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DR H.H. BEHR'S TWO VISITS TO SOUTH AUSTRALIA IN 1844-45 AND 1848-49

Darrell N. Kraehenbuehl

8 Ravensthorpe Avenue, Millswood, South Australia 5034

Abstract

This paper outlines the explorations and botanical endeavour of the famous German-American medico-naturalist, Hans Herman Behr, in South Australia (1844-45) and (1848-49). Five Appendices embrace the following topics: A, Chronology (1843-1855); B, Collection Localities; C, List of plants named after Behr and synonyms; D, Behr paper "On the vegetation at the Murray"; E, Two entomological excerpts.

Introduction

Dr Behr is probably the least known of all the famous German and United Kingdom botanists who came to South Australia last century, and an appraisal of his work is long overdue. All previous references to Behr in Australian scientific literature are brief and terse to the extreme. Even the eminent botanical biographer J. H. Maiden (1912) had little to say about him, apart from some short notes taken from Miss Alice Eastwood (1904), that he went to Australia in 1844 and returned to Germany in 1847. Three of the American source biographies are also partly inaccurate and quite misleading when referring to his work and travels during the period 1844-1850. It has therefore been necessary to correct some of the following statements; "From Australia Dr. Behr extended his travels to Java, the Straits-Settlements, the East Indies, and the Cape of Good Hope—always observing, collecting and describing." (Gutzkow et al., 1904)—"in 1847 he returned to Germany" (*ibid.*), and that in 1848, "—he gave up his practice and undertook his second great voyage, journeying first to Brazil and other countries of South America and thence to the Philippine Islands. There, in Manila he remained for the next two years, practicing medicine and exploring the country." (*ibid.*)—"In 1851 he came to California, which he never again left except in 1853, when he made a journey to Germany in order to bring his Polish bride, Miss Agnes Omylska to his San Francisco home." (*ibid.*).

Later, Essig (1931) really confused the issue by his statement that "On the recommendations of Humboldt he went to Australia in 1844 to study the aborigines as well as to collect and investigate in botany and entomology. He extended his travels and studies to Java, Straits Settlements, East Indies, and returned to Germany in 1848." Alice Eastwood (1904) also reflected that "he understood every language of Europe." He was undoubtedly a gifted linguist, but this would have been a daunting feat for any man. Nevertheless there is one point upon which the writer must agree with Miss Eastwood, that because Dr Behr never left any record of his writings, it is extremely difficult to trace his movements and activities.

The following account may therefore help to redress the confusion that has arisen about his overseas voyages, and provide a more accurate appraisal of the period 1844-1850, and life's work of this truly remarkable 19th Century scientist.

Biographical

Hans Herman Behr was born on 18 August 1818 in the German town of Koethen then the capital city of the principality of Saxony-Anhalt. According to one account (Anon., 1904a), "his father and grandfather held the office of councillor of the Prince and had jurisdiction over eleven villages with power to pronounce all sentences except death." At the Zerbst Academy he studied Greek, Latin, Hebrew and mathematics. It was about



Fig. 1. Dr H. H. Behr, about 80 years old.

this time that he began to take an interest in the natural sciences “and he became an ardent collector of bird’s eggs even stealing the nest of one of the royal swans to get a specimen for his collection.” (ibid.). In 1837 he entered the University of Halle, and from there went to Würzburg to study medicine. At Würzburg, Behr became deeply interested in botany, and it was said what he learnt there about that discipline, “was the basis of his wonderful knowledge of the flora of the world which distinguished him above his contemporaries.” (ibid.). Another side of his character, was his interest in the typical German student sport of duelling—fighting 27 duels for the student Club Moenania. (ibid.). On March 23 1843, he graduated as doctor of medicine from Berlin University, and then returned to Koethen where he practised medicine for a short time (Anon., 1904b).

Encouraged by his famous friends and mentors Karl Ritter and Alexander von Humboldt, Behr decided to embark on a voyage to Australia to further his knowledge in botany and entomology, being possessed of a special interest in the Coleoptera and the Lepidoptera. Subsequently, on May 27 1844, Behr left Bremerhaven on the ship, *George Washington*, bound for Australia; the vessel arriving at Port Adelaide on September 12 1844 (Anon., 1844a). The Colonial Newspaper ‘Observer’ (Anon., 1844b) gives a quaint account of this voyage as follows: “The *George Washington* arrived Thursday last, brings one hundred and eighty one steerage and two cabin passengers (H.H. Behr and E.F.G. Harzen). Six deaths occurred on the voyage, viz three adults and three children. There were also eight births. We understand the passengers present a very clean and respectable appearance. One of them became deranged at an early stage of the passage; and we are sorry to say he still continues in that melancholy state.”

Behr then proceeded via Gawler to the Lutheran settlement of Bethanien (Fig. 2) and, by November 1844, was already despatching a letter to the Stettin Entomological Society about insect collections secured in the vicinity of Bethanien and the Barossa Range. On this first visit to South Australia Behr stayed thirteen months, exploring Pine Scrubs near

Gawler (Fig. 3), in the Spring of 1844; the Lyndoch district; Barossa Range throughout the Spring and early Summer of 1845; Light River during October, November 1844 and February 1845; Murray Flats July and August 1845; River Murray May 1845, and the River Onkaparinga (Schlechtendahl, 1847). He has nothing to say about his first excursion to the River Murray, but has left us with a fine account of his March 1849 journey.

One puzzling aspect is deciding where Dr Behr lived during his sojourn in the colony. Maiden thought he might have resided at Gawler, but there is no evidence to support this. On the other hand it is likely he boarded at the residence of Augustus Fiedler, a prominent landowner, orchardist and winegrower of Langmeil near Tanunda (19th century records, S.A. Dept of Lands). Behr secured a number of plant specimens from Fiedler's Section, and several interesting butterfly species from Herr Fiedler's citrus orchard at Bethanien (probably from Sect. 1, Hd Moorooroo, County Light). It is also possible that he might have boarded at Herr Buttner's Tanunda Hotel in Tanunda (Yelland, 1970). After completing his botanical reconnaissance of the Barossa Range and district, Dr Behr left Port Adelaide on October 9 1845; the sole passenger (except for Capitan Laun's wife), on board the small boat, *Heerjeboy Rustomjee Patell*, bound for Batavia and Amsterdam (Anon., 1845. The boat is named incorrectly as *R. H. Patel*. Dr Behr's name spelt as Dr Buhr). However on the voyage home the vessel was attacked in the Lombok Straits by pirates and forced to detour back through the Straits of Bali (Map 1), and take refuge at Banjoewangie, a port on the east coast of Java (Anon., 1904a). On 29 December 1845 the *Patell* loaded with a cargo of tobacco, sugar, gum d'Omar and vanilla sticks (Anon., 1846) sailed from Banjoewangie for Cape Town; arriving at Table Bay on 8 March 1846. The following day the *Patell* sailed for Amsterdam, reaching that city on 19 May 1846 (S. African Dept National Education, Govt Archives, Ref. C.C. 49, p. 141). From here Dr Behr presumably found his way overland to Koethen where he resided until the troublesome period of May and June 1848.

