

Clarifying collection details of specimens from Champion Bay, Western Australia, held in the Natural History Museum, Tring

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SUMMARY.—Six bird specimens from Champion Bay (now Geraldton), Western Australia, were purchased by the British Museum from the dealer E. T. Higgins and registered in 1867. They included the first known specimen of Painted Finch *Emblema pictum* to have been collected after the holotype. All six specimens are of interest because their species are either rare or otherwise unknown in the Geraldton area. Widespread drought in the 1860s probably contributed to at least some of the unusual occurrences but cannot explain them all. Possible alternative locations for the specimens' origins are investigated. Biographical details of the probable collectors of the specimens, A. H. du Boulay and F. H. du Boulay, are explored.

In their review of Painted Finch *Emblema pictum* in South Australia, Black & Horton (2014) discussed observations made by Frank Gibson in the Flinders Ranges, South Australia, in 1868–69. They believed that his observations constituted the first record of the species since the collection of the holotype in June 1840, on Depuch Island in the Pilbara region of north-western Western Australia, by Benjamin Bynoe, surgeon to *HMS Beagle*. Gibson collected ten Painted Finch specimens in 1869, four of which are held in the Natural History Museum, Tring (Sharpe 1890). Black & Horton (2014) noted another specimen listed by Sharpe (1890), from Champion Bay (now Geraldton) in Western Australia, but they were unaware of its date of registration. The Champion Bay Painted Finch was in fact registered in 1867 and thus pre-dates the Gibson specimens. As it now is the first known record of the species after the holotype, the specimen is of considerable interest, and further details are desirable concerning its collector, its locality and any other material collected with it.

The Champion Bay specimens

The Painted Finch (Fig. 1) is one of a series of six specimens from Champion Bay, Western Australia (WA) (Fig. 2) purchased from Mr Higgins and registered on 25 February 1867 (Table 1). Edmund Thomas Higgins was a dealer in natural history specimens, living in London at the time (Sharpe 1906, Torrens 1994), and an agent for at least one other Australian bird collector, John Thomas Cockerell (PH unpubl.; Sharpe 1906). On the assumption that the specimens were shipped to England soon after they were collected, were about three months in transit, and were sold to the museum soon after reaching Higgins, they were probably collected no later than October 1866. In an age when it was difficult to keep insect pests at bay, and interesting natural history specimens from Australia were highly desirable in England, it is likely that the Champion Bay material was not collected much earlier, so the year of collection can probably be set at 1866. The register entries are rather scant, in three instances giving only the genus name, but all can be matched with entries in *Catalogue of the birds in the British Museum* (CBBM; see Table 1), with the exception of 1867.2.25.6. In the case of the Spinifex Pigeon *Geophaps plumifera* and Grey-crowned Babbler *Pomatostomus temporalis* specimens this permits identification to subspecies (Table 1) but unfortunately both specimens are missing and their identifications cannot be verified. The



Figure 1. Specimen of Painted Finch *Emblema pictum* from Champion Bay, Western Australia, NHMUK 1867.2.25.3 (© H. van Grouw, Natural History Museum, London).

Figure 2. Map of Western Australia showing localities and biogeographical regions mentioned in the text. Boundaries of the biogeographical regions are approximate.

Figure 3. Specimen of Letter-winged Kite *Elanus scriptus* from Champion Bay, Western Australia, NHMUK 1867.2.25.5 (© H. van Grouw, Natural History Museum, London)



TABLE 1

The six Champion Bay specimens: details from the Natural History Museum, Tring, register and from the *Catalogue of the birds in the British Museum* (1874–98) (Cat. Birds BM). Ad. = adult; C. = collector; sk. = skin; st. = standing (mount).

