THE WEST COAST RANGE, TASMANIA: MOUNTAINS AND GEOLOGICAL GIANTS

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(with four text-figures, one table and two appendices)

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It has long been believed that, with the exception of mounts Sorell and Strahan, the peaks of the West Coast Range, western Tasmania, were named by Charles Gould, first Tasmanian Government Geologist, during his three epic journeys to the region undertaken between 1860 and 1862. Although the peaks were named after nineteenth-century men of outstanding achievement in science, all Fellows of the Geological Society of London, only four (Murchison, Sedgwick, Lyell and Owen) were named by Gould at the time of his journeys and two (Huxley and Jukes) were probably named by him at a later time. Three other peaks (Darwin, Geikie and Read) and the Tyndall Range were named directly or indirectly by Thomas Bather Moore.

Key Words: topographic nomenclature, western Tasmania, history, Charles Gould, Thomas Bather Moore, Geological Society of London.

INTRODUCTION

The West Coast Range of western Tasmania (fig. 1) largely owes its topographic prominence to an underlying succession of resistant, non-marine conglomerate-sandstone-mudstone siliciclastics – the Upper Cambrian Owen Conglomerate and its correlates. The rocks occupy a north-trending belt deposited during the Middle to Late Cambrian Tyennan Orogeny (part of the extensive Ross-Delamerian Orogeny of East Gondwana) in a series of half-grabens adjacent to an emergent Proterozoic continental block that sourced voluminous siliciclastic sediment mainly from the east (Corbett & Turner 1989, Noll & Hall 2005, 2006).

With the exception of mounts Sorell and Strahan, the peaks of the West Coast Range were named after nineteenth-century men of outstanding achievement in science, all Fellows of the Geological Society of London and most of whom played significant roles in the development of the Society as the world's pre-eminent society of the geological sciences. Notes on the peaks and the persons after whom the peaks are named are presented as appendix 1.

The E.R. Pretyman Index to Tasmanian place names (Tasmanian Archives series number 2809) comprises entries derived from Nomenclature Board decisions gazetted in the Tasmanian Government Gazette and documents the early usage of place names in records. Relevant entries in the index state that Charles Gould, the first Tasmanian Government Geologist, named mounts Murchison, Sedgwick, Lyell, Owen, Jukes, Huxley and Darwin between 1860 and 1862. Nearly all twentieth-century publications support Gould having named the peaks (e.g., Whitham 1949, Blainey 1954, Banks 1985, 1994), with the notable exceptions of Meston (1942) who credited Gould with naming Sedgwick, Lyell, Owen, Huxley and Jukes, and Binks (1980) who stated that Mount Darwin was named by T.B. Moore.

In his landmark work on the history of the Mount Lyell mining field, historian Professor Geoffrey Blainey postulated that Gould had opposed Darwin's theory of evolution "for he named the three massive mountains (mounts Sedgwick, Owen and Jukes) in honour of bitter opponents of Darwin's theory ... (and) in stark contrast he gave to three smaller mountains which lay between the giants the names of Darwin and his faithful disciples, Lyell and Huxley" (Blainey 1954, p. 10). Blainey's postulation has largely become entrenched as fact in Tasmanian folklore (for example, the Wikipedia (2010a) and Darwin's opponents have been extended to include Sir Roderick Murchison (Wikipedia 2010b).

The Blainey position seems problematic for the following reasons:

1. Charles Gould had left England prior to the 24 November publication of *On the Origin of Species* (Darwin 1859) and would not have been aware of the passion of the subsequent debate that, in any event, did not peak till after 1862 by which time he had already named mounts Sedgwick, Lyell and Owen.

2. The peaks were not named at the same time, as might be expected if Gould had sought to leave his opinion encrypted in the names of the peaks.

3. In his only public thoughts on the matter, albeit in 1886 over a quarter of a century after he had first seen the West Coast Range, Gould came out strongly in support of Darwin and his theory (see appendix 2).

4. Professor J. Beete Jukes supported Darwinism (Secord 1986). In a letter of 27 February 1860, he told Darwin – "Your theory accounts for just so much of progressive improvement as we see has taken place i.e. an improvement & a multiplication & a complexity in the whole but not necessarily absolute in every step or every instance, & relative but not always absolute – " (Jukes 1860).

Although this study was initially undertaken to try and prove or disprove Blainey's hypothesis, it became apparent that there was uncertainty as to who had actually named some of the mountains and when, and furthermore, that there may have been another colonial champion of "men of science".

CHARLES GOULD IN WESTERN TASMANIA 1860–1863

Charles Gould (1834–1893; Fellow of the Geological Society 1859 following nomination by R.I. Murchison, T.H. Huxley and A.C. Ramsay), the son of distinguished naturalists John and Elizabeth Gould, graduated from the

FIG. 1 — Locality Map, modified after Lovett (1886) showing West Coast Range mountains discussed in text; Mount Murchison named in Gould's first expedition orange background, peaks named during second expedition gold background; Mount Ramsay, not shown, is approximately 50 km NNW of Mount Murchison.

University of London and the School of Mines. He worked at the British Geological Survey under the direction of Sir Roderick Murchison from 1857 to 1859 during which time he mapped areas of Mesozoic rocks in southeastern England (Banks 1994) and published two papers on Jurassic crustaceans in the *Journal of the Geological Society* (Gould 1857, 1858). This work would have made him acutely aware of the work of Richard Owen, the eminent authority in the field – no doubt he would already have been aware of Owen's work as Professor Owen and John Gould were friends who often took tea together as attested to by numerous references in correspondence between Charles and his father (State Library of New South Wales 2010). Professor Thomas Huxley, a former lecturer from the School of Mines, presented the second of the papers on Gould's behalf.

On the recommendation of Murchison, Gould was appointed by the Tasmanian Government as Geological Surveyor in 1859 with a commission to "effect a complete geological survey of the island, and to prepare a geological map" (Tasmania House of Assembly Journal 1859, quoted by Banks 1994). He arrived in Tasmania in July 1859, some four months before Charles Darwin published the first edition of *On the Origin of Species* in November of that year (Darwin 1859).

Between 1860 and 1863, Gould undertook three epic journeys to western Tasmania (fig. 2). Full details of those journeys have been widely published (e.g., Binks 1980) and it is his naming (or not) of West Coast Range peaks that is of interest to this work.