Behr spent the next two years in Germany, placing his natural history collections in order. He conveyed botanical material to Dietrich von Schlechtendahl who described many new species in the German periodical 'Linnaea', while some of his insect collections were dealt with by E.F. Germar (1848), a world authority on the Family *Coleoptera*. Meanwhile the political situation in Germany in 1848 was becoming more tense: Socialist revolutions in Prussia and Saxony, fanned by the events in France, stirred workers, students and some of the radical intelligentsia into action (Eyck, 1968). Behr was one of these, and so, to prevent his son's becoming more deeply involved in the revolution, Behr's father arranged for the young medico to take a second trip to South Australia (Anon., 1904a). Therefore, on 15 June 1848, Behr in his capacity as ship's surgeon was a passenger on the ship *Victoria* en route via Rio de Janeiro to South Australia. On November 6 1848 the vessel reached Port Adelaide, having been delayed by a blockade of the North Sea by a Danish naval squadron (Anon., 1848).

Once more Behr proceeded to Bethanien, traversing much the same country he had botanised in 1844-45. He was at Gawler by 21 November, and had apparently arrived at Tanunda two days later. Other areas explored by him included: Barossa Range November, December 1848 and January 1849; Salt Creek November 1848; Eastern side of the Mount Lofty Range November and December 1848; River Murray (Moorundie) March 1849; and 'Second half of the Murray Scrub' December 8 1848. On April 14 1849 he sent an important letter to Professor G. Kunze in Leipzig outlining the results of a recent visit he had paid in March and early April to Moorundie on the River Murray. This paper is notable not only for revealing Behr's astonishing knowledge of the Australian arid vegetation, but heralds the development of a fluent literary style, to appear so brilliantly later in novels and books (Behr, 1849).



Fig. 2. Sand scrub, Bethany sandplain. Section 42, Hundred of Moorooroo, County Light. (Photo. D. Kraehenbuehl.)



Fig. 3. *Callitris* pine scrub. Willaston Cemetery, 2 km north of Gawler. (Photo. D. Kraehenbuehl.)



H. H. Behr

Fig. 4. Dr H.H. Behr in middle life.



Fig. 5. Specimens of *Westringia rigida* collected by Behr in the Murray scrub and "above Salt Creek" (MEL). (Photo. D. Kraehenbuehl.)

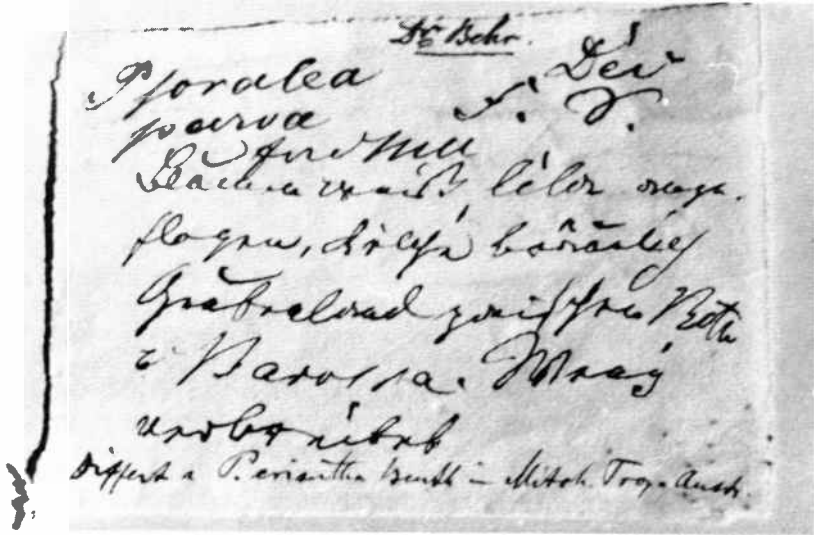


Fig. 6. A Behr plant label (MEL). (Photo. D. Kraehenbuehl.)

It was during this second stay in South Australia that Behr met Ferdinand von Mueller and William Hillebrand (later famous as Director of the Honolulu Botanical Gardens, Hawaii). Indeed there is slim evidence from herbarium labels that Behr and Mueller might even have co-collected in the Barossa Range and at Salt Creek, near Rosedale in November 1848. The date of Dr Behr's last departure from South Australia has eluded me: all I know for certain is that he accompanied William Hillebrand to Manila in the Philippines, sometime late in 1849, and that they both practised medicine there for a short time (Anon., 1904a), but according to Steenis-Kruseman (1974) no Asian collections are known. Dr Behr's arrival in Manila is confirmed by a short note in the 'Botanische Zeitung', that "news comes from Manila in the middle of December that Dr. Behr announces his intention of remaining there as a practising doctor, in order later to be able to continue his natural history investigations. His recent collections made in South Australia will probably be sent to Sir (William) Hooker in England." (Behr, 1850). But it seems his stay in the Philippines could not have been more than about seven months duration because Behr himself states in the Californian journal 'Zoe', that he first saw a *Malva* species in a garden of a Mr Tittell in San Francisco in September 1850 (Behr, 1891).

It is not my intention to elaborate too much about his activities in the United States, other than to say he lived in San Francisco for 54 years, was a member of the California Academy of Sciences in 1854, and a former Professor of Botany at the California College of Pharmacy in San Francisco (Essig, 1931). Possibly his most notable honour came in 1898 when this redoubtable old scientist had the honorary degree of doctor 'honoris causa' bestowed upon him by the Frederick William University of Berlin. "The presentation of the diploma was made the occasion of a magnificent function in Beethoven Hall on August 18, 1898; prominent citizens of all walks of life uniting to do him honour, and telegraphic congratulations being received from all parts of the world." (Anon., 1904b). He was the author of several books including 'The Plants of San Francisco', a novel about the Philippines, and a book of verse and nonsense 'The Hoot of the Owl.' He bequeathed most of his large Lepidopterous collections to the Academy; but it was regrettable that all these were destroyed in the disastrous earthquake of 1906. Hans Behr lived to the ripe old age of 85 years and six months, and died Monday March 6 1904, at his residence 1215 Bush Street (ibid.). Legge (1953) provides a particularly useful account of his work in California during the last half of the nineteenth century.

Several anecdotes gleaned from American sources lend a small insight into his character. First, when Behr settled in San Francisco he was accused by a Lutheran newspaper editor of being a Jesuit. "This vicious propaganda worked so effectively that his clientele—North German (and therefore Lutheran) grocers, butchers and tradespeople left him, and he was forced to move his practice elsewhere. He had his revenge by pointing sarcastic arrows which mutual friends never failed to wing to the target for which they were intended. For instance, discovering a particularly obnoxious louse, he named it after his enemy." (Gutzkow et al., 1904).

James Cottle a writer in 'Pan Pacific Entomology' says, "Let me state that Dr Behr was a very peculiar man. If you understood him, you might sail along like a ship before the wind in the most amiable manner. On the contrary, if you entered the Academy in that know-it-all, arrogant mode your dove-like voice would not be heard, your desired information or request would go by the board. G.O. Mueller, an old German friend of mine with whom I collected many years, once said to me 'Cottle what is the matter with Behr? If I am in your company I can see something' (referring to certain specimens he wished to see) but if I am alone he will show me nothing'. My answer was 'Mueller you presume too much; do not cross him.' With me it was different. I knew but little regarding entomology and I always asked Behr's advice in any matter pertaining to it. If he advised

me as to where I could capture a certain species I would try and get it, and would remember him on my return.” (Cottle, 1926).