Register no.	Name in register	Identification	Cat. Birds BM	Specimen
1867.2.25.1	<i>Lophophaps</i>	Spinifex Pigeon (rufous-bellied form) <i>Geophaps plumifera ferruginea</i>	Vol. 21 (Salvadori 1893: 534). Ad. st. A. H. Du Boulay [C.]	Missing
1867.2.25.2	<i>Pomatorhinus</i>	Grey-crowned Babbler <i>Pomatostomus temporalis rubeculus</i>	Vol. 7 (Sharpe 1883: 422). Ad. sk. Purchased.	Missing
1867.2.25.3	<i>Emblema maculata</i>	Painted Finch <i>Emblema pictum</i>	Vol. 13 (Sharpe 1890: 296). ♀ ad. sk. Purchased.	Skin; collector not given on label
1867.2.25.4	<i>Falco hypoleucus</i>	Grey Falcon <i>Falco hypoleucos</i>	Vol. 1 (Sharpe 1874: 394). ♂ ad. st. Purchased.	Relaxed mount; collector not given on label
1867.2.25.5	<i>Elanus inscriptus</i>	Letter-winged Kite <i>Elanus scriptus</i>	Vol. 1 (Sharpe 1874: 340). Ad. sk. Purchased.	Relaxed mount; collector not given on label
1867.2.25.6	<i>Ptilonorhynchus</i>	A bowerbird species? (possibly Western Bowerbird <i>Chlamydera guttata</i>)	?	Not found among the bowerbird collection

sixth specimen may have been a Western Bowerbird *Chlamydera guttata*, as this is the only bowerbird that occurs near the Champion Bay region (Johnstone & Storr 2004), but there is no Champion Bay bowerbird of any species either in the bowerbird collection or listed in *CBBM*, so its identity is unconfirmed. The three specimens that remain in the collection are of Letter-winged Kite *Elanus scriptus*, Grey Falcon *Falco hypoleucos* and Painted Finch. All six specimens are of interest because the species are rare or unknown from the Geraldton region; their possible provenance will be discussed below.

The collector

The only clue to the identity of the collector of the Champion Bay material is in the *CBBM* entry for the Spinifex Pigeon specimen, which Salvadori (1893) listed as having been collected by 'A. H. Du Boulay'. As specimen 1867.2.25.1 is missing, it is impossible to verify that it was indeed the specimen listed by Salvadori, but there were no others from Champion Bay in his list so it is almost certain that they were one and the same. None of the other Champion Bay specimens was listed with a collector's name, however, and none of the three surviving specimens has a collector's name on its label (Table 1). It is possible that Salvadori was aware of information concerning Du Boulay (or du Boulay) that Sharpe, who listed the other four specimens in *CBBM*, did not know. Sharpe (1906) noted the existence of the Champion Bay specimens in his account of Higgins, listing them together with ten specimens from Cape York, Queensland, also purchased from Higgins and registered in October 1867, but whereas he gave the collector for the latter (J. T. Cockerell), he did not for the former. Despite the lack of evidence, however, it is reasonable to assume that if du Boulay collected one of the specimens from Champion Bay, he probably collected or at least supplied them all. A search of museum and other records on the Atlas of Living Australia website (www.ala.org.au/data-sets/ accessed 20 July 2015) revealed no birds either from Champion Bay or collected by du Boulay. The earliest records from Geraldton are two

specimens (Red-backed Kingfisher *Todiramphus pyrrhopygius*, White-plumed Honeyeater *Ptilotula penicillata*) collected in 1899 by an unknown collector (probably Robert Hall) and held in Museum Victoria. Similarly, there are no records of birds from Champion Bay or collected by du Boulay in REJ's historical database (WA Museum), the earliest from Geraldton being two Rainbow Bee-eaters *Merops ornatus* and a Little Tern *Sternula albifrons* collected in 1896. It seems likely that the six 1867 specimens were an incidental collection made by an occasional collector, and several may have been targeted because they were unusual birds for the local area at that time. Who then was du Boulay?

Arthur Houssemayne du Boulay was born in Dorset, England, and baptised on 16 April 1843 (www.freebmd.org.uk/cgi/search.pl; www.search.ancestry.com.au/). Newspaper articles from the National Library of Australia's Trove website reveal biographical information, including that from the 1880s onwards 'du' was mostly used in his family name, rather than 'Du'. On 20 November 1862, Arthur du Boulay arrived in Perth from London and immediately sailed for Champion Bay (Anon. 1862b) where he joined other members of his extended family, who had already settled there. These included the brothers Julius and Francis Houssemayne du Boulay, who were Arthur's cousins (Anon. 1914a, 1922). Arthur became a pastoralist and assumed the lease of Minnanooka Station from his cousins (Anon. 1922); this is now only a place name (Minnenooka) c.25 km east-southeast of Geraldton (Fig. 2). On 10 March 1864 he joined an expedition led by Frederick Kennedy Panter to explore northern coastal WA (Panter 1864a,b). The expedition's chief naturalist was Dr James Martin, who had explored the Glenelg River area in the Kimberley region in 1863 (Anon. 1863, Martin 1865). The Panter expedition sailed to the Kimberley and spent three weeks at Brecknock Harbour, followed by three weeks in the vicinity of Roebuck Bay (Fig. 2), returning to Fremantle (Perth) on 6 June 1864 (Anon. 1864b, Panter 1864b,c). During the expedition, du Boulay made meteorological and other observations (Martin 1864a) and conducted a survey of Roebuck Bay and its environs (Martin 1864c). Cape Du Boulay, c.70 km south-west of Broome (Fig. 2), was named in his honour (Martin 1864d).