The first of the mountains, Mount Murchison, was named during the first journey which was essentially a high-level traverse from Lake St Clair through to the Eldon Range and thence northwards to Cradle Mountain and the Middlesex Plains – Gould (1860) reports that he had seen the mountain from both Eldon Peak and Eldon Bluff in February of 1860. Although he had climbed Eldon Peak and must surely have seen the wonderful vista of the West Coast Range to his west, Gould makes no mention of any mountain other than the northernmost that he named in honour of Sir Roderick, his former director at the British Geological Survey. Gould is almost reverential about Murchison and in several letters to his father, written during the first few years of his arrival in the colony, either mentions intending to or having written to Sir Roderick, or requests that the elder Gould presents Charles' respects to Sir Roderick when next he sees him.

The second journey, undertaken in 1862, commenced in the area traversed during the first journey near the junction of the King and South Eldon rivers, headed west through the present Linda Valley towards Howard's Plain (site of the present Queenstown Aerodrome) and thence southwest, reaching Macquarie Harbour near the present town of Strahan (fig. 1). From the King River to Howard's Plain, Gould would have had several opportunities to view this portion of the West Coast Range. A sketch map produced by him in 1862 (fig. 3) shows that he named mounts Owen, Lyell and Sedgwick at this time, while mountains to the south of Mount Owen, although shown diagrammatically, are not named.

Gould ascended Mount Owen from the King River on 22 February 1862 – "I ascended Mt Owen starting at daybreak on the 22 from its foot, and not reaching the summit until four o'clock p.m. It consists entirely of a silurian (?) quartzose conglomerate, inclined at high angles from an antideluvian axis, running north and south through the mountain. A few minutes before I got upon the summit heavy clouds rolled up, and after waiting an hour for them to clear off, I was obliged to come down without even a glimpse of the country before me" (letter in *The Mercury*, 14 May 1862).

The third and most arduous journey (December 1862 to June 1863) commenced at Kelly Basin in Macquarie Harbour, headed initially east to the Franklin River north of Mount McCall, down the Franklin to the Lower Gordon River near Sir John Franklin Falls, south towards Moore's Lookout, west towards Mount Wedge and finally northwest to Mount Dawson and "civilisation" (fig. 2). In his report of the journey, Gould (1863) describes how he climbed a "very lofty hill with rugged quartzose summits" near the Andrew/Franklin junction at the southern end of what is now known as the Engineer Range. He noted that the King River must have flowed through the West Coast Range and not around the southern end as had been previously assumed. He referred to the "lofty and precipitous range that extends to the southward from Mount Owen" but did not name any of the peaks either in the text or on the accompanying map (fig. 3).

GOULD POST-1863

Gould was a competent geologist but did not find the gold so eagerly sought by his political masters. He was made redundant in early 1867 but he remained in Tasmania until November 1873, including the undertaking of project-specific work for the Government (Roberts 2007). During 1873 he named Mount Ramsay following a visit to the area, where he had leased a tin claim with J.R. Scott (Binks 1980, Banks 1985). The feature was named in honour of Andrew Ramsay (see appendix 1) one-time colleague at the Geological Survey (and a subsequent Director-General) and one of the men who had nominated Gould to fellowship of the Geological Society nearly a quarter of a century earlier.

There is no direct record of Gould having named mounts Huxley, Jukes and Darwin – none of these peaks is named on any of the maps published by Gould immediately after his journeys nor is there any mention in his reports and they are un-named on an 1865 German map directly attributed to him (Petermann 1865).

Mounts Huxley and Jukes are shown on the 1877 map compiled by J.R. Scott and showing his route to the Pieman River, Mount Bischoff and Emu Bay undertaken earlier that year (Scott 1877b). It is thus likely the peaks were named between 1865 and 1877. It is noteworthy that new names bestowed by Scott in 1877 (Mount Tyndall and lakes Spicer and Dora) are specifically designated on this map and so it may be inferred that those peaks had been named somewhat earlier. Similarly, Charles Sprent's 1879 compilation map (Sprent 1879) of western Tasmania shows only mounts Huxley and Jukes, with the King River incorrectly depicted as flowing westwards to the south of Mount Jukes.

It may be that Gould named mounts Huxley and Jukes during the latter half of the 1860s, albeit based on the memory of his only possible sighting from Howard's Plain in 1862 or from the southern end of the Engineer Range in 1863, but most probably recorded in his field note-books. Figure 4 comprises digital views of the West Coast Range constructed from near Howard's Plain and the Engineer Range and gives an idea of the peaks that Gould may have viewed.

Although no longer available, it is most likely that Gould would have kept detailed field note-books and that these

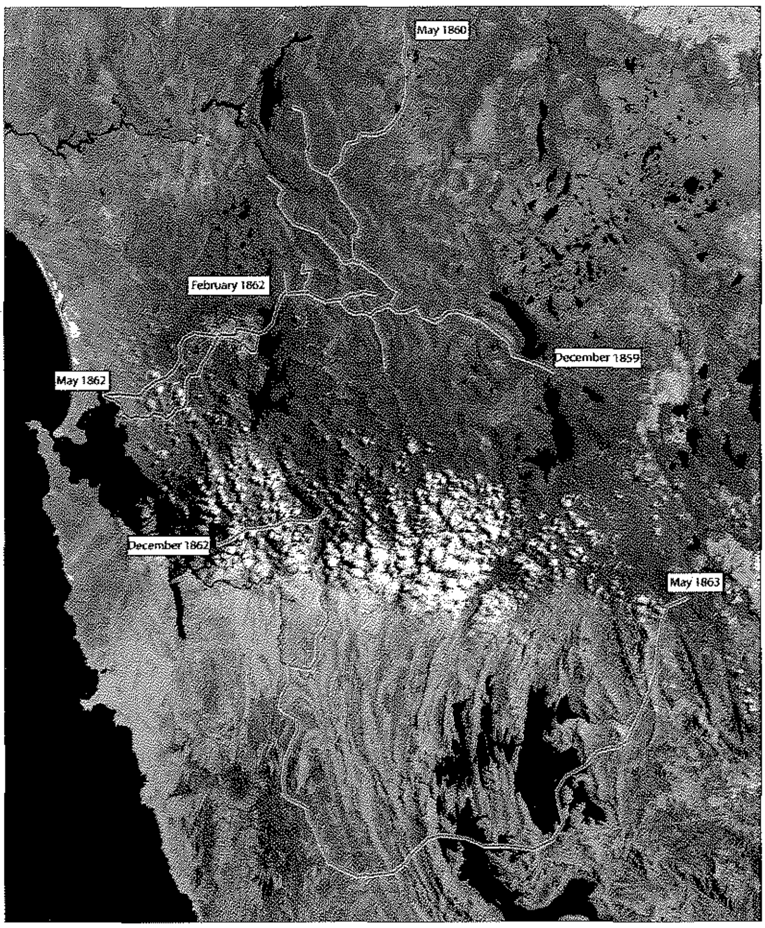

FIG. 2 — Map showing approximate position of Gould's three journeys to western Tasmania; 1860 expedition is red, 1862 in lilac, 1863 in cyan. Figure constructed using Memory-Map software (Interactive Topographical Maps, Tas-T1 Tasmania, version 5.1.3), tracks after Binks (1980).