Behr has been described as a man of good will and generous spirit, and that “his knowledge of men and affairs, together with the vast knowledge he had gained in far countries and strange places, made him the most companionable of men—(Anon., 1904b). A final tribute comes from Ewan (1953) who notes that “those who came to San Francisco from afar were sure to find Dr. Behr a hearty host, and it would be difficult to know how important was his influence in the lives of the many scientists and others that he chanced to meet.”

Natural History Work in South Australia

Dr Behr was the first botanist systematically to collect and study the flora of the Barossa Range, mallee scrubs towards the River Marne (River Rhine) and areas adjacent to the River Murray at Moorundie (Fig. 7); but we do not know the full extent of his South Australian collections. Dietrich von Schlechtendahl (1847) treated 200 plants collected by Behr, of which he described 62 as being new species: a further five namely, *Loranthus exocarpi* (= *Lysiana exocarpi*), *Drosera rosulata* (= *Drosera whittakeri*); *Eucalyptus odorata*; *Correa schlechtendahlii*; and *Ionidium australasiae* (= *Hybanthus floribundus*), being described by Behr. Later Schlechtendahl (1847, 1848) treated an additional 25 Behr collections of which nine were described as being new to science. In 1958 the writer had the good fortune to locate a small remnant sand scrub of about five hectares in extent, on the sandplain northeast of Tanunda township. This area in part of Section 42, Hundred of Moorooroo, County Light, also lies only 2.5 km north of Bethany, and must have been very close to one of Dr Behr’s type collection sites. Altogether 130 native plants occur here, including many of those species first described by Schlechtendahl.



Fig. 7. Ruins of Edward John Eyre’s Aboriginal Station at Moorundie, River Murray, 1913. (Photo. courtesy of South Australian Archives).

Other Behr plant material has been described by Meisner (1848); Ferdinand von Mueller & Wilhelm Sonder (1853); several Rhamnaceae collections by Siegfried Reissek (1858); a number of *Eucalyptus* species by Mueller (1855); and F.A.W. Miquel (1856). Dr Behr's 1844-45 plant collections, including many types, are held at the Halle Herbarium, while the 1848-49 collections appear to be those which are incorporated within the large Sonder Herbarium; part of which was purchased last century by the Victorian Government, for the Melbourne Herbarium (Willis, 1949). Baron von Mueller had been urging the Colonial Government to purchase this very valuable Herbarium for many years, but because of their dilatory attitude towards the cost, a sizeable portion of the original Sonder material, remains today at the Institut für Allgemeine Botanik, Hamburg (Stafleu & Cowan, 1976). Twenty seven South Australian plants were originally named after Behr, but these have been reduced to ten, namely; *Aristida behriana*, *Baeckea behrii*, *Eremophila behriana*, *Eriochlamys behrii*, *Eucalyptus behriana*, *Lasiopetalum behrii*, *Loudonia behrii*, *Prostanthera behriana*, *Senecio behrianus* and *Swainsona behriana*. It is also perhaps worthy to mention that Behr honoured his patron, and life-long friend, Schlechendahl, by naming a new *Correa* after him. The genus *Behria* (Liliaceae), endemic to Baja California, also recalls him.

Apart from his River Murray article, Dr Behr wrote an important paper "Ueber die Verhältnisse der Süd Australischen Flor im Allgemeinen." (later translated by Richard Kippist, Behr 1851) in 'Linnaea' (1847b), and two articles about South Australian aborigines, published in a German geographical journal (1848a & b), and an article on colonial life in South Australia in a German newspaper. Behr also contributed two entomology papers to the Stettin entomology journal (1845, 1847a), and though the scope of this present paper is biased towards botanical matters, I have included in Appendix E, two excellent summaries of his entomological researches.

In hindsight it is now apparent that Hans Behr paved the way for Ferdinand von Mueller and his fruitful explorations into the South Australian countryside. More is the pity that Behr never accomplished his intended visit to "the tip of Spencer's Gulf" near Melrose, or areas in the South East of the colony: all this he left to Mueller who fulfilled the task so brilliantly (Kraehenbuehl, 1971). Another curious fact that has come to light, is that in September 1849, Ferdinand von Mueller, Behr, William Hillebrand, William Blandowski and Ferdinand Osswald were all residing in South Australia; busily making plant collections, and extending knowledge of the colony's flora.*

Conclusion

One hundred and thirty five years have passed since Dr Behr accomplished his scientific reconnaissances into Barossa and Murray Mallee regions, and it is astounding that so much native vegetation has still survived. The fine Kaiserstuhl Conservation Park, proclaimed in 1978 reserves several important plant communities along the headwaters of Tanunda Creek, and despite a long history of grazing, the ravine of Tanunda Creek at Schlincke's Gully (Figs 8 & 9) is still aesthetically beautiful and wild in many places. Sandy Creek Conservation Park contains fine stands of Native Pine (*Callitris*) Woodland, and heath associations peculiar to the sand dune terrain of the Lyndoch region. But the former dense scrub of the Bethany sand plain is practically lost for ever to viticulture. Of all Behr localities in the Barossa Valley, that of Salt Creek has been most adversely affected by excess clearing along the creek, in scrub and open woodland; only small pockets remaining near hillsides.

*William Hillebrand and William Blandowski arrived in South Australia on September 14, 1849, on the vessel, *Ocean*. Blandowski later moved to Melbourne, and joined the staff of the Museum of Natural History. Ferdinand Osswald collected plants in the Barossa District and near Robe (South East District) around 1848; he was living at Kermode St, North Adelaide, at least until August, 1853. Osswald later resided in Nordhausen, Germany.



Fig. 8. View of Tanunda, 1938. Barossa Range in background, with Schlincke's Gully in the middle distance. (Photo. courtesy of South Australian Archives).



Fig. 9. View of Tanunda, 1938 (adjoining right side of Fig. 8). Mount Kaiserstuhl in the middle distance.

In the gorges and foothills along the eastern side of the Mount Lofty Range, where Behr secured several interesting *Acacia* species, a number of varied plant communities may still be observed, while further to the east, Moorundie Conservation Park near Blanchetown, has been established to conserve Hairy-nosed Wombat colonies and mallee plant associations adjacent to the River Murray.

If it were possible for Behr to survey the situation today, he would surely be delighted that future generations have been so eager to conserve natural areas throughout the Barossa and Murray Mallee regions. Way back in 1845, Dr Behr showed us the way: it is therefore vital that present generations of Australians must ensure our priceless heritage, and historic links with the past, are not just frittered away and destroyed for ever.

