.

⁴³From William Piesse to Matthew Smith, 23 Nov. 1877. Cons 129, no. 25/409, State Records Office of Western Australia, draft transcript provided by Mueller correspondence project.

⁴⁴*The Inquirer and Commercial News* (Perth). Monthly summary for the mails. 26 Dec. 1877, p. 3.

⁴⁵Ernest Giles to Harry Ord, 18 Mar. 1878. Home *et al.* (2023+).

Table 1. New taxa described from specimens collected by Ferdinand Mueller in Western Australia during October–December 1877.

Acacia adnata F.Muell., *Chem. & Drugg. Australas. Suppl.* 5(51): 26 (1882).

Type citation: Near the Irwin River; F.v.M.

Mueller specimens: holo: K000806105 [K catalogue has it as isotype]; iso: MEL2073980, NSW216929; status not designated: PERTH708747.

Typification: Cowan and Lewington (*Fl. Australia* 11B: 62 (2001)).

Acacia amblyophylla F.Muell., *S. Sci. Rec.* 2(7): 149 (1882).

Type citation: Near Shark-Bay; F.v.M.

Mueller specimens: holo: MEL615148; iso: NSW, PERTH143006; photo of holotype: PERTH739928.

Typification: Maslin (*Fl. Australia* 11A: 287 (2001)).

Brachyscome latisquamea F.Muell., *Fragm.* 11: 16 (1878) [= *Pembertonia latisquamea* (F.Muell.) P.S.Short].

Type citation: Ad sinum marinum Shark-Bay in locis tempore pluviali humidis; F.M. Prope Champion-Bay, C.Gray.

Mueller specimens: lecto: MEL239618 p.p.; isolecto: MEL239618 p.p.

Typification: Short (*J. Adelaide Bot. Gard.* 28: 169 (2014)).

Comesperma rhadinocarpum F.Muell., *Fragm.* 11: 1 (1878).

Type citation: In virgultis ad fluvios Greenough's, Arrowsmith's et Irwin's River; F.M.

Mueller specimen: status not designated: MEL98608.

Typification: No recent treatment.

Note: van Steenis (*Acta Bot. Neerl.* 17: 383 (1968)) proposed the new combination *Bredemeyera rhadinocarpa* (F.Muell.) Chodat ex Steenis, but did not indicate typification. This action has not been accepted in Australia.

Darwinia forrestii F.Muell., *Fragm.* 11: 9 (1878) [= *Chamelaucium forrestii* (F.Muell.) N.G.Marchant].

Type citation: In rupibus graniticis ad summitatem montis Burrobonup prope flumen Gordon's River; F.M.

Mueller specimens: lecto: MEL2290893; isolecto: CGE, GH00068981, MEL2290894, MEL726509, MEL726510, PERTH06796427.

Typification: Marchant (*Nyctisia* 30: 323 (2019)).

Deyeuxia abscondita T.D.Macfarl., *Nyctisia* 31: 179, Figs 1, 2 (2020).

Type citation: Preston's River [Preston River], Western Australia, 8 December 1877, F.Mueller s.n. (holo: MEL 72092); Blackwood & Preston River, Western Australia, 8 December 1877, F.Mueller s.n. (iso: PERTH ex MEL 2127721A).

Mueller specimens: holo: MEL72092; iso: MEL2127721.

Typification: Macfarlane (*Nyctisia* 31:179 (2020)).

Note: At time of writing, MEL2127721 had not yet been transferred to PERTH (pers. comm, T. Macfarlane).

Eremaea violacea F.Muell., *Fragm.* 11: 10 (1878).

Type citation: In plagis arenosis ad fluvios Irwin's, Arrowsmith's et Greenough's River; F.M.

Mueller specimens: holo: MEL526437; iso: CBG, K000793698, MEL526438, PERTH.

Typification: Hnatiuk (*Nuytsia* 9(2): 162 (1993)).

Eucalyptus salmonophloia F.Muell., *Fragm.* 11: 11 (1878).

Type citation: In silvis ad flumen cygnorum ejus ostium versus, F.M.; abhine usque in viciniam oasis Victoria-Spring passim occurrens; E.Giles.

Mueller specimens: syn: MEL1517645, MEL1517646, MEL1517647, MEL567376, MEL567377, MEL567379, MEL567380, MEL567381, MEL569054, NSW346141.

Typification: Chippendale (*Fl. Australia* 19: 262 (1988)).

Note: Maiden (*Crit. Revis. Eucalyptus* 2(7): 217 (1912)) corrected the location of Mueller's collection to the head of the Swan River, rather than the mouth of the river as stated by Mueller.

Eucalyptus todtiana F.Muell., *S. Sci. Rec.* 2: 171 (1882).

Type citation: Near the Greenough and Arrowsmith River on sandy ridges, F.v.M.; near the Moore-River, J.Forrest.

Mueller specimens: syn: K (not found on K catalogue), MEL567390, MEL568930, MEL1517660, NSW354141.