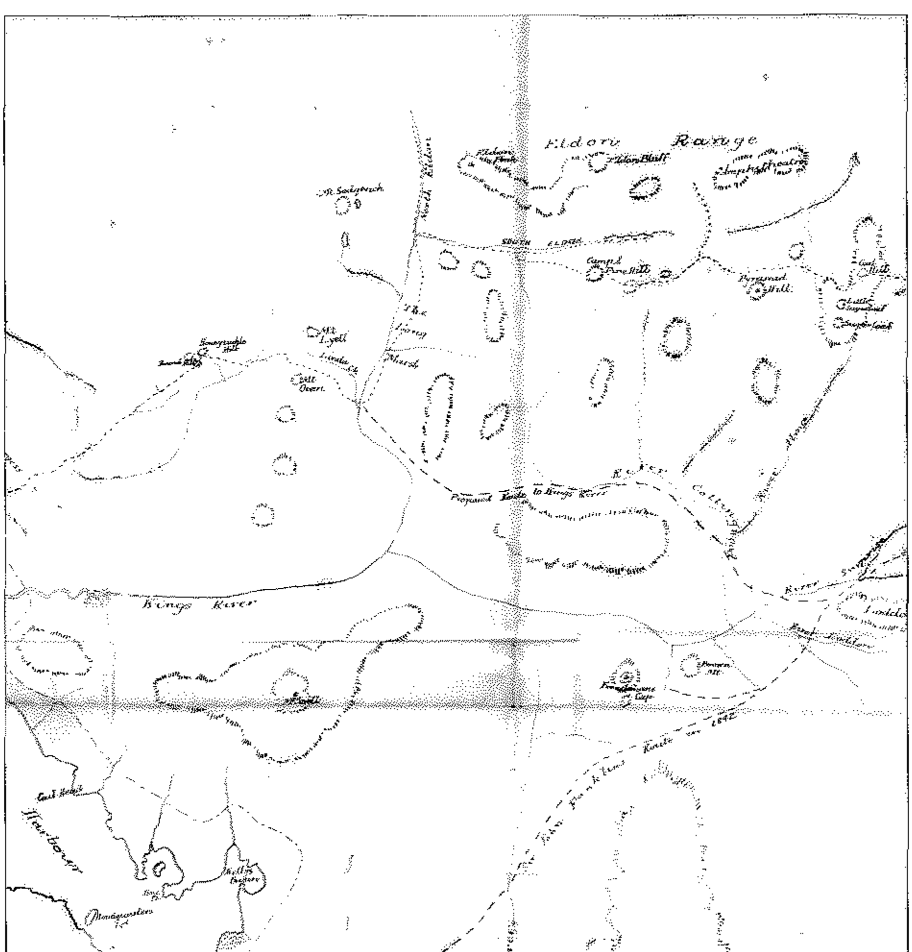

FIG. 3 — Sketch map produced by Gould after his second (1862) expedition sourced from attachment to file downloaded from Mineral Resources Tasmania (www.mrt.tas.gov.au), original believed to be hand-drawn by Charles Gould.