On 21 January 1867 Arthur du Boulay married Caroline Howard in Geraldton (Anon. 1867). At the time, however, the prospects for sheep farming were poor, due to continuing drought and low wool prices (Anon. 1922). That, combined with lawlessness in Geraldton (J. du Boulay pers. comm.), persuaded du Boulay to change profession. The newlyweds therefore returned to England where they lived from 1868 until 1874, while du Boulay studied law (Anon. 1922). In October 1874 the du Boulays, now with three children, returned to WA (Anon. 1874) and du Boulay established his practice as a barrister and solicitor in Geraldton (Anon. 1922). He remained at Geraldton for the rest of his life, dying on 18 June 1922 (Anon. 1922).

Provenance of the specimens

Although registered with the locality of Champion Bay (Geraldton), the six specimens may not have been collected there, as their species are rare or unknown in the vicinity, and in some cases occur in environments very different from the sandplains on which Geraldton is sited (Johnstone & Storr 2004). WA localities and regions given in the following summary of species distributions are shown in Fig. 2. Letter-winged Kite is usually restricted to a core range in the northern and eastern Lake Eyre Basin of inland Australia (Marchant & Higgins 1993), and Grey Falcon is rare, elusive and largely confined to inland regions (Schoenjahn 2013). The rufous-bellied form of Spinifex Pigeon occurs mainly in the Pilbara and mid-Gascoyne regions of WA (Higgins & Davies 1996, Johnstone & Storr 1998) some 350 km or more north of Geraldton. The southern edge of the WA distribution of Grey-crowned Babbler is closer to Geraldton but still some 150 km to the north-east (Higgins & Peter 2002,

Johnstone & Storr 2004). Painted Finch is common in the Pilbara (Johnstone *et al.* 2013) but the southernmost confirmed records in coastal WA are around Carnarvon and the Kennedy Range (Johnstone *et al.* 2000), some 400 km north of Geraldton; in the interior of WA the species is patchily distributed as far south as the Kalgoorlie district (Johnstone & Storr 2004). In WA Western Bowerbird occurs mainly in the Pilbara, Gascoyne and interior regions, but has been recorded further south (Johnstone & Storr 2004) including one sighting in sand-hill country near Geraldton, as reported by Ashby (1921).

Could any of these typically more northerly or inland species have been collected in the vicinity of Champion Bay, and even if so, where else might they have been obtained? Several possibilities are discussed below.

1. *Most of the specimens were collected near Champion Bay or Minnanooka Station.*—When populations of Letter-winged Kites' main rodent prey decline such as during drought, the kites disperse across much of the continent, as far as coastal WA (Marchant & Higgins 1993, Johnstone & Storr 1998). There was a severe drought across much of Australia in the mid 1860s (e.g. Anon. 1865b) and a naturalist 'Microzoon' writing in 1869 about the birds of Victoria noted that Letter-winged Kite was almost unknown in Victoria until 'the great drought a few summers ago' when it appeared in extraordinary numbers, together with many other inland species (Microzoon 1869b). The Champion Bay kite (Fig. 3) could have been collected during the same dispersive episode. A later dispersal was documented in October–November 1888 by Carter (1889) who observed large numbers of Letter-winged Kites in the Gascoyne region north of Geraldton.