Appendix A Chronology

- 1843: March 23, graduates as Medical Doctor from Berlin University.
 1843-44: March to May 1844, residing at Koethen.
 1844: May 27, departure from Bremerhaven on the *George Washington*.
 1844: September 12, arrival at Port Adelaide, South Australia.
 1844: Spring of year spent collecting in Barossa Range, Bethany and eastern side of Mount Lofty Range.
 1844: November, writing from Bethany.
 1845: January, collections from Mount Barker; May, collections from River Murray; July, August, collections from Murray Flats.
 1845: October 9, departure from Port Adelaide on the *Heerjeboy Rustomjee Patell*, for Batavia, Netherland's East Indies.
 1845: December, boat attacked by pirates in Lombok Strait.
 1845: December 29, departure from Banjoewangi, east coast of Java, on *H.R. Patell*.
 1846: March 8, arrival at Table Bay (Cape Town), South Africa. March 9, departure from Table Bay.
 1846: May 19, arrival at Amsterdam, Holland, on *H.R. Patell*.
 1846: Northern spring, arrival back in Germany.
 1846-48: Spring to summer of 1848, medical practice at Koethen; natural history collections handed on to D. von Schlechtendahl and E.F. Germar.
 1848: June 15, departure from Hamburg on the barque *Victoria*, via Rio de Janeiro. Political upheavals in Germany.
 1848: November 6, arrival at Port Adelaide, South Australia.
 1848: November 21, Gawler Town; Nov. 22, Gawler Town Pine Forest; Nov. 23, between Gawler & Lyndoch Valley; Nov. 23, Tanunda; Nov. 29, "Above Salt Creek"; "Second half of Murray scrub", Dec. 8.
 1849: March, writing from Tanunda.
 1849: Late March—early April; excursion to Moorundie, on River Murray.
 1849: April 14, writing from Tanunda.
 1849: Late spring, departure from South Australia for the last time, accompanied by Dr William Hillebrand. Precise date as yet unknown.
 1849: Middle December, writing from Manila, Philippines.
 1849-50: December—? August 1850, residing in Philippines as medico and natural history collector—assisted by Catholic clergy.
 1850: ? August or ? September, arrival at San Francisco, California, U.S.A.
 1850-52: Residing in San Francisco; member of famous Vigilance Committee.
 1853: Return to Germany to bring back Polish bride Miss Agnes Omylska.
 1854: Arrival back in the U.S.A., precise date unknown.
 1854: February 4, member of California Academy of Sciences.
 1855: Curator of Botany at Academy.

Appendix B

Collection Localities

- ANGAS PARK:** Old name for Nuriootpa, Barossa Valley township, 75 km north-east of Adelaide (Fig. 10).
- ANGASTOWN:** Former spelling of Barossa Range township, Angaston, 80 km north-east of Adelaide.
- BAROSSA:** Probably refers to the Hundred of Barossa, which takes in the scrubby area near Lyndoch.
- BAROSSA RANGE:** The northern spur of the Mount Lofty Range, c., 70 km from Adelaide.
- BETHANIEN:** See also *Between BETHANIEN and BAROSSA*: Modern name Bethany: small pioneer German settlement, 3 km east of Tanunda township.
- FIEDLER'S SECTION:** Prior to 1850, being Sections 1, 11 and 22 of the Hundred of Moorooroo, County Light. Section 1 bordering Tanunda Creek, and Section 11 adjacent to Chateau Tanunda Winery. Section 22 is located on the sandplain near Dorrien. Named after Augustus Fiedler of Langmeil (Tanunda).
- GAWLER RIVER:** See also *Towards the GAWLER and LIGHT RIVERS*. Formed by the confluence of the North and South Para Rivers which meet at Gawler.
- GAWLER TOWN:** Gawler, a large township, 40 km north of Adelaide.
- GAWLER TOWN PINE FOREST:** Remnant Native Pine (*Callitris preissii*) forests, in and surrounding Gawler.
- KOWI MANILLA:** Native aboriginal name for an unknown location along the River Onkaparinga, Mount Lofty Range. Precise location unknown.
- LANGMEIL:** Early German settled village, along east bank of Para River at Tanunda.
- LIGHT RIVER:** Large stream, c. 90 km north of Adelaide.
- LYNDOCH VALLEY:** See also *Between LYNDOCH VALLEY and GAWLER*: Old name for Lyndoch; small township, 56 km north of Adelaide (Fig. 11).
- MOORUNDIE:** See also various spellings viz: *MARONDE, MURONDI, MOORUNDEE, MOORUNDI*. Small location on River Murray 7 m South of Blanchetown, which is 135 km east of Adelaide.
- MOUNT BARKER:** See also *MOUNT BARKER DISTRICT BEI HAHNDORF*: Prominent hill in Mount Lofty Range, 32 km east of Adelaide.
- MURRAY FLATS:** Flat areas adjacent to the River Murray.
- MURRAY RIVER:** South Australia's largest river, located east of the Mount Lofty Range.
- MURRAY SCRUB:** See also *SECOND HALF of the MURRAY SCRUB* or *LAST HALF of the MURRAY SCRUB*. Apparently refers to that part of the Murray Mallee south of the modern Truro-Blanchetown highway, towards the River Marne.
- ONCAPARINGA RIVER:** The Onkaparinga River rises near Mount Torrens in, the Mount Lofty Range, 48 km east of Adelaide.
- PFEIFFER'S SECTION:** See also *Between PFEIFFER'S SECTION and LYNDOCH VALLEY*: A difficult section to locate: probably somewhere close to Nuriootpa, for Wilhelm Pfeiffer was an early landholder at Angas Park and in 1876 as 'William' Pfeiffer his address was 'farmer Tanunda Scrub'.
- RHINE RIVER:** The River Marne which rises in the Eastern Mount Lofty Range 70 km east of Adelaide, and joins the River Murray at Wongulla.
- SALT CREEK:** Small stream between Rosedale and Sheoak Log, c. 13 km north-east of Gawler. Also known as Greenock Creek.
- SANDBERG:** An unknown locality, but may refer to either one of two areas viz: the high sand dunes near Lyndoch and Altona, or the high dunes at Moppa, north-west of Nuriootpa.
- SANDPLAIN, BETHANIEN:** Sandy tracts located about 3 km north of Bethany.
- SANDSCRUB:** Possibly refers to the above locality, or sandscrubs in the Lyndoch Valley.
- SCHLINCKEN'S THAL:** See also *SCHLINCKEN'S SCHLUCHT*. Schlincke's Creek is the upper ravine section of Tanunda Creek, near the Kaiserstuhl. It was named after Daniel Schlincke, flour miller of Bethany.
- TANUNDA:** See also *TONUNDA*: Large township in the Barossa Valley, 67 km north of Adelaide. The Kaiserstuhl (Mt Kitchener) is the large hill overlooking the town. I have seen no actual Behr plant collections from the Kaiserstuhl, although this is a familiar Ferdinand Mueller locale.
- TANUNDA CREEK:** Tributary of the Para River, which rises in the Barossa Range to the east of Tanunda township, about 75 km north of Adelaide.
- TORRENS RIVER:** Large river in the Mount Lofty Range, which rises 60 km from Adelaide, near the township of Mount Pleasant.



Fig. 10. Peppermint gum (*Eucalyptus odorata*) woodland, Angas Park (now called Nuriootpa). (Photo. D. Kraehenbuehl.)



Fig. 11. Altona Scrub, near Lyndoch. (Photo. D. Kraehenbuehl.)