Typification: Chippendale (*Fl. Australia* 19: 131 (1988)).

Gastrolobium forrestii Ewart, *J. Proc. R. Soc. N.S.W.* 42: 188 (1908) [= *Gastrolobium cuneatum* Henfr.].

Type citation: Blackwood River, W.A., Sir John Forrest; W.Aust. 1889; Gordon River in forest land, 1877.

Mueller specimen: status not designated: MEL247648.

Typification: Chandler *et al.* (*Aust. Syst. Bot.* 15(5): 636 (2002)).

Note: Chandler *et al.* cited only Forrest specimens as types, not the Mueller specimen.

Halgania argrophylla Diels, *Bot. Jahrb. Syst.* 35(2–3): 491 (1904).

Type citation: in distr. Irwin pr. Irwin River et Greenough Riv. (F.v.Müller in hb. Melbourn!), pr. Northampton in arenosis aridis fruticulosus flor. m. Nov. (D. 5642).

Mueller specimen: lecto: MEL80049.

Typification: Holstein and Gottschling (*Aust. Syst. Bot.* 31(2): 115 (2018)).

Hibbertia cunninghamii var. *debilis* F.Muell. *Fragm.* 11: 93, *adnot.* (1880)

Type citation: detexi ad cataractas fluvii Serpentine-River.

Mueller specimens: status not designated: MEL666578, MEL666579.

Typification: Name of uncertain application (APNI, <https://biodiversity.org.au/nsi/services/search/names>.)

Hibbertia rhadinopoda F.Muell., *Fragm.* 11: 91 (1880) [= *Hibbertia diamosenos* (Steud.) J.R.Wheeler].

Type citation: In pratis fertilioribus ad flumen Harvey's River; F.M.

Mueller specimens: holo: MEL1010265, MEL1010266; status not designated: NSW436256, K000700348,

Typification: Wheeler (*Nuytsia* 15(2): 327 (2004)).

Hibbertia teretifolia var. *bisulcata* F.Muell., *Fragm.* 11: 95 (1880) [= *Hibbertia rupicola* (S.Moore) C.A.Gardner].

Type citation: a Champion-Bay (C.Gray), flumine Irwinii (F.M.) ad montes Stirlingii et promontorium Cape Arid (Maxwell).

Mueller specimen: syn: MEL666842.

Typification: Wheeler (*Nuytsia* 15(2): 296 (2004)).

Hybanthus debilissimus F.Muell., *Fragm.* 11: 4 (1878) [= *Pigea debilissima* (F.Muell.) P.I. Forster].

Type citation: In silvis Karri-forests secus flumen Shannon; F.M.

Mueller specimens: iso: AD, MEL26772, MEL26774, MEL26775; status not designated: K000327662, MEL26773.

Typification: Bennett (*Nuytsia* 1(3): 235 (1972)).

Lasiopetalum ogilvieanum F.Muell., *Fragm.* 11: 107 (1881).

Type citation: In locis sabulosis inter fluvios Greenough et Irwin River; F.M.

Mueller specimens: lecto: MEL52370; iso: K000686566, MEL52369.

Typification: Shepherd and Wilkins (*Nuytsia* 32:140 (2021)).

Lhotskya harvestiana F.Muell., *Fragm.* 11: 8 (1878) [= *Calytrix harvestiana* (F.Muell.) Craven].

Type citation: Inter flumen Murchison's River et sinum marinum Shark-Bay; F.M.

Mueller specimens: holo: MEL545045; iso, fragm: PERTH01065246.

Typification: Craven (*Brunonia* 10(1): 59 (1987)).

Mesomelaena stygia var. *deflexa* Kük., *Repert. Spec. Nov. Regni Veg.* 48: 53 (1940) [= *Mesomelaena stygia* subsp. *deflexa* (Kük.) K.L. Wilson]

Type citation: West-Australien: Zwischen den Arrowsmith – und Irwin – Rivers XI.1877 (F.Mueller! in herb. Phytol. Mus. Melbourne.)

Mueller specimens: holo: B 10 0296663; status not designated: K000960095, NSW722253.

Typification: Wilson (*Telopea* 2(2): 192 (1981)).

Ptilotus stirlingii var. *pumilus* Benl, *Muelleria* 1(2): 108 (1959) [= *Ptilotus stirlingii* (Lindl.) F.Muell. subsp. *stirlingii*].

Type citation: Type from Sharks Bay, Western Australia (Holotype of variety in MEL – F.Mueller, Oct., 1877).

Mueller specimens: holo: MEL2219748; status not designated: MEL2219742, MEL2219745.

Typification: Davis and Butcher (*Nuytsia* 20: 268 (2010)).

Roebuckia cheilocarpa var. *integra* P.S.Short, *J. Adelaide Bot. Gard.* 28: 175 (2014) [= *Roebuckia cheilocarpa* (F.Muell.) P.S. Short var. *cheilocarpa*]

Type citation: Western Australia. Between Shark Bay & Murchison River, F.Mueller (holotype: MEL 692820).