Grey Falcon can occasionally appear in coastal regions, especially during or after droughts (Marchant & Higgins 1993). In WA Grey Falcon has rarely been recorded south of 26°S (Johnstone & Storr 1998, Schoenjahn 2013) so Champion Bay (Geraldton, 28°46'S) is an unusually southerly location. If it is correct then, like the kite, the falcon's appearance at Champion Bay was probably influenced by drought conditions. This is by no means the southernmost record of Grey Falcon in WA, however, the holotype having been collected in c.1839 near York (31°53'S) (Schoenjahn 2010). Other southerly records include historical sightings near Moora (30°38'S) and Northam (31°39'S) (REJ, WA Museum bird database; see Fig. 2 for localities). Noteworthy also is a Grey Falcon shot in Melbourne, Victoria, Microzoon (1869a) stating that the specimen was, by the time of his article, in the National Museum (of Victoria). This undated specimen (MV6358), possibly also collected during the 1860s drought, remains the only recorded occurrence of the species in the Melbourne district (Longmore 2012).

Painted Finch is capable of wide dispersal and irruptive movements (Higgins *et al.* 2006, Black & Horton 2014), and in WA is known to disperse, sometimes over hundreds of km, to flatlands during drought (Johnstone & Storr 2004). While there are no confirmed records anywhere near Geraldton (REJ, WA Museum bird database), it is feasible that the species could be a rare and brief visitor there. Like the kite and falcon, the appearance of the finch at Champion Bay or Minnanooka would probably have been drought-influenced, and indeed this may explain the appearance of Painted Finches in the Flinders Ranges in 1868–69, Gibson's observations being among the southernmost ever recorded (Black & Horton 2014). The sandplain habitat around Geraldton is far from typical for Painted Finch, which prefers spinifex (*Triodia*) in rocky hills and stony country (Johnstone & Storr 2004). The species has been recorded in atypical habitats, however, for example two clutches of eggs in the South Australian Museum (B2726, B14238) were laid in nests in tomato plants at the old police station at Illamurta Springs, Northern Territory, two birds were observed at Clayton Bore drain, Birdsville Track, north-eastern South Australia (Reid 2000), and Kovac

& Niejalke (2004) found the species breeding at a spring-fed wetland at Hermit Hill, south of Lake Eyre in central South Australia.

Grey-crowned Babbler is sedentary (Higgins & Peter 2002), so a specimen is unlikely to have been collected at least 150 km from the nearest known observation. In addition, the original sandy heath environments around Geraldton or Minnanooka would have been unsuitable for the species, which prefers open woodland with sparse ground cover (Higgins & Peter 2002). Du Boulay could only have collected the babbler further north or inland from Champion Bay. Spinifex Pigeon is also considered to be sedentary (Higgins & Davies 1996), occupying grasslands on rocky hills or stony flats (Johnstone & Storr 1998), so this specimen must have been collected hundreds of km north of Champion Bay where suitable habitat does occur. Western Bowerbird is usually found in rocky country or open riverine woodland but may occur in other habitats such as mangroves or homestead gardens (Johnstone & Storr 2004, Higgins *et al.* 2006). It is the only one of the six Champion Bay species for which there are other records in the vicinity, lending support for this locality, or Minnanooka, as the source of the bowerbird specimen.

2. *The specimens were collected during the 1864 Panter expedition.*—Given that the six species have more northerly distributions, it is reasonable to question if Arthur du Boulay collected the specimens in 1864 during the Panter expedition. Letter-winged Kite and Grey Falcon may occur at times in the Kimberley region, but are probably little more likely to be encountered there than at Geraldton. The rufous-bellied form of Spinifex Pigeon does not occur in the Kimberley, being replaced there by a white-bellied form, which does not occur in the coastal regions explored by the expedition (Johnstone & Storr 1998). Painted Finch is not known to occur in the Brecknock Harbour region of the Kimberley, but may occur in the vicinity of Roebuck Bay (Johnstone & Storr 2004), although the habitat encountered by the expedition there was mostly grassy plains with low open woodland (Martin 1864b,c), and atypical for the species. Grey-crowned Babbler does occur in coastal regions of the Kimberley, however, as does Great Bowerbird *Chlamydera nuchalis* (Johnstone & Storr 2004). Western Bowerbird does not reach further north than the Pilbara, so if du Boulay's unidentified bowerbird was collected in the Kimberley, it must have been a Great Bowerbird.