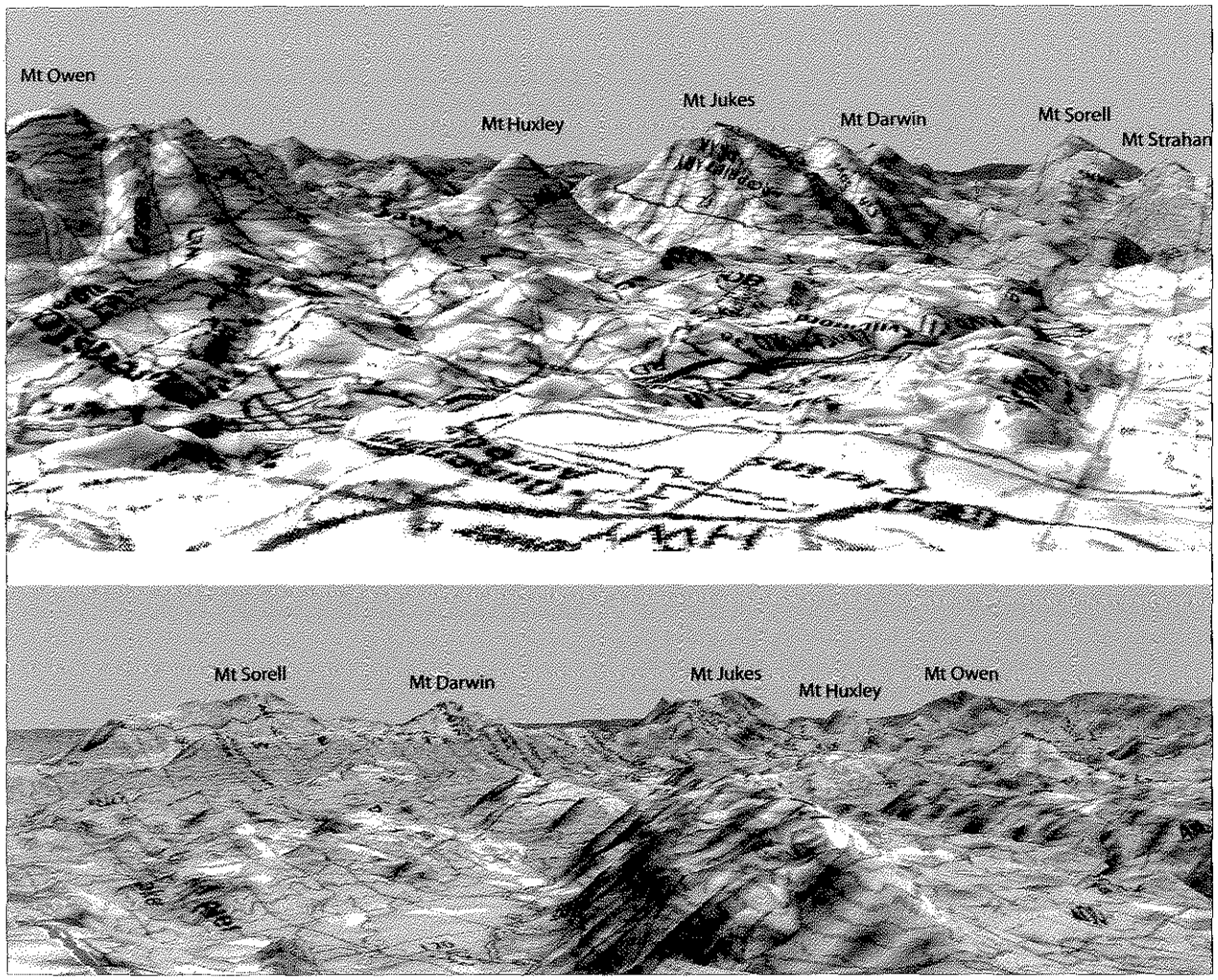

FIG. 4 — Digital views of West Coast Range from (a) near Howard's Plain and (b) near the southern end of the Engineer Range; it should be noted that Gould's observations were from the ground whereas these models were made at low altitude. Figure constructed using Memory-Map software (Interactive Topographical Maps, Tas-T1 Tasmania, version 5.1.3).

would have contained sketches of landscapes through which he passed (his mentor Sir Roderick Murchison drew wonderful sketches to record his own meticulous observations).

Given the condition of the Tasmanian public service during the period 1870–1875 it is perhaps not surprising that records of the naming of obscure mountains in the (then) uneconomic and remote west of the island have been lost. Following a long period of low economic growth, the Government had cut the public service to a minimum by 1870. J.E. Calder had been removed as Surveyor-General (with his duties performed by a single clerk) and by 1880 a grossly inefficient Lands Department could not handle the volume of ordinary land transactions and a rapidly increasing number of mining leases (Roberts 2007).

J.R. SCOTT, T.B. MOORE AND GOULD'S TRADITION

James Reid Scott (1839–1877) was born in Scotland and arrived in Tasmania at the age of 17 to live with his uncle James, who taught him surveying. He served in the House of Assembly during 1866–72, the Legislative Council from 1872–77 and held the portfolio of Colonial Secretary in 1872–73. In 1873, Scott and his friend William Charles Piguenit (then a draughtsman with the Lands Department, remembered today as one of Australia's greatest colonial artists) spent a month at Lake St Clair and investigated the Murchison and Eldon valleys (Binks 1980, Harper 2007). Scott most certainly knew Charles Gould well and had explored the area south of Mount Bischoff with him in 1873, finding tin and bismuth at Mount Ramsay (Roberts 2007).

Thomas Bather Moore (1851–1919) was born at New Norfolk. After elementary schooling in the colony he completed his education at Windermere College in the English Lake District under the guardianship of an uncle and returned to Tasmania in 1868 (McShane 1986). His father, surgeon John Anthony Moore of New Norfolk, was a member of The Royal Society of Tasmania and it is likely that Moore grew up in an environment where the scientific method and discussion was encouraged.

Moore was an heroic figure and the "last of the true explorers" of western Tasmania (Binks 1980, McShane 1986). Charles Whitham's book on Western Tasmania (1949, but written in 1923) was dedicated to Moore, a "botanist, geographer, geologist and master of bushcraft" with "unsurpassed" knowledge of western Tasmania.

It is unknown where Moore obtained his geological expertise but it is tempting to link his time in the English Lake District and its classic glacial landforms, ongoing debates about the effect of former glaciation on the European landscape and his own observations in western Tasmania. He published a paper on glaciation in the vicinity of (the then-named) Mount Tyndall in 1894 (Moore 1894) and a further one on possible low-altitude glaciation the following year (Moore 1895).

In January 1877 James Scott set out to walk to Mount Heemskirk and met Thomas Moore and his brother James at Lake Dora, east of the Tyndall Range (Binks 1980). The Moore brothers and James Andrew were exploring the overland route and cutting the track that went from Lake St Clair to Mount Heemskirk (Andrew 1888). According to Binks (1980), Scott asked the Moores if he might name two nearby lakes Dora and Spicer, in honour of Mr and Mrs W.W. Spicer of Hobart.

In a letter to the Minister for Lands and Works, Scott (1877a) records the naming of lakes Dora and Spicer and also informs the Minister that he has named Mount Tyndall, "an appropriate continuation of the sequence of names of eminent men of science given by Gould to the peaks of the West Coast Range of which it is one". Although he knew Gould, it is difficult to see why someone of Scott's background would have continued Gould's "tradition", let alone to invoke the name of a relatively obscure scientist, perhaps best known for explaining why the sky was blue (see appendix 1). It does not seem unreasonable that along with advice of how to name the lakes, it was suggested by naturalist Thomas Moore that Scott also name the most prominent of the peaks forming the western skyline in honour of John Tyndall, a noted expert on glaciation (see appendix 1) far more likely to be known by Moore with his interest in glacial landscapes than by Scott.

The map of this trip, referred to previously, was compiled prior to Scott's untimely death at his home in New Town on 25 August 1877 (Scott 1887b).

MOUNT DARWIN

The naming of Mount Darwin is more problematic. The feature is not indicated on an 1881–1882 map of western Tasmania, but does appear on an 1886 map drawn by G.F. Lovett on behalf of the Secretary of Mines (amended as fig. 1); it was thus named between 1882 and 1886. As the correct position of the King River Gorge (between mounts Huxley and Jukes) is shown for the first time on this map, it is likely that the person who correctly mapped the river also named Mount Darwin. Binks (1980, p. 172 but without attribution) states that T.B. Moore named Mount Darwin; although no confirming record could be found, the present author supports that conclusion as Moore named numerous topographic features on the West Coast (Whitham 1949, Binks 1980) and there is no credible alternative.

In 1883 Thomas Moore was one of a team that made a track from Lake St Clair to Macquarie Harbour. He also undertook exploration of the central West Coast Range during which time he climbed Mount Huxley and varied an earlier report by Con Lynch as to the course of the King River between mounts Jukes and Huxley (Whitham 1949). It is considered likely he named Mount Darwin, in keeping with Gould's "tradition", at this time.