Mueller specimens: holo: MEL692820; status not designated: MEL692558, MEL692818, MEL692819, MEL692822.

Typification: Short (*J. Adelaide Bot. Gard.* 28: 175 (2014)).

Statice salicorniacea F.Muell., *Fragm.* 11: 7 (1878) [= *Muellerolimon salicorniaceum* (F.Muell.) Lincz.]

Type citation: In locis salinis ad margines oceani usque, secus paeninsulam Peronis et portum Freycineti sinus Shark-Bay; F.M.

Mueller specimens: holo: MEL44400; iso: K0007866676.

Typification: No recent treatment, but see Linczevski (*Botaniceskij Zurnal SSSR*: 676 (1982)) for transfer to *Muellerolimon*.

Note: The combination *Goniolimon salicorniaceum* (F.Muell.) Christenh. & Byng, proposed by Christenhusz *et al.* (*Global Flora* 4: 144 (2018)) has not been accepted in Australia.

Tetragonia diptera F.Muell., *Fragm.* 11: 8 (1878).

Type citation: Ad sinum marinum Shark-Bay; F.M.

Mueller specimens: syn: MEL99772, MEL99773; status not designated: K000768359.

Typification: Prescott (*Fl. Australia* 4: 40 (1984)).

Note: Prescott designated a specimen at MEL as an isotype.

Trachymene xerophila E.Pritz., *Bot. Jahrb. Syst.* 35(2–3): 453 (1904) [= *Platysace xerophila* (E.Pritz.) L.A.S.Johnson].

Type citation: loco non indicato (Drummond 189 in hb. Berol!), in distr. Avon septentrionali pr. Watheroo in arenoso-glareosis flor. m. Nov., Dec., Jan. (E.Pritzel Pl. Austr. occ. 988, D. 2123), in distr. Irwin pr. Irwin Riv. (F.v.Müller in hb. Berol!), pr. Dogara in fruticetis apertis arenosis flor. m. Dec. (D. 5726).

Mueller specimens: syn: MEL2254700, MEL2290564; status not designated: MEL2254699.

Typification: Johnson (*Contrib. N.S.W. Natl Herb.* 3: 101 (1962)).

Xerotes ordii F.Muell., *Fragm.* 11: 23 (1878) [= *Lomandra ordii* (F.Muell.) Schltr.]

Type citation: In vallibus silvaticis ad flumen Shannon, ejus ostium versus; Muir, F.M.

Mueller specimens: syn: MEL20555, MEL20556, MEL20557, MEL20558, MEL20560, MEL20561, WUP0002284; isosyn K (not found on K catalogue); status not designated: PERTH1069012 (photo of the K sheet).

Typification: Lee and Macfarlane (*Fl. Australia* 46: 118 (1986)).

Xyris indivisa N.A.Wakef., *Western Australian Naturalist* 4: 80, fig. 7 (1954).

Type citation: Holotype: Karri Forest, swampy banks of the Shannon River, F.Mueller, 12/12/1877 (MEL, duplicate at PERTH).

Mueller specimens: holo: MEL73442; iso: PERTH01086367.

Typification: Conn and Doust (*Aust. Syst. Bot.* 10: 243 (1997)).

in Ferguson Creek (an upper tributary of Preston River).⁴⁶ Giles sold the block to Mueller for £800 in June 1877.⁴⁷ After examining the block, Mueller expressed disappointment with its potential and conveyed that it required considerable development to make it of any financial benefit to him. It was reported by a Bunbury correspondent that ‘Baron Von Mueller is, after all, not likely to become a landowner in this district, much to our regret and loss. The 2000 acres selected did not meet with his approval, while the rent offered by a settler whose land adjoins - £2 per annum - settled the matter as an eligible investment. After visiting the land in question and spending two or three days with us the

⁴⁶F. Mueller to Malcolm Fraser, 7 July 1878. Home *et al.* (2023+).

⁴⁷Ernest Giles to F. Mueller, 2 June 1877. Home *et al.* (2023+).

Baron proceeded overland to Albany'.⁴⁸ Mueller subsequently attempted to recoup his £800 outlay and explained his situation in a letter to Forrest, writing that he 'could not accept the land selected & wished to sell the right of selection' and that 'the land in question can doubtless be made into a valuable estate by spending £10 an acre on clearing the timber, fencing, building, and by ploughing the small share of its areable [sic] land'.⁴⁹ Both Giles and Forrest interceded on Mueller's behalf in attempting to resolve the matter,⁵⁰ although how the issue was finally resolved is not clear. Mueller soon after sought another block of land near Perth,⁵¹ but that was rejected by the Western Australian government.⁵² Mueller had, in November 1877, applied to Governor Ord for Western Australian naturalisation on the basis that he intended to invest in land in the colony.⁵³ However, this was rejected as Mueller did not intend to reside in the colony.⁵⁴