Appendix C
List of Plants named after Behr

Names not currently accepted are printed in italics.

I have deleted *Halgania behrana* (= *H. littoralis* var. *glabrifolia*) from Maiden's (1907) list as this refers to *Halgania bebrana* F.v.M., named after Domina de Bebrana.

ASTERACEAE

- Argyrophanes behrii* Schlecht. = *Helichrysum baxteri* A. Cunn. ex DC.
- Aster behrii* Schlecht. = *Vittadinia blackii* N.T. Burbidge
- Eriochlamys behrii* Sond. & F.v.M. ex Sond.
- Chrysocephalum behrianum* Sond. = *Helichrysum baxteri* A. Cunn. ex DC.
- Senecio behriana* Sond. & F.v.M. ex Sond.

EPACRIDACEAE

- Pentataphrus behrii* Schlecht. = *Astroloma conostephioides* (Sond.) Benth.

FABACEAE

- Lotus australis* Andr. var. *behrianus* Tate = *Lotus cruentus* Court
- Lotus australis* Andr. var. *behrii* Moore & Betche = *Lotus cruentus* Court
- Swainsona behriana* F.v.M. ex J.M. Black

HALORAGACEAE

- Loudonia behrii* Schlecht.

LAMIACEAE

- Prostanthera behriana* Schlecht. (Fig. 12.)

MALVACEAE

- Abutilon behrianum* F.v.M. = *Abutilon theophrasti* Medic.
- Lavatera behriana* Schlecht. = *Lavatera plebeia* Sims
- Malva behriana* Schlecht. = *Lavatera plebeia* Sims



Fig. 12. *Prostanthera behriana*, Barossa Range. (Photo. D. Kraehenbuehl.)

MYOPORACEAE

Pholidia behriana F.v.M. = *Eremophila behriana* (F.v.M.) F.v.M.

MYRTACEAE

Calycotrix behriana Schlecht. = *Calytrix tetragona* Labill.

Camphoromyrtus behrii Schlecht. = *Baeckea behrii* (Schlecht.) F.v.M.

Eucalyptus behriana F.v.M.

ORCHIDACEAE

Caladenia behrii Schlecht. = *Caladenia* sp.*

Diuris behrii Schlecht. = *Diuris pedunculata* R.Br.

POACEAE

Aristida behriana F.v.M. (Fig. 13.)

PROTEACEAE

Grevillea behrii Schlecht. = *Grevillea ilicifolia* R.Br.

RHAMNACEAE

Cryptandra behriana Reiss. = *Cryptandra tomentosa* Lindl.

Trymalium behrii Reiss. = *Spyridium subochreatum* (F.v.M.) Reiss.

ROSACEAE

Acaena behriana Schlecht. = *Acaena echinata* Nees var. *echinata*

STERCULIACEAE

Lasiopetalum behrii F.v.M. (Fig. 14.)

THYMELAEACEAE

Pimelea behrii Schlecht. = *Pimelea octophylla* R.Br.



Fig. 13. *Aristida behriana*, Freeling, S. Aust. (Photo. D. Kraehenbuehl.)

*Bentham (1873) believed that *Caladenia behrii* was a form of *C. patersonii*.

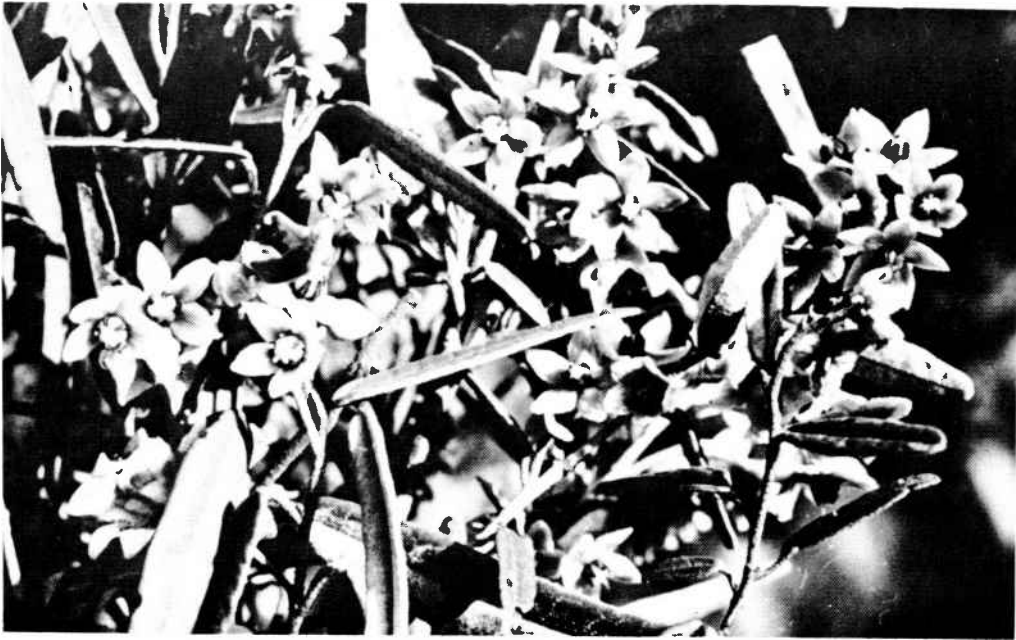


Fig. 14. *Lasiopetalum behrii*, Murray mallee. (Photo. D. Kraehenbuehl.)

Appendix D

Extract from the 'Botanische Zeitung' 7 (1849) 873-876

Translation by Doris Sinkora, National Herbarium of Victoria

Travellers

On the vegetation at the Murray. From a letter by Dr Hermann Behr of Koethen (East Germany) to Prof. G. Kunze in Leipzig.*

Tanunda, April 14th, 1849**
(Received 12th November).

As far as I am concerned, I hope to complete the areas of the Gawler, Rhein, and the eastern scrub as far as the Murray shortly. I am only awaiting the coming spring in this district, before I'll move up north towards the tip of Spencer's Gulf. The present season is not exactly favourable for botanical explorations, travelling is made more difficult through lack of water, and I can tell a story [lit.: "sing a song"] about the tortures of thirst. Few plants are to be found in flower, and, those that are, can be found flowering just as well during any other season. Only the Loranthaceae and Santalaceae are contrary enough to develop their flowers right now, as does also *Calostemma* [*C. purpureum*] and along the Murray the beautiful *Crinum* [*C. flaccidum*]. I returned from there only a few days ago. In the plains and up to the springs of Light's Pass about the only thing found flowering was an occasional *Oxalis cognata* [*O. perennans*]. Otherwise the herbaceous

*See also: About the conditions of the South Australian Flora generally, by Dr H. Behr, *Linnaea* XX (1847) pp. 545-58.—Kze.