Natural history specimens were collected during the Panter expedition (Martin 1864a). Some of James Martin's plant specimens remain in the National Herbarium of Victoria (Atlas of Living Australia www.ala.org.au/data-sets/) and numerous butterflies and beetles were probably collected (Andrews 1864). However, there is no indication from Panter or Martin's reports that bird specimens were retained, many of those shot being destined for eating (Martin 1864d). It is also clear that Martin's bird identification abilities were limited as most were noted in generic terms, 'cockatoo', 'pigeon' etc., while others were wrong, e.g. Malleefowl *Leipoa ocellata* (of semi-arid southern Australia) and Superb Lyrebird *Menura novaehollandiae* (of wet forests in south-east Australia) that he reported in the Glenelg River district (Fig. 2) (Martin 1864b). Nonetheless, Martin was able to skin birds (Martin 1865), so if du Boulay didn't already know how to prepare specimens he may have had the opportunity to learn from him.

3. *The specimens were collected in the Pilbara region.*—All six species occur in the Pilbara region, although Letter-winged Kite only rarely does so (Johnstone *et al.* 2013). We have found no evidence of Arthur du Boulay having visited the Pilbara, as the Panter expedition did not stop there on either its outward or homeward journeys (Panter 1864b,c). However, it is possible that he made a private trip to the Pilbara for which there remains little or no documentation. He may even have travelled inland to the Gascoyne region south of the Pilbara, where all six species can also be encountered, although the logistical difficulties

of such a journey at that time would have been considerable and unlikely to have gone unnoticed in the press. Alternatively, Arthur du Boulay may have acquired Pilbara specimens from one of his cousins. Francis Houssemayne du Boulay (born England 1837, died Beverley, WA, 1914) was a naturalist and musician who specialised in collecting beetles in many parts of Australia (<https://familysearch.org/>; Anon. 1914a,b, Musgrave 1932). Reportedly, he went beetle-hunting on many occasions with Dr James Martin when both were still in WA, and he sent many of his WA collections to beetle specialists in England (Musgrave 1932). In January 1864 he sailed to England, the ship's cargo including '2 cases specimens Natural History', presumably his (Anon. 1864a); he returned to WA in September 1865 (Anon. 1865a).

In March 1866 Francis du Boulay joined Robert J. Sholl (Government Resident at Port Walcott, Fig. 2) in a 12-day expedition to the Maitland and Fortescue Rivers in the Pilbara (Sholl 1866), during which time Sholl named Du Boulay Creek, a few km east of the Fortescue River, almost certainly honouring Francis du Boulay. Sholl's (1866) description of the expedition indicates that they were constantly on the move and dealing with difficult terrain, straying horses and other events, so collecting of beetles, let alone birds, was probably minimal. However, Francis remained at Port Walcott for more than a month after the end of the expedition as he waited for the next ship home (Anon. 1866), and in that time may have collected a few birds, which he then could have handed to his cousin Arthur.

4. *The specimens were collected earlier by F. T. Gregory.*—Francis Thomas Gregory (1821–88) was a surveyor and explorer who undertook several expeditions in WA, some with his elder brother Augustus Charles Gregory, until he moved to Queensland in 1862 (Whittell 1946, Waterson 1972). In 1858 he led an expedition to explore the Gascoyne River district (Fig. 2), during which he encountered a 'new species of crested quail' (Gregory & Gregory 1884). He sent a specimen to John Gould who described it as *Lophophaps ferruginea* (Gould 1865), now *Geophaps plumifera ferruginea* (Spinifex Pigeon). In notes he sent to Gould, Gregory stated that he had 'found this species in large numbers on the Gascoigne River ... I have occasionally seen more than five hundred come down to drink in less than half-an-hour' (Gould 1865).

On 23 April 1861 F. T. Gregory sailed from Fremantle with a small party of volunteers and ten horses (Gregory 1862). Among the volunteers was Edward Brockman, a pastoralist and cousin of Francis du Boulay (Anon. 1861, 1902, 1914a). The ship called in at Champion Bay to pick up supplies and ten extra horses, including one supplied by Francis du Boulay; additional volunteers joined the party, but du Boulay was not among them (Gregory 1862). Arriving at Nickol Bay in the Pilbara region (Fig. 2) on 11 May 1861, the party spent the next five months exploring inland regions in two major expeditions, during which Gregory named several rivers including the Fortescue. Brockman was one of the hunters on the expedition, and Gregory (1862) noted on 26 May that 'Cockatoos and other game were plentiful, sixteen of the former being killed by Mr. Brockman at one shot'; the description indicates that the cockatoos were Little Corellas *Cacatua sanguinea*. While most of the birds shot were to supplement the men's meat ration, some were retained for 'our small collection of birds' (Gregory 1862). As on the 1858 expedition, the men again encountered 'crested quail or partridges', and Gregory described the method whereby local Aborigines captured large numbers of them at river pools.