Travelling south-eastward, Mueller passed Preston River (7–8 Dec.) and the Blackwood River/Warren River area (9–10 Dec.). It is not known whom he travelled with at this time, but from 12–18 December he was in the company of George Maxwell and Thomas Muir, and possibly his brothers Andrew Muir and John Reid Muir (Mueller 1878c). It is probable that he met with these men earlier, but the available evidence indicates that they travelled together on the dates noted above. In regard to the Muirs, Mueller had a previous association in the early 1870s with John Reid Muir who collected specimens for him. AVH (2022) lists about 400 collections by J.R.Muir. Mueller (1873) named *Lepyrodia muirii* F.Muell. for him as the collector. As well as collecting with Mueller in 1877, Thomas Muir in subsequent years sent specimens to Mueller. The degree of involvement of Andrew Muir is not known and there is no evidence that he collected specimens for Mueller.

It is most probable that Maxwell, the Muirs and Mueller travelled together in the vicinity of Shannon River (12 Dec.), Warren River (12 Dec.), Burrobnup (14 Dec.), Gordon River (14–16 Dec.) and Lake Muir (14 Dec.) (AVH 2022). Mueller (1879: 5) commented on the distribution of the ornamental *Eucalyptus ficifolia* F.Muell. [= *Corymbia ficifolia* (F.Muell.) K.D.Hill & L.A.S.Johnson] noting that 'this species is very limited; it extends, according to Messrs. Muir and Maxwell, from the western side of Irwin's Inlet to the mouth of the Shannon'. Mueller could not have personally seen the species in the wild as the route taken did not go far enough south. His admiration for the ornamental qualities of the species was undoubtedly based on cultivated specimens. He wrote that 'hardly anything more gorgeous can be imagined than the forest of *E. ficifolia* about the month of February, when the brilliant trusses of flowers diffuse a rich red over the dark-green foliage of the whole landscape'. The species does not form 'forests' *per se* and the currently known distribution of the species takes in that described by Mueller as well as outlier populations to the east and north of Albany.

Mueller (1878c: 146) noted that 'the best plant of this latter part of the journey is a stately *Xerotes* from the valleys of the Lower Shannon'. He described it as *Xerotes ordii* F.Muell. [= *Lomandra ordii*

⁴⁸*The Herald* (Fremantle). Country news. 29 Dec. 1877, p. 3.

⁴⁹F. Mueller to John Forrest, 14 Feb. 1878. Home *et al.* (2023+).

⁵⁰John Forrest to Colonial Secretary. 2 Mar. 1878. Colonial Secretary's Office, SDUR/M8/900J, State Archives, Batty Library, Perth; Ernest Giles to Harry Ord, 18 Mar. 1878. Home *et al.* (2023+); John Forrest to Malcolm Fraser, 4 Apr. 1878. Home *et al.* (2023+).

⁵¹F. Mueller to Harry Ord, 8 Nov. 1878. Home *et al.* (2023+); F. Mueller to Harry Ord, 26 Nov. 1878. Home *et al.* (2023+).

⁵²Alexander Forrest to F. Mueller, 26 Oct. 1878. Home *et al.* (2023+); Roger Goldsworthy to F. Mueller, 26 Nov. 1878. Home *et al.* (2023+).

⁵³F. Mueller to Harry Ord, 20 Nov. 1877. Home *et al.* (2023+).

⁵⁴Roger Goldsworthy to F. Mueller, 26 Nov. 1877. Home *et al.* (2023+).

(F.Muell.) Schltr.] in recognition of Governor Harry Ord (1819–1885) for ‘having evinced a great interest in my researches here’. Ord was governor of Western Australia 1877–1880. Mueller noted that he ‘was directed to this showy plant by Mr. Muir, who had previously noticed it in the few localities to which it is confined’ (Table 1). Mueller (1878b: 9) also named a new species for John Forrest from ‘Burrobnup’ (possibly Granite Peak or Mt Roe: for discussion on those place names see Hearn *et al.* (2006) and Marchant (2019)), *Darwinia forrestii* F.Muell. [= *Chamelaucium forrestii* (F.Muell.) N.G.Marchant], for ‘whose kind assistance I enjoyed in my recent journey’ (Table 1).

Mueller continued travelling onto Albany during the following week. En route or after arriving in Albany, he visited Walpole, Chorkerup (collections dated 18–24 Dec.), Kamballup (18 Dec.), Torbay (20–22 Dec.), Hay River, Wilsons Inlet (20–24 Dec.) and King River (25–26 Dec.). By about 27 December he was preparing to return to Melbourne (Mueller 1878c). Mueller departed Albany on 29 December on R.M.S.S. *Assam* and arrived in Melbourne on 4 January, 1878.⁵⁵ Eight new taxa were described on collections made by Mueller in south-west of Western Australia between Perth to Albany, December 1877 and are presented in Table 1.