**In a letter written from there one month earlier the traveller expresses the hope to have completed the Barossa Range shortly, and then to be able to move further into the interior, to the Mt Remarkable area. Cultivation is already reducing much of the endemic flora.

flora of this stretch of country was withered and devastated by animals. Trees and shrubs showed the usual forms; the species of *Eucalyptus*, *Acacia retinodes* [and] *pyncnantha*, *Exocarpus* [*Exocarpos cupressiformis*] and *Casuarina* [*C. stricta*], abundant in Angus Park, and the latter two formerly widespread around here, have now become isolated and rare specimens, because of the cattle which love the young foliage of these trees. This kind of vegetation continues with little variation, though less damaged by animals, right into the mountains, the grasslands of which extend across the water dividing range. However, from here on, as soon as the area, the river system of which already belongs to the scrub country, becomes more stony, *Santalum lanceolatum* [*S. acuminatum*], *Acacia cyclophylla*, [the hairy phyllode form of *Acacia rotundifolia*, abundant on the eastern side of the Mount Lofty Range near the River Marne and Cambrai], and their companions appeared. I found a Compositae new to me, related to *Cassinia* [this may be *Helichrysum bilobum*], a pretty shrub with white flowers.

The road to Maronde [= Moorundie] which I followed next morning after an improvised overnight camp in the scrub, leads for five hours, starting from the eastern slopes of the mountains, through plains which are covered with the low shrubs of a Compositae with white foliage [? *Cratystylis conocephala*]. From a distance this gives the impression—rather strange under the burning Australian sun—of snow-covered fields. Apart from a few species of *Salsola* [*S. kali*] and an occasional *Stenochilus* [*Eremophila* sp., probably *E. glabra* or *E. maculata*], it is difficult to find anything else, at least at this time of year. The white plain extends 'ad infinitum'. A black forest belt marks the horizon; at long last it is reached. But behind it, already visible through the sparse foliage of scrub *Eucalyptus*, glimmer once more the white shrubs of the plains. Thus it goes on, until finally the unbroken forest is reached. The black border along the horizon, which promised shade and coolness, spreads its thin, bare, snake-like twisted branches: it limits the view, and that is at least one advantage in the Murray Scrub! But one looks in vain for shade under the broken screen of its almost leafless crowns, through which a blue sky laughs down on the deceived wanderer. I did not find any plants here, but there was manna, to which my black friend Tujaemlurig drew my attention. I had the good luck to meet this aborigine on the way to Maronde [= Moorundie] and a native is always better than no companion at all. Referring to the manna: this is a kind of syrup which exudes from the leaves of some *Eucalyptus* species [could refer to a number of *Eucalyptus* species including *E. gracilis*, *E. oleosa*, *E. socialis* or *E. pileata*, which all occur in this region] and then dries in the sun, forming white patches on both sides of the leaves and on the stems. Permeated with the volatile oils in which these trees abound, it tastes very pleasant and refreshing, but strangely enough it is known to very few Europeans. Generally the scrub has far more such aids than one would expect, and to fully appreciate it one has to go to school with the aborigines first. Drinking water drips from cut-off roots, and deep in the wilderness one finds nests of Megapodius eggs [mallee fowl, native name mayerarko, still relatively common near Blanchetown and Waikerie]. It does not take long before one is as tired of the scrub as one is of the flats, and one greets joyfully the first clearing which shimmers from afar like a snowfield beneath the frame formed by the bare trunks, carrying foliage only high up in the crowns. These flats are, by the way, the most desolate spot I have found anywhere in the five continents on this earth. Other deserts impress with the vast expanse of desert meeting sky. But this small almost square spot, bordered by gloomy monotonous forests can give rise to no other emotion than that of never-ending boredom. After we had walked through the next forest, a flat of different appearance came into view. Here, too, were these white shrubs, but for a change they consisted of *Scaevola* [*S. ?spinescens*] and Chenopodieae. For contrast there is the black-green heathlike foliage of *Melaleuca curvifolia* [*M. lanceolata*] and the varied verdure—different shades of green amongst *Cassia* and *Stenochilus* and other shrubs. A beautiful *Loranthus* [? *Lysiana exocarpii*] with scarlet-red flowers hangs from a *Myoporum*-like

tree [Behr collected *M. platycarpum* towards the Murray in March 1849]. However, no grass at all is found here, though this is due rather to the herds of cattle, which are driven frequently through here from the Upper Darling, than to the poverty of the soil. But a fair distance from the road several species of grasses can be found, which cover the bright yellow sand here and there with their grey-green remnants.

According to my observations, the forest grows always on the barely noticeably elevated ridges, which run across the scrub. There the ground is very stony, and the subsoil seems to consist of solid limestone, of which large pieces are still entangled amongst the roots of uprooted trees that frequently lie across the roads.

The flats are always low-lying and are more sandy than rocky, and during the rainy season they are probably often swampy. The eastern plains, which are rich in vegetation, are formed in many places near mountains; they have stony soil, but are always slightly lower-lying than the forest belts running across them.

The plains of the Murray Scrub slope steeply down to the river valley. In most places this slope is so steep that it looks like a wall. The valley contains the floras of the scrub and the plains in colourful variety, and added to this are the plants of the lagoons [billabongs] and areas reached by floods. *Callitris* [probably *C. preissii*] grows here without its usual associates, and generally few plants agree with those of the western lowlands. A beautiful *Acacia* [possibly *A. stenophylla*, which is common here] with long, almost reed-like phyllodes, *Cassinia*, *Phyllanthus* [? *P. fuernrohrii*] and *Melaleuca curvifolia*, as well as an *Exocarpus* [*Exocarpos aphylla*] like a leafless *Leptomeria*, form the characteristic features of an undergrowth above which nine *Eucalyptus* species as high as trees [but of bush-like growth] spread their thin crowns, a *Clematis* [*C. microphylla*] with long branches climbing through them. The land reached by the floods shows a partiality for Compositae; amongst them a few species of *Senecio* [*S. lautus* and, possibly, *S. behrianus*] in particular predominates in large numbers. A strange shrub grows here, with rod-like branches and flowers and fruiting capsules similar to *Euphrasia* [a very difficult plant to assess, but may refer to *Eremophila divaricata*, whose flowers superficially resemble a *Euphrasia*. *Eremophila divaricata* occurs at Blanchetown] also a *Morgania* [*M. glabra*] and a very lovely *Swainsona* [*S. greyana* or, possibly, *S. sericea*].

The edge of the lagoons is bordered by a kind of *Arundo* [*Phragmites australis*], which may not differ from *Donax*, and by *Typha* [*T. domingensis* and/or *T. orientalis*], *Micromaria* [probably *Mentha australis*, which Behr did collect on the Murray] and *Calystegia* [*C. sepium*] generally a vegetation very similar to the European, in which only a pretty *Sida* [*S. petrophila* is common] stands out. *Azolla* [*A. filiculoides* and/or *A. pinnata*], *Valisneria* [*Vallisneria spiralis*] and *Potamogeton* [*P. crispus*, *P. pectinatus* and *P. tricarlinatus* are all common], float in the lagoons and in the river. A *Jussieua* [*Ludwigia peploides*] trails along tree trunks that have fallen into the water, and an amphibious *Rumex* [probably *R. bidens*] with floating stem-like rhizomes sometimes forms artful garlands, at other times, when hidden under water, showing only foliage and buds. The growth of tall reeds, as tall as a man and covering large areas, which was previously recorded from here, has disappeared under the feet of grazing cattle. I hope to be able to tell you some more in a later letter about the other side of the riverbank, which is almost completely unknown, where the vegetation, as far as I have seen so far, seems to differ mainly in the predominance of *Callitris*. The natives from the Murray rarely enter there; but the desert plateau they enter only unwillingly, if ever. They speak of enemy tribes, who use magic and can change into birds; however a more plausible reason may be the charge of cannibalism which they make against the unknown inhabitants of the scrub. However, in my opinion the most certain enemies lying in wait there for the inexperienced traveller are hunger and thirst.