The expeditioners left Nickol Bay on 23 October 1861 with the 14 surviving horses and, without stopping at Champion Bay, sailed directly to Fremantle, where they arrived on 9 November 1861. Whether or not Francis du Boulay's horse survived and was returned to him is unrecorded, but it is possible that Gregory may have given him some bird specimens as recompense. There would have been little opportunity for him to do so directly before

his departure for Queensland in February 1862 (Anon. 1862a), but Francis's cousin Edward Brockman could have given him some, which he later gave to his other cousin Arthur du Boulay. Gregory did send specimens to John Gould (Gould 1865) who described one of them as *Chlamydera guttata*, a new species of bowerbird (Gould 1862).

Discussion

It is impossible to determine the actual provenance of the Champion Bay specimens, but it is possible that they came from more than one source. Four of the six specimens could have been collected near Champion Bay or Minnanooka, but it is virtually impossible that the Spinifex Pigeon and Grey-crowned Babbler were collected there. However, the Panter expedition appears an unlikely source for most of the specimens. If the intention was to send the specimens to England for sale, it is probable that they would have been sent soon after collection, so material collected in 1864 could be expected to appear in England by 1865. Given the significance of the Kimberley location, because of its remoteness and the considerable public interest in the expedition at the time, it seems unlikely that the specimens would have been given a location of 'Champion Bay'. The dealer, Higgins, supplied J. T. Cockerell's specimens as from the equally remote location of Cape York, not Cockerell's home town of Brisbane; had the Champion Bay specimens been from the Kimberley, this surely would have been highlighted. Furthermore, only two of the six species are likely to have been encountered by the expedition.

The Gregory expeditions are a more probable source in that all species except the kite are likely to have been encountered and bird specimens, including two of the Champion Bay species, are known to have been collected. However, like the Panter expedition, if the specimens were intended for sale in England, it is more likely that they would have appeared there in the early 1860s, rather than 1867. In addition, if the kite, falcon, babbler and finch had been collected, Gregory probably would have sent specimens to Gould as a priority before sparing any for the du Boulays. They would have been of great interest to Gould had he known of them, but he made no mention of any specimens or information from Gregory for any of these four species; he only mentioned the pigeon and bowerbird, as well as other species that Gregory sent (Gould 1865).

The Champion Bay specimens may have been collected over several years, but it is more likely that they were collected over a relatively short period. The kite would almost certainly have appeared following the mid-1860s drought, so it is likely that all six birds were collected some years after the Gregory and Panter expeditions. From the point of view of timing, the Sholl expedition of 1866, and the month thereafter, seems more likely, and all six species could have been encountered in the Pilbara at that time. Francis du Boulay probably had ample opportunity after the Sholl expedition to collect birds in the vicinity of Port Walcott, and the abundance of Spinifex Pigeons encountered by the Gregory expeditioners indicates that du Boulay should have been able to collect at least that species with ease. The question remains as to why Francis would have given bird specimens to Arthur du Boulay to sell, especially as he was familiar with sending natural history specimens to England himself. More likely is that Arthur collected most or all of the kite, falcon, bowerbird and finch specimens near Champion Bay or Minnanooka, and Francis gave him at least the pigeon and babbler from the Pilbara, with all of the specimens then being bundled together and given the same locality. Another possibility is that Salvadori (1893) misread 'F. H. Du Boulay' as 'A. H. Du Boulay', and Francis collected all of the specimens, but as the only label bearing the du Boulay name was affixed to the Spinifex Pigeon that is now missing, this cannot be checked.

As a pastoralist in the Champion Bay district in the 1860s, Arthur du Boulay would have been well placed to observe the local avifauna and note any unusual occurrences. He would have learnt the value of collecting scientific specimens from his cousin and during the 1864 expedition. Further development of his collecting work would have been curtailed by his marriage and return to England in 1867–74, and pursuit of a new career. It seems highly likely that he and Francis du Boulay were the collectors of this remarkable suite of Champion Bay specimens, and quite likely that the collecting localities were the Champion Bay–Minnanooka area, and around the Fortescue and Maitland Rivers and Port Walcott in the Pilbara.

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