Mueller’s contribution to the Western Australian flora after 1877

Mueller worked on numerous publications that dealt with aspects of the Western Australian flora in the years up to his death in 1896. With a decrease in the potential to describe taxonomic novelties, Mueller set about to complete a number of illustrated monographs and other publications that summarised what was then known about the Australian flora (Hewson 1999). The inclusion of Western Australian plants was an essential element in establishing an assessment, as thorough as possible, of the flora of the entire continent.

Report on the forest resources of Western Australia, 1879

In his *Report on the forest resources of Western Australia*, Mueller (1879) provided detailed descriptions and superb illustrations of 17 species of *Eucalyptus* (some now in *Corymbia*), as well as brief notes on species of *Agonis*, *Acacia*, *Banksia*, *Callitris* (as *Frenela*), *Casuarina*, *Melaleuca* and *Santalum*. The illustrations were prepared by Robert Austen (1851–1879), who, at the age of 28, died soon after publication of the work.⁵⁶ Mueller, in correspondence to Joseph Hooker, wrote: ‘Sad to record, my poor draftsman Austin [sic], after a long and severe illness (nephritis) has died and this needs now the training of another artist for the purpose’.⁵⁷ Austen’s illustrations were prepared as lithographs by the renowned John Nugent Fitch (1840–1927) and printed in London by Vincent Brooks, Day & Sons, then among the most renowned printing companies in England. Printing was facilitated by Joseph Hooker from Kew Gardens,⁵⁸ and publication costs, about £300, were borne by the Western Australian government.⁵⁹

Three plates of analytical illustrations were prepared by Ludwig Rummel. During the 1870s, Rummel was employed as an analytical chemist and microscopist at Mueller’s phytochemical laboratory at the Melbourne Botanic Gardens (Rae & Maroske 2020). Of interest is the public ‘disagreement’

⁵⁵*The Argus* (Melbourne). The R.M.S.S. *Assam*. 5 Jan. 1878, p. 7.

⁵⁶*The Argus* (Melbourne). Family notices. 23 May 1879, p. 1.

⁵⁷F. Mueller to Joseph Hooker, 6 July 1879. Home *et al.* (2023+).

⁵⁸F. Mueller to Joseph Hooker, 16 Aug. 1879. (Home *et al.* 2023+).

⁵⁹F. Mueller to John Forrest, 11 Sept. 1879. (Home *et al.* 2023+).

that developed between Rummel and Mueller in 1881 when Rummel accused Mueller of failing to acknowledge his contributions as a chemist and deprecating his role in the translation of Wittstein's (1878) *Chemistry of plants*.⁶⁰ Mueller wrote in the preface to the work: 'I feel great pleasure in acknowledging the co-operation of Mr. L. Rummel, who for many years conducted many phyto-chemic and technic operations in my laboratory, in aiding me throughout in the work of translation, and also in its revision, while it was passing through the press'. In an indignant retort, Rummel claimed that 'whatever the Baron has published during the last 10 years, under his own or our joint names, in regard to original researches and discoveries in the provinces of phyto-chemistry and microscopy, has been my own work, unaided, except of course by legitimate reading. The translation also into the English language of Dr Wittstein's *Chemistry of Plants* has been done by me, the Baron's share of the work being restricted to some trifling alterations, and to the nomenclature of the plants'.⁶¹ Rummel unsuccessfully claimed compensation from the Victorian government when he was dismissed in 1881: he was deemed an employee of Mueller and not necessarily to be a public servant employed by the government.⁶²

Eucalyptographia. A descriptive atlas of the eucalypts of Australia and the adjoining islands, 1879–1884

Mueller noted in 1879 in the introduction to the first decade (published sections of ten illustrations each) of *Eucalyptographia* that it was a continuation of the treatment of the eucalypts that he presented in *Report on the forest resources of Western Australia* but that the work presented was only a preliminary account as 'there is no limit to a work of this kind, particularly when it is remembered, that the eucalypts form the principal timber-vegetation nearly all over the wide Australian continent'. In a summarising comment when the work was completed in 1884, Mueller wrote that 'specific demarcation moreover can in most cases not yet be drawn with completeness and accuracy for want either of sufficient museum-material, or of opportunities to study their characteristics further in culture or in free nature. Moreover the eucalypts, which remain yet to be dealt with, are mostly restricted to widely distant and as yet hardly accessible localities'. Although Mueller was aware that other species were yet to be described and that new discoveries had been made about the existing species, he was not able to publish the additional work that he had hoped.