DISCUSSION AND CONCLUSIONS

There is no available direct evidence that Charles Gould named peaks other than Murchison, Sedgwick, Lyell and Owen. It is highly unlikely, however, that he did not name mounts Jukes and Huxley – Thomas Huxley had nominated him for Fellowship of the Geological Society of London and Gould had worked with Jukes at the Geological Survey prior to moving to Tasmania in 1859 and referred to him as a "master" of geological science in his 1886 book (Gould 1886; appendix 2).

The naming of Mount Darwin is more problematic, although the evidence suggests it was named between 1882 and 1886, over 10 years after Gould had left the colony. Thomas Bather Moore named numerous geographic features on the West Coast and his naming of Mount Darwin is consistent with available information and consistent with his support for Gould's "tradition" in naming the peaks the West Coast Range after exceptional men of science, a tradition which he was happy to continue.

Table 1 summarises the naming of the peaks discussed herein (mountains listed geographically from north to south).

TABLE 1
The naming of the peaks of the West Coast Range (mountains listed geographically from north to south)

Peak	Named by	Year
Ramsay	Gould	1873
Murchison	Gould	1860
Tyndall	Scott (?on advice from Moore)	1877
Geikie	Moore	1893
Sedgwick	Gould	1861
Lyell	Gould	1861
Owen	Gould	1861
Huxley	?Gould	1860s
Jukes	?Gould	1860s
Darwin	?Moore	?1883
Strahan	Moore	?
Sorell	?	1820s

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(www.tasmap.tas.gov.au), copyright State of Tasmania. Figure 3 is published with permission of the Director, Mineral Resources Tasmania.

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APPENDIX 1

Mountains and Giants of Geology

This appendix provides brief notes on the mountains of the West Coast Range and the men after whom they are named.

Mount Murchison

Mount Murchison, the tallest mountain in the West Coast Range, is fittingly named after Sir Roderick Impey Murchison (app. fig. 1; 1792–1871; Member Geological Society 1824; Secretary Geological Society 1826–1828, 1829–1831; Foreign Secretary Geological Society 1828–1829; President Geological Society 1831–1833, 1841–1843; Council Geological Society 1826–1863; knighted 1846 and created a baronet in 1862).

After an early military career, Murchison became fascinated by geology and joined the Geological Society of London. He soon became one of its most active members and his first paper was read in 1825. In 1831 he journeyed to the Welsh borders to attempt to discover whether the rocks underlying the Old Red Sandstone could be grouped into a definite order of succession: the result was the establishment of the Silurian System, formally published in 1839.

Between 1836 and 1840 Murchison collaborated with Adam Sedgwick on an influential series of papers that established the Devonian System in 1839 (Rudwick 1985). Subsequent often-bitter disputes with Sedgwick (and others) over the proper boundary between the Cambrian and Silurian divisions in the oldest fossil-bearing rocks (now known as Ordovician) were to deeply influence mid-nineteenth-century geology and remain one of the most famous controversies in geology (Secord 1986, Herries Davies 2007).

Murchison undertook a geological campaign in Russia with the view of extending to that part of the Continent the classification he had succeeded in elaborating for the older rocks of Western Europe. In 1841 he proposed the establishment of the Permian System, based upon his Russian work.

In 1855 Murchison was appointed Director-General of the Geological Survey of the United Kingdom and Director of the Royal School of Mines and the Museum of Practical Geology in Jermyn Street, London.

Perhaps the tallest of the nineteenth-century geological giants, Murchison had an apparently insatiable appetite for public recognition and receipt of due credit for his achievements on Palaeozoic stratigraphy (Rudwick 1985).

Tyndall Range

The Tyndall Range, named after John Tyndall, comprises an elevated area north of Mount Sedgwick; the highest peak in the range is Mt Geikie.

Professor John Tyndall (1820–1893; Fellow Geological Society 1868), made important contributions in physics, atmospheric science and geology. Perhaps best remembered as the man who first explained why the sky is blue, Tyndall studied glaciers and became a skilled mountaineer.

Tyndall visited the Alps for purposes of recreation in 1849 and began to go there yearly for the purpose of studying glaciers. This resulted in 1856 in an expedition with Thomas Huxley and produced a joint paper (Tyndall & Huxley 1857). For the next four years glaciers became the major focus of Tyndall's scientific interest and in 1862, fresh from a another summer in the Alps with Huxley, he published the then-radical view that the extent of glacial action in Switzerland was so great as to have caused almost all the features of the present landscape – this was too much for Charles Darwin who urged J.D. Hooker "for Heaven's sake instil a word of caution into Tyndall's ears" (Darwin 1862a).

Mount Geikie

It is assumed Mount Geikie was named after Sir Archibald Geikie (1835–1924; Fellow Geological Society 1859; President Geological Society 1890–1892, 1906–1908; Council Geological Society 1883–1884, 1885–1894, 1989–1897, 1902–1924; knighted 1891), although his brother James (1839–1915; Fellow Geological Society 1873) was also a geologist. The first known use of "Mount Geikie" was by T.B. Moore in 1894 who noted that the name "was not yet officially sanctioned" and that mounts Geikie and Tyndall were separated by "water channels" (Moore 1894).

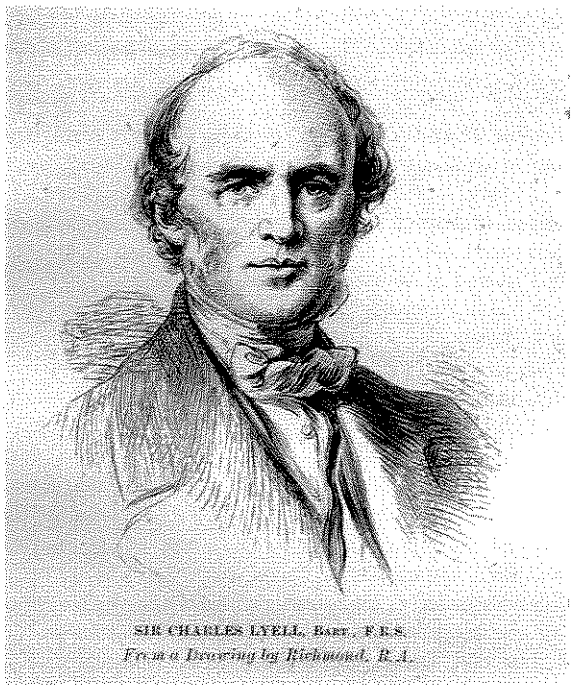
After leaving a banking career, Archibald Geikie undertook a year of study at the University of Edinburgh. In 1855 he became a mapping assistant with the Geological Survey under the directorship of Murchison and in 1867 was appointed as the first Director in Scotland of the Geological Survey of Great Britain. In 1871 he became the first Murchison Professor of Geology and Mineralogy at the University of Edinburgh, combining the duties of both posts. In 1881 he was appointed the Geological Survey Director-General for Great Britain.