—Dr Hermann Behr

Appendix E

Two Entomological Excerpts

Translation by James A. Baines, Torquay, Victoria

Extract from 'Linnaea Entomologica' 3 (1848) 153-157

Contributions to the insect fauna of Adelaide, by E. F. Germar. Published by the Entomological Society of Stettin, in Posen and Bromberg.

Page 153.

Dr Behr, M.D, in Coethen, who in the spring of 1846 returned from New Holland, where he spent a year and a half in the vicinity of Adelaide as a naturalist, handed over to me the beetles he collected there, with the wish that I would examine and describe them. After comparing them with species from New Holland described by Erichson, Boisduval, Westwood, Kirby, Newman, Hope, Marsham and others, it was apparent that only relatively few were already known, and that on the whole the insect fauna of New Holland offers within limited local ranges greater differences than is the case in other countries.

Van Diemen's Land which lies about a hundred geographical miles further south, seems to have only a few species in common with the Adelaide district, for of 204 species of beetles which Erichson describes from this country [Archiv fur Naturgeschichte, Vol. 8, 1842] only eight have been discovered by Behr. It is striking that of the species that Newman described from the Adelaide area only very few were with certainty recognized in Behr's collection; however, Newman's descriptions are so insufficient that it is almost impossible to determine from them with certainty.

Page 154.

The diversity of insect faunas is due mainly to climate, vegetation, mountains and the nature of the soil, especially the mountains, which produce very remarkable variations, so that the entire character of the fauna is often altered by them, as for example in South America by the Andes and in Europe by the Alps. On the other hand there are other considerable mountain ranges that seem to cause only slight deviations, eg. the Apennines, the Pyrenees, the Urals. Inland New Holland is still too little known to draw conclusions from this circumstance about the character of the insect fauna, but great mountain chains cannot be presumed, and one cannot really say that the general nature of the New Holland insect fauna should be subjected to great changes, but only that the species change more quickly and establish themselves as opposites, than is found elsewhere. Dr Behr, in the 'Entomologische Zeitung', Part 6, 1847, communicated his remarks in reference to the occurrence of the insects, and his observations on the habitat of the separate genera I have embodied in the following (introductory) preamble.

In the group of the Carabidae flattened forms predominate, which are found under the bark of eucalyptus trees, and though *Argutor* and *Steropus* were collected there, only *Promecoderus* was found in cow-dung. Most of the species came from Bethanien an old Lutheran colony north of Adelaide, where Behr spent the longest time. _____

Page 155. 2nd. last paragraph.

Behr brought with him very few species of *Brachelytren*, although it is accepted that this Family also has numerous representatives near Adelaide. Specially varying forms of these are however, in general not yet described from New Holland. _____

Page 156. last paragraph.

Of the families of Ptinioridae, Nitidularidae, and Dermestidae Behr brought so few species that they give no support for observations. _____

Page 157. middle of page.

Behr's communications have enriched the genus *Cryptodus*, formerly of only two species (*Cr. paradoxus* MacLeay, Westw. and *Cr. anthracinus* Erichs. Tasmannianus Westw.).

Extract from 'Archiv fur Naturgeschichte' 12 (1846) 198

A review of Natural History of the Insects published during 1845.

Editor, Dr Wilhelm Ferdinand Erichson. Published by Nicolai'schen Buchhandlung, Berlin.

On the butterflies of that district (Adelaide) Behr gave an account in a letter written from Bethanien (*Entomologische Zeitung*, p. 210). He likewise describes its fauna as remarkably poor. Among the day-flying butterflies is found a *Papilio* [*P. demoleus* or *P. anactus*], like *Demoleus*, and perhaps introduced with lemon trees, as well as a few *Pentus*, 3 *Vanessa*, 3 *Hipparchus*, and several *Lycaenidae*. Most interesting is a butterfly closely related to *Castnia*, which flies in the pine forest (the pine-tree of the settlers is *Callitris*) and resembles in colouring and behaviour our *N. parthenias*. The night fliers are richer in number by far; especially the tribe of *Microlepidoptera* is in no way inferior in richness of species to that of the European fauna. Isolated tropical forms crop up here, especially the huge *Hepiolus* [sic; should be *Hepialus*, Swift-moth] [*Hepialidae*] and an *Erebus*. (As the butterflies collected by Dr. Behr have been purchased by the Royal Collection of this country, I cannot complete the foregoing account.) The *Pontidae* are *Pieris aganippe* [*Delius aganippe*; *Pieridae*] and *Teutonia* Don., the *Vanessa*: *V. calybe* God. [*Precis villida calybe*], *Itea* F. [*Vanessa itea*; *Nymphalinae*] and an unnamed species very much like *V. cardui*; the *Hipparchus* are *H. (lasiommata) merope* F. [*Heteronympha merope merope*][—]of which both sexes have been counted as two different species[—] and *Singa* Boisd. Of *Lycaenidae*, there are 10 species; also 3 kinds of *Thymetus* were collected. The genus related to *Castnia* has recently been given the name *Synemon* [*Castniidae*] by Doubleday; Behr's collection included 4 species of it. Among the spiders are several forms peculiar to New Holland; even so, *Agaristidae* are not lacking (*A. latina* Don., *tristifica* Hub. and 2 species still unnamed)*.

Acknowledgements

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*A day moth, *Comocrus behrii* (*Agaristidae*) was named by George French Angas, who resided in South Australia during the 1840's.