Of the 118 species treated in *Eucalyptographia*, 39 were from Western Australia, of which 30 were considered endemic (Mueller 1879–1884). Not all species that were treated were illustrated. The work was published in ten decades thus amounting to 100 species being illustrated. Of these, 34 were Western Australian species. Two of the Illustrations were the work of Robert Austen (*Eucalyptus diversicolor* F.Muell. and *E. erythrocorys* F.Muell.) and six plates of analytical illustrations were by Ludwig Rummel. These included details of bark, transverse sections of leaves, cell structure, anthers, cuticle arrangement and wood structure. The majority of the illustrations were prepared by Emil Hermann Todt (1809–1900). Todt was born in Berlin and migrated to South Australia in 1849 and then the Victorian goldfields in 1851 (Lance 2006). He was a trained sculptor most active in Victoria, remembered for his work 'The gold diggers' that was first exhibited in 1854,⁶³ and now in the collection of the National Gallery of Victoria.⁶⁴ His connection to Mueller dates from at least 1862, when he 'skilfully executed

⁶⁰*The Argus* (Melbourne). Baron von Mueller and Mr. L. Rummel. 27 May 1881, p. 7; *The Argus* (Melbourne). The Baron von Mueller and Mr. L. Rummel. 30 May 1881, p. 6.

⁶¹*The Argus* (Melbourne). Baron von Mueller and Mr. L. Rummel. 27 May 1881, p. 7.

⁶²*The Argus* (Melbourne). Parliament. 20 May 1881, p. 5.

⁶³*The Argus* (Melbourne). The exhibition. 20 Oct. 1854, p. 5.

⁶⁴National Gallery of Victoria. The gold diggers. <https://www.ngv.vic.gov.au/explore/collection/work/3628/>.

the task of modelling Victorian fruits entrusted to him by Dr Mueller' for the Victorian Court at the London International Exhibition.⁶⁵ It is not known how Todt was engaged by Mueller as an illustrator for *Eucalyptographia*. One review reported on the illustrations in that 'they are all faithfully depicted by Mr. Emil Todt, to whom the Baron accords a deserved meed of praise for the ardor he brought to bear on the furtherance of the present publication'.⁶⁶ Todt was seventy-five years of age when the work was published and it was to be his last significant artistic endeavour (Lance 2006). Mueller acknowledged him by naming *Eucalyptus todtiana* F.Muell. (Table 1). In the protologue Mueller (1882a: 171) wrote: 'Named in honor of Mr. Emil Todt, through whose artistic talent numerous species became illustrated for the "Atlas of Eucalypts"'. In treating *E. todtiana* in *Eucalyptographia*, Mueller (1879–1884, decade 9, 11th plate) added that Todt 'became devoted only to illustrating plants at a venerable age, when most of those, engaged in such pursuits, have ceased to work professionally. Therefore all the more praise is due to this gentleman for the youthful ardour, which he still brought to bear on the extensive furtherance of the present publication'. Unlike *Report on the forest resources of Western Australia*, which was printed in London, the lithographs in *Eucalyptographia* were prepared in Melbourne by Charles Troedel & Co. Ltd.

Description and illustrations of the Myoporinous plants of Australia, 1886

The next illustrated monograph by Mueller dealt with the genera *Eremophila* and *Myoporum*, placed by him in the Myoporinae [= Scrophulariaceae]. In the preface to the work, Mueller (1886c: Preface) described them as consisting of 'frutescent and arborescent plants entirely, and which on this account forms at many places a prominent part in the Australian flora ... extensively distributed over all parts of the Australian continent ... attaining their highest development in the hottest and most arid regions of this portion of the globe'. Some 74 species were illustrated, the total thus far accounted for Australia at that time. Of these, 48 species occurred in Western Australia and of which 23 were considered endemic. The illustrations were prepared by Robert Graff, Mueller (1886c: Preface) writing that the illustrations 'do credit to his artistic skill, and this all the more, as these lithographic drawings are his first effort in botanic direction'. This publication lacked any text, Mueller noting in the preface that: 'The descriptive portion of this publication will be given somewhat later'. Mueller proposed a treatment of the Australian Myoporinae for Alphonse de Candolle's *Monographiae phanerogamarum* with expected publication of the Latin version in 1887 and an English version, to include the plates, in 1888.⁶⁷ However, this did not eventuate and Mueller's work on the Myoporinae consists of the lithographic plates with brief captions and no significant text. The lithographs were prepared by C. Troedel & Co., Melbourne. Very little verifiable biographical information is presently available on the artist Robert Graff. There are newspaper notices that refer to a Robert Graff in Victoria, some certainly apply to Robert Graff the artist associated with Mueller's illustrated monographs from 1886 until 1892,⁶⁸ whilst other notices apply to a farmer from Hansonville, Greta District, more than likely another Robert Graff.⁶⁹

⁶⁵*The Argus* (Melbourne). Victorian fruits at the exhibition. 17 July 1862, p. 7.

⁶⁶*The Leader* (Melbourne). *Eucalyptographia*. 31 May 1884, p. 14.

⁶⁷F. Mueller to Alphonse de Candolle, 15 May 1886. (Home et al. 2023+); F. Mueller to Alphonse de Candolle, 25 Dec. 1886. (Home et al. 2023+).