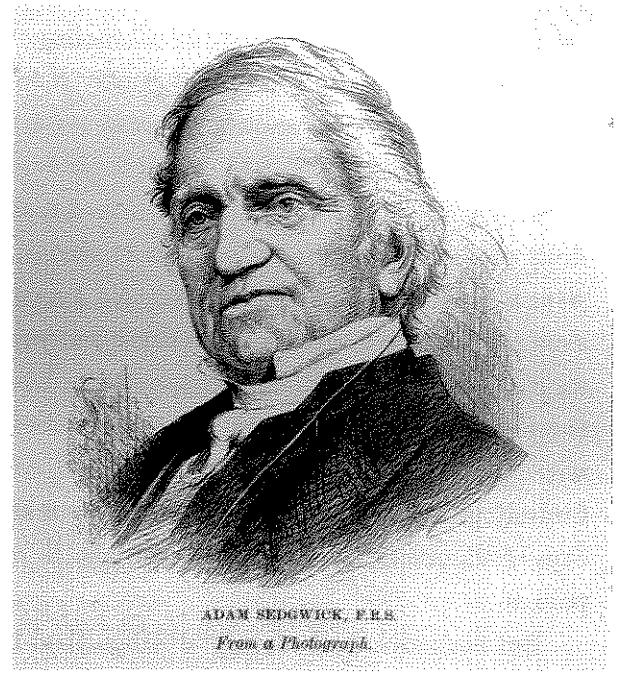
Sir Archibald Geikie was primarily interested in geomorphology and became a strong advocate of the theory of land surface erosion through fluvial action, weathering agents and ice action during repeated ice ages. He also studied past volcanic action, and made the first attempt to group Scotland's eruptions into a chronological succession.

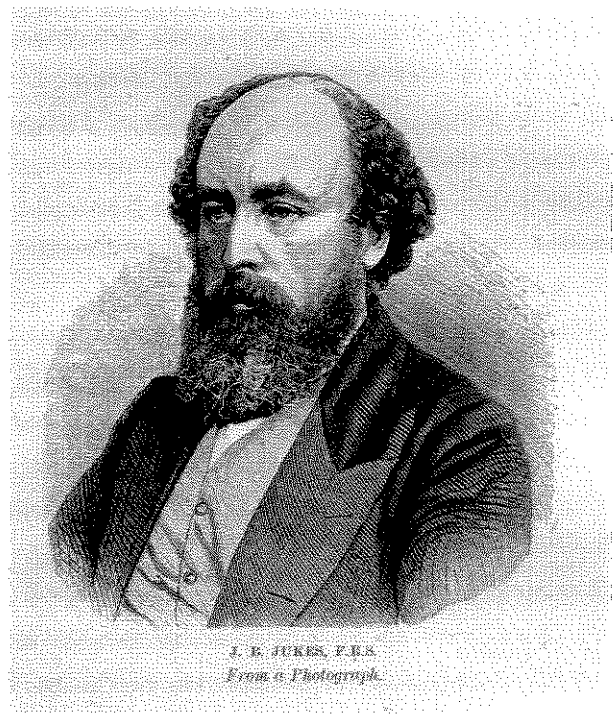
Before the close of the nineteenth century, Geikie was to assume Lyell's mantle as the world's most famed geologist (Herries Davies 2007).

Mount Sedgwick

Charles Gould named Mount Sedgwick after the Reverend Adam Sedgwick (app. fig. 1; 1785–1873; Member Geological Society 1818; President Geological Society 1829–1831; Council Geological Society 1824–1825, 1827–1844, 1845–1848), another geological giant and one of the most famous names in geology.







APPENDIX FIG. 1 — Portraits of Sir Charles Lyell (top left), The Reverend Adam Sedgwick (top right), Sir Roderick Murchison (bottom left) and J.B. Jukes (bottom right). Scanned from Geikie (1875).

Sedgwick obtained his BA from the University of Cambridge in 1808 and his MA in 1811. He became a Fellow of Trinity College, Cambridge, and Woodwardian Professor of Geology at Cambridge from 1818 until his death in 1873. He studied the geology of the British Isles and Europe and defined the Cambrian System in 1835.

Having taken Holy Orders and being the son of an Anglican vicar, it is perhaps not surprising that Adam Sedgwick was a firm opponent of Darwin's theory. Maintaining a fine line between his science and his faith, his geological position was catastrophist (as was Murchison) and he believed in a series of Divine creative acts throughout the long span of earth history.

Sedgwick was teaching geology at Cambridge University when he hired twenty-two year old Charles Darwin as an assistant in the summer of 1831 to help him on some research in Carnarvonshire, Wales. Darwin later said that this was "a memorable event in my life; I felt it a great honour, and it stimulated me to work, and made me appreciate the noble science of geology" (reported in Clark & Hughes 1890).

As noted by Herbert (2005), this trip played a role in larger events for both men: for Darwin it would provide a valuable introduction to fieldwork at a high level of complexity, and so when the offer to sail on H.M.S. *Beagle* came shortly thereafter, he knew that he had been briefly but well trained in the field; for Sedgwick it was the beginning of several years' labour that would define the Cambrian System and ignite the dispute mentioned previously (Secord 1986).

Sedgwick was not a believer in Darwin's (then) theory of evolution. In a letter of 24 November 1859 to his former student, Sedgwick informed Darwin that "I have read your book with more pain than pleasure. Parts of it I admired greatly, parts I laughed at till my sides were almost sore; other parts I read with absolute sorrow; because I think them utterly false & grievously mischievous" (Sedgwick 1859). On 2 January 1860 he informed a Miss Gerard that the book "repudiates all reasoning from final cause; and seems to shut the door upon any view (however feeble) of the God of Nature as manifested in His works. From first to last it is a dish of rank materialism cleverly cooked and served up" (Clark & Hughes 1890, p. 239).

Despite this difference of opinion, Sedgwick and Darwin remained friendly until Sedgwick's death in 1873.