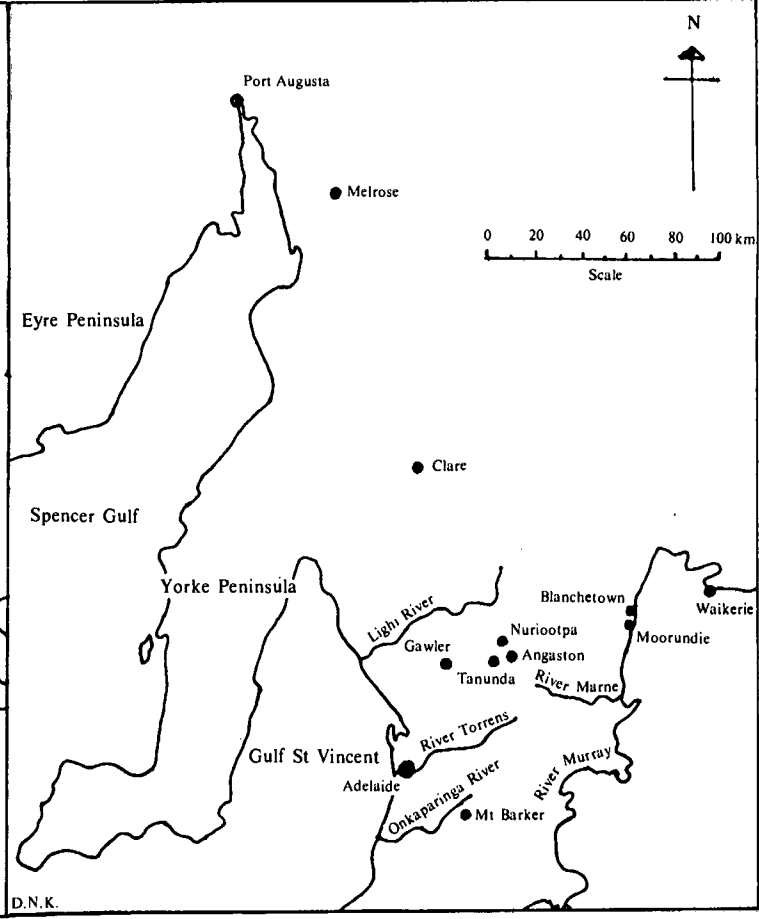
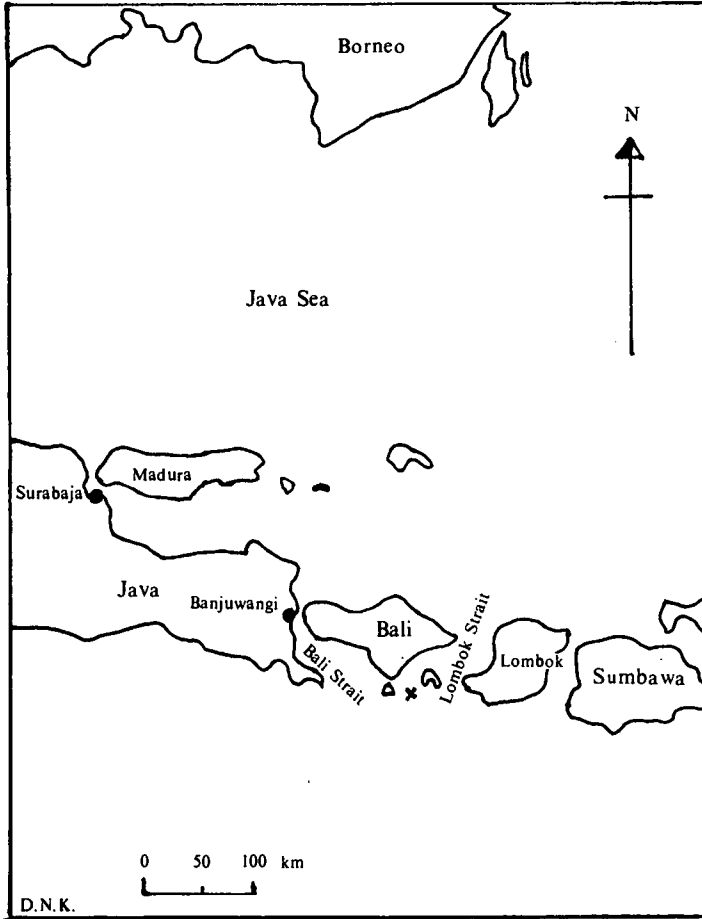
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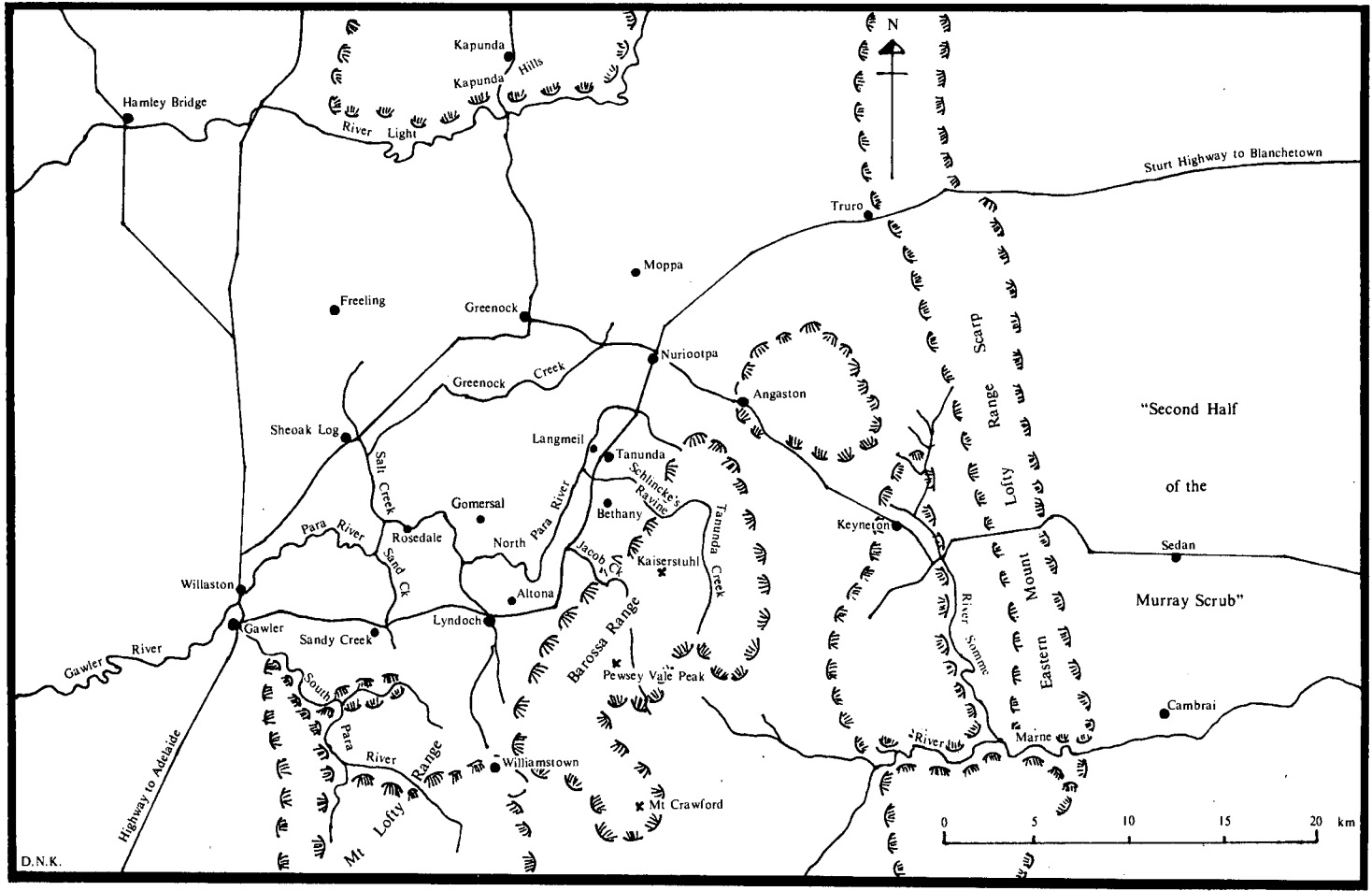
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Map 1. Part of Indonesia, showing where the *H.R. Patell* was attacked.

Map 2. Part of South Australia.



Map 3. Barossa and adjacent Murray mallee regions of South Australia.