⁶⁸*The Argus* (Melbourne). Family notices. 16 Apr. 1886, p. 1; *The Age* (Melbourne). Births. 27 Dec. 1887, p. 1; *The Herald* (Melbourne). Collision with buggy. 22 Jan. 1913, p. 3.

⁶⁹*The Ovens and Murray Advertiser* (Beechworth). Oxley Shire Council. 13 May 1893, p. 5; *The Leader* (Melbourne). Family notices. 21 Nov. 1914, p. 60; *The Wangaratta Chronicle*. Death at Melbourne. 25 Nov. 1914, p. 2; *The Argus* (Melbourne). Advertising. 15 Dec. 1914, p. 1.

Iconography of Australian species of Acacia and cognate genera, 1887–1888

Perhaps the most ambitious of Mueller's illustrated works was his *Iconography of Australian species of Acacia and cognate genera* (Mueller 1887–1888). The work comprised 13 decades, 1–8 in 1887 and 9–13 in 1888, with a total of 130 illustrations. These included *Acacia*, 118 spp., *Adenanthera*, 1 sp., *Albizzia*, 1 sp., *Archidendron*, 4 spp., *Archidendropsis*, 2 spp., *Cathormium*, 1 sp., *Erythrophloeum*, 1 sp., *Neptunia*, 1 sp. and *Pararchidendron*, 1 sp. Of these, 24 species were from Western Australia, of which 17 were endemic. As a continuation of Mueller's plan to produce illustrated monographs, he wrote of the acacias in the introduction that 'it was deemed best, to devote the next volume to those native species of *Acacia*, of which hitherto no drawings had appeared anywhere ... so that a work like the present one seemed specially called for'. As with *Description and illustrations of the Myoporinous plants of Australia*, the illustrations were prepared by Robert Graff, the lithographs by Charles Troedel & Co. and it was printed in Melbourne. Mueller (1887–1888: Introduction) wrote that Graff's work on the acacias demonstrated 'patient perseverance as well as artistic accomplishment'. The Western Australian species *Acacia graffiana* F. Muell. [= *A. hemiteles* Benth.], based on a Drummond collection, was named for him, with Mueller (1887: 118) writing in the protologue that Graff was an 'accomplished and zealous artist, who recently finished the lithographic illustrations of the "myoporinous plants," and who has since drawn and engraved many plates for the Iconography of Australian Acacias and allied genera'. Mueller also noted the assistance of George Luehmann, Mueller's herbarium assistant, he being responsible for specimen selection on the basis that they were complete with each having a full complement of leaves, flowers and fruit, 'a principle adhered to also in all the former illustrated publications of the author' Mueller (1887–1888: Introduction). Unless Mueller had access to a complete specimen for an individual species, he did not include it in the illustrated publications.

The work was well received with reviews appearing in newspapers and magazines. The most thorough were presented in *The Sydney Mail and New South Wales Advertiser* with each completed decade being reviewed, and on completion of the thirteenth decade, summarised as: 'Baron Mueller has now completed the first volume of his great work on the *Acacia* and Cognate Genera of Australia, and has dedicated it in complimentary terms to Sir Henry B. Loch, Governor of Victoria. This volume contains 130 figures of plants hitherto but imperfectly described "a large systematic assemblage of plants," the author remarks, "particularly important for horticulture and technology"'.⁷⁰ Although unsigned, it is known through correspondence that the reviews were prepared by Rev. William Woolls.⁷¹ A review in the *Gardeners' Chronicle* stated: 'Australian Acacias. Baron von Mueller has completed with the thirteenth decade his series of lithographic illustrations of the species of this large, intricate, and interesting group. The work will not only be valuable to botanists for the care and fullness with which the structural details have been treated, but also to horticulturists in enabling them to identify their plants; while to the colonist the importance of correct nomenclature and ready means of discriminating species possessed of such useful properties as yielding timber, gum, tannin etc., can hardly be over-estimated' (Anon. 1889).

⁷⁰ *The Sydney Mail and New South Wales Advertiser*. Australian species of *Acacia*. 29 Dec. 1888, p. 1331.

⁷¹ *The Sydney Mail and New South Wales Advertiser*. Lithograms of the genus *Acacia*. 26 Nov. 1887; *The Sydney Mail and New South Wales Advertiser*. Work on the *Acacia* and cognate genera. 4 Feb. 1888; *The Sydney Mail and New South Wales Advertiser*. Australian *Acacia* and cognate genera. 25 Aug. 1888, p. 380; *The Sydney Mail and New South Wales Advertiser*. Australian *Acacia* and cognate genera. 1 Sept. 1888, p. 436; *The Sydney Mail and New South Wales Advertiser*. Australian acacias. 17 Nov. 1888, p. 1023; William Woolls to F. Mueller, 24 Aug. 1888, draft transcript provided by Mueller correspondence project.