Mount Lyell

Sir Charles Lyell (app. fig. 1; 1797–1875; Member Geological Society 1819; Secretary Geological Society 1823–1826; Foreign Secretary Geological Society 1829–1835; President Geological Society 1835–1837, 1849–1851; Council Geological Society 1823–1846; 1847–1854, 1855–1865; 1866–1875; knighted 1848) was a Scottish lawyer and the most famous geologist of his day.

Lyell's geological interests ranged from volcanoes and geological dynamics through stratigraphy, palaeontology and glaciology to archaeology and anthropology. He is best known for his role in popularising fellow Scot, James Hutton's doctrine of uniformitarianism.

His most important work was in stratigraphy. In 1833 he proposed dividing the Tertiary into the tripartite Pliocene, Miocene and Eocene (in order of increasing variation from present faunas and inferred increasing age) and also first defined the Recent (1833) and Pleistocene (1839). The supreme theoretical authority in geology of his day, Lyell's notable publications include *Principles of Geology* (1830), *Elements of Geology* (1838) and *Geological Evidences of the Antiquity of Man* (1863).

Although Lyell was a supporter of Darwin and largely responsible for Darwin writing *On the Origin of Species,* they differed in detail, particularly with respect to the antiquity of man. In 1860 Darwin had predicted that Lyell's forthcoming discussion of human antiquity would "horrify the world" far more than *On the Origin of Species* (Darwin 1860).

He is buried in Westminster Abbey, London.

Mount Owen

Sir Richard Owen (1804–1892; Fellow Geological Society 1837; Council Geological Society 1838–1840, 1844–1848, 1853–1854, 1857–1858; knighted 1884) the brilliant but controversial biologist, comparative anatomist and palaeontologist hailed as the English "Cuvier" became a Fellow of the Geological Society in 1837 and subsequently refused the presidency in 1844, 1852 and 1871 (Herries Davies 2007, Rupke 2009).

Widely regarded as malicious and dishonest, he was also one of the most brilliant and influential scientists of his time. His best known publication is *Palaeontology, or a Systematic Summary of Extinct Animals and their Geological Relations* published in 1860; he also studied the marsupials of Australia, and in particular those of Tasmania.

He was a personal friend of John Gould (and the Gould family) and former friend of Charles Darwin; he subsequently became one of Darwin's most severe critics. Darwin (1862b) told Huxley "he is so dishonest that I really now care little what he says".

Darwin expanded the preface of the 1866 edition of *On the Origin of Species* to include a lengthy account of Owen's alleged claim to have discovered the principle of natural selection in 1850: "This belief in Professor Owen that he then gave to the world the theory of natural selection will surprise all those who are acquainted with the several passages in his works, reviews, and lectures, published since the 'Origin,' in which he strenuously opposes the theory" (Darwin 1866).

The range and volume of Owen's scientific work are vast and he published over 600 papers and more than a dozen book-length studies (Rupke 2009). Owen's taxonomic work included a number of important discoveries and his most important role in founding the British Museum of Natural History left a lasting legacy. After his death, Huxley reviewed Owen's work, and concluded that "hardly any of these speculations and determinations have stood the test of investigation, or, indeed, that any of them were ever widely accepted. I am not sure that anyone but the historian of anatomical science is ever likely to recur to them ...".

History, and in particular the past 50 years, has been significantly kinder to Owen than was Thomas Huxley and he is now widely regarded as one of Britain's great naturalists.

Both Professor Owen and John Gould were Corresponding Members of The Royal Society of Tasmania.

Mount Huxley

Mount Huxley was named after Professor Thomas Henry Huxley (1825–1895; Fellow Geological Society 1856; Secretary Geological Society 1859–1863; President Geological Society 1868–1870; Council Geological Society 1858–1864; 1865–1867; 1868–1872), one of the most famous scientists of his day, and in particular the greatest master of comparative anatomy. His writings are still widely read today.

Huxley was born into a literate middle-class family that became short of money and he left school at 10 after only two years of formal schooling. Largely self-taught and very determined, he studied medicine at university and joined the Royal Navy as Assistant Surgeon on H.M.S. *Rattlesnake* which undertook a voyage of study and surveying to Australia and New Zealand.

He became Professor of Natural History at the Royal School of Mines (Charles Gould being one of his students) and naturalist to the Geological Survey in 1855. He was Fullerian Professor at the Royal Institution 1855–1858 and 1865–1867; Hunterian Professor at the Royal College of Surgeons 1863–1869; President of the British Association for the Advancement of Science 1869–1870; and President of the Royal Society 1883–1885.

In 1851 he met John Tyndall and the two remained lifelong friends, often working together in the Alps, as mentioned previously.

In referring to *Principles of Geology*, Huxley remarked that Lyell was "the chief agent in smoothing the path for Darwin" (Huxley 1900, p. 168). Together with Lyell, Huxley was one of a small group who knew about Darwin's views before they were published – his widely-quoted response to the idea of natural selection was "How extremely stupid not to have thought of that!" (Huxley 1887, p. 197).

Self-styled as "Darwin's Bulldog", Huxley vocally defended what he termed "Darwinism" from December 1859 for over 30 years. Though he pleased Darwin by striking out at the opponents of evolution, he also disappointed him by failing to be a total defender of natural selection, disagreeing with Darwin on the tempo of evolution and other matters of detail.

Mount Jukes

Mount Jukes was named after Professor Joseph Beete Jukes (app. fig. 1; 1811–1869; Fellow Geological Society 1836), described as one of the finest field geologists of his generation (Herries Davies 2007). Geikie said of Jukes that "a more joyous, generous kindly spirit lived not among us" with "a capacity for field-geology second to that of no one in this country" (Geikie 1875).

Jukes studied geology under Professor Sedgwick at Cambridge and later referred to Sedgwick as "my dear father in geology" (Herries Davies 2007). On Sedgwick's recommendation he became geological surveyor of Newfoundland in 1839–1840 and in 1842 accepted the post of naturalist in the expedition in H.M.S. *Fly*. In the next three years he twice circumnavigated Australia including a visit to Hobart in August 1842 (Jukes 1847) and visited Java in 1845. Juke's geological contribution to the voyage volume was a chapter on the Great Barrier Reef, an early classic of Australian geology, its detailed evidence affording strong support for Darwin's theory of coral reefs.

On returning to England in 1846 Jukes joined the Geological Survey of Great Britain and was assigned to North Wales and Staffordshire. In 1850 he became director of the Irish Geological Survey and held this position until a fall from a horse resulted in his death in Dublin on 29 July 1869.