Iconography of Australian Salsolaceous plants, 1889–1891

The illustrated monograph of Australia's saltbushes [Salsolaceae Menge = Chenopodiaceae Vent], was, according to Mueller (1889–1891), predicated on 'not only a multitude of endemic forms of high phytologic interest, but also a considerable number of prominent utilitarian value. The "Saltbushes" constitute in many wide tracts of our island-continent the prevailing vegetation, and on this again depends then locally to a large extent the sustenance of herds and flocks'. The work included 90 lithographs, which were published in nine decades, 1–2 in 1889, 3–6 in 1890 and 7–9 in 1891. Both the illustrations and lithographs were prepared by Robert Graff, the artist who prepared Mueller's two previous illustrated monographs. The lithographs were printed by the Government Printing Office, Melbourne. Of the 90 species illustrated, 44 were from Western Australia, of which nine were endemic. One newspaper report noted that 'Baron Mueller is of opinion that several species now known only in Western Australia might be cultivated advantageously in Eastern Australia. In a matter so important the Agricultural Society would render great service to the pastoral interests by ascertaining from experiment whether such is the case'.⁷² This report is in the style of William Woolls, but there is no known correspondence to verify his authorship.

Iconography of Candolleaceous plants, 1892

The first decade of this family [Candolleaceae F.Muell. = Stylidiaceae R.Br.] was the last illustrated monograph to be published by Mueller. Mueller wrote that the first decade would possibly be the only one published as he had no staff or financial means to continue with the project.⁷³ The illustrations and lithographs were once again prepared by Robert Graff, and printed by the Government Printing Office, Melbourne (Mueller 1892). Ten species of *Candollea* Labill. [= *Stylidium* Sw. ex Willd.] were illustrated. Of these, six were from Western Australia and all endemic.

Other publications by Mueller that dealt with the Western Australian flora

Second systematic census of Australian plants, with chronologic, literary and geographic annotations, 1889

Mueller's nomenclatural 'choices' and systematic relationships of all known Australian plant species were laid out in his *Second systematic census of Australian plants*. The work provided a rearrangement of the species included in Bentham's *Flora Australiensis*, as well as new species described since completion of that work in 1878. It was also an update of Mueller's first census of 1882 (Mueller 1882b). In the *Second systematic census*, Mueller (1889) stated that of the 8839 Australian species he listed, 3560 were recorded for Western Australia, which was 40.3% of the Australian flora. A calculation based on his numbers indicates that of the Western Australian species recognised by Mueller, 73% were considered endemic at that time. Data from the Western Australian Herbarium (2023) suggest that the number of native species as of 2022 was 14959 (including unpublished phrase names), about four times the number proposed by Mueller in 1889.

⁷²The *Sydney Mail and New South Wales Advertiser*. Salsolaceous plants. 30 Apr. 1892, p. 974.

⁷³F. Mueller to Thomas Wilson, 8 Apr. 1893. Home *et al.* (2023+); F. Mueller to Walter Gill, 9 Aug. 1895. Home *et al.* (2023+).

The vegetation of Western Australia and List of extra-tropic West Australian plants (Vasculares), 1896

These combined accounts were among Mueller's last publications prior to his death in 1896. *The vegetation of Western Australia*, written for the Western Australian Year Book 1894–95, was a preliminary synopsis of the flora of the colony. It was written in a style that gave flourishes of affectionate admiration, sometimes poetically, for plant genera and species and their formation into one of the world's most unique floras. One newspaper reported on the informality of the work as 'Baron von Mueller gossips pleasantly on the vegetation of the colony'.⁷⁴ On a sombre note, Mueller (1896a: 200) wrote, knowing that he would never personally visit Western Australia again in his lifetime: 'In parting sorrowfully and reluctantly from this charming flora, with the elaborating of which the writer throughout more than forty years has become prominently identified, and which to his extreme regret he can hardly hope ever to see again'. In the accompanying *List of extra-tropic West Australian plants (Vasculares)*, Mueller (1896b) provided a systematic arrangement of those species occurring south of the Tropic of Capricorn. This included about 100 families, 580 genera and 3700 species, which was a moderate increase in the number of Western Australian species that Mueller presented in 1889 in the *Second systematic census of Australian plants*. Bickford (1897: 279) indicated that Mueller 'till within almost the last few hours preceding his death, was engaged compiling for 1897 a complete census of Western Australian phanerogamic and cryptogamic plants; this consequently was not concluded'. However, an updated census was prepared by Morrison (1902) in which he stated that 'in compiling the present list, acknowledgement must be made of the assistance rendered by Mr. J.G. Luehmann, Government Botanist at Melbourne, who has supplied some alterations determined on by the late Baron before his death. These will be found under the genera *Aotus* and *Dillwynia*, *Waitzia*, *Perotis*, and *Anthistiria*, and may be taken as indicative of the Baron's latest views thereon'. This can be accepted as Mueller's final contribution to the flora of Western Australia.

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⁷⁴*The Geraldton Advertiser*. Our year-book. 31 Aug. 1896, p. 2.

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