In May 1862, Jukes informed Charles Darwin that he had a new theory to account for the topography and drainage system of southern Ireland. In the subsequent paper (Jukes 1862), which advocated a revival of the fluvial theory of denudation, Jukes argued that rivers not only excavate their valleys, but that they adjust their courses according to the underlying structures. This important work influenced the subsequent work of Ramsay, Geikie and others (Bayliss 1978).

Mount Darwin

Named after Charles Robert Darwin (1809–1882; Fellow Geological Society 1836; Secretary Geological Society 1838–1841; Council Geological Society 1837–1851). According to Hills (1914, p. 20) it was originally called the "Red Mountain" because of the reddish hues of the underlying volcanic rocks when compared with the white of Mount Sorell and the variegated aspect of Mount Jukes.

Charles Darwin, arguably the greatest scientific mind of all time because of his pioneering work on evolution by natural selection, was also an excellent geologist who published four books and 20 papers on geology (Major 2007, Herbert 2005). He described and interpreted coral reefs, volcanoes and volcanic islands, uplift and subsidence based on movements of the earth's crust, stratigraphy and sedimentology, aspects of metamorphism, geological time and the geology of South America and Australia (and in particular, Tasmania).

Darwin's geological training was a combination of university studies, with fieldwork and reading. As noted previously, he had undertaken fieldwork with Adam Sedgwick in Wales prior to joining H.M.S. *Beagle*. It is well documented that during the long and eventual voyage of the *Beagle* his most revered and used possessions included the three volumes of Lyell's *Principles of Geology*; volume 1 was carried with him when he boarded in 1831, volume 2 was delivered to Montevideo in November 1832 and volume 3 at the Falkland Islands in March 1834 (Herbert 2005).

Sir Charles Lyell had played an important role in publication of *On the Origin of Species* (Darwin 1859). Darwin had been pondering the question of species for nearly 20 years and had concluded that natural selection could explain the structure of the living world. On 14 May 1856, Darwin recorded in his journal that he "began by Lyell's advice writing species sketch". He had been advised by Lyell to publish only a brief outline, probably for the sake of priority, but was reluctant to compress all his material into a small work and soon abandoned Lyell's idea in favour of a book. In early 1858 Darwin received a manuscript from Alfred Wallace setting out ideas on evolution parallel to his own and after hasty consultations with Lyell, Joseph Hooker, Thomas Huxley and others, a series of papers was jointly communicated to the Linnean Society on 30 June 1858 on behalf of Darwin and Wallace by Lyell, Hooker and J.J. Bennett, Secretary of the Linnean Society. Lyell subsequently read the papers at the meeting on 1 July 1858 in the meeting room of the Linnean Society (now part of the Geological Society, altered somewhat, but the present lecture theatre for society meetings and symposia).

Darwin was active within the Geological Society and received the society's highest honour, the Wollaston Medal in 1859 (his poor health precluded him receiving it in person and it was accepted on his behalf by Lyell).

Against his expressed wishes, Darwin was buried in Westminster Abbey in 1882.

Mount Strahan

Mount Strahan lies directly east of Macquarie Harbour west of the main north-south line of the mountains of the West Coast Range and together with Mount Sorell dominates the east side of the harbour near Sarah Island.

It was named in honour of Sir George Cumine Strahan (1838–1887; Governor of Tasmania 1880–1887) by T.B. Moore.

Mount Sorell

Mount Sorell, the most southwesterly of the West Coast Range peaks was named during the convict settlement of Macquarie Harbour after William Sorell (1775–1848) a soldier and the third Lieutenant-Governor of Van Diemen's Land.

Others

Sometimes considered part of the West Coast Range and prominent in the region are mounts Dundas and Read. The adventurer Jorgen Jorgenson named "Mount Dundas" in 1826 after Captain Deans Dundas, a director of the Van Diemen's Land Company; unfortunately, Jorgenson's navigation was poor and the feature named by him was probably Mount Ossa (Binks 1980, Sprod 2001). It is uncertain when the name was applied to the present Mount Dundas, but it was used by Scott on his 1877 compilation. Mount Read was named by T.B. Moore around 1880 after Mr R.C. Read of Plenty, a financial backer of Moore's 1877 expedition (Binks 1980).

Outside of the West Coast Range but relevant to this study is Mount Ramsay, located west of the upper reaches of the Huskisson River. It was named by Charles Gould in 1873 (Banks 1985) after Sir Andrew Crombie Ramsay (1814–1891; Fellow Geological Society 1844; President Geological Society 1862–1864; Council Geological Society 1848–1853, 1855–1860, 1862–1869, 1871–1877, 1878–1881; knighted 1881).

Ramsay commenced the study of geology comparatively late in life in 1840 when he undertook work on Arran and subsequently obtained a post at the Geological Survey of Great Britain through the influence of Murchison. In 1862 he was elected President of the Geological Society of London and in 1872 he succeeded Murchison as Director-General of the Geological Survey. Ramsay's most important work was on glaciation, denudation and fluvial systems and he (controversially at the time) explained how certain mountain valleys and lakes were formed by the glaciers that had once flowed through them.

Darwin had been strongly influenced by Ramsay's arguments in favour of the glacial formation of rock-basins, but like others was uncertain of the extent of the power of glaciers in shaping the landscape: "I have now come round again, to Ramsay's view for third or fourth time; but Lyell says when I read his discussion in the Elements [C. Lyell 1865] I shall recant for fifth time" (Darwin 1864a). In 1864 Darwin asked Ramsay whether he "or anyone at Jermyn St" (that is, the Geological Survey) had written "to young Gould in Tasmania" about evidence of glaciation in the mountains. He further stated that if he knew Gould's address he would write himself (Darwin 1864b).

APPENDIX 2

Charles Gould – Later life and "Dragons, Unicorns and Sea Serpents"

It is possible to partially reconstruct the travels of Gould from 1878 until his death in 1893 from a study of the correspondence between Gould and his family (State Library of New South Wales 2010). In summary, Gould's movements included:

November 1878	Constantinople (modern Istanbul, Turkey)
November 1878	Cairo/Suez
December 1878	Aden (present-day Yemen)
December 1878	King George Sound (en route to Sydney)
February–May 1879	Sydney. Gould reported that the colony was in "hopeless" depression, he was looking for work and did not wish to travel much; he departed on 1 May.
June 1879	Shanghai
July–October 1879	Hong Kong
January–July 1880	Singapore
September 1880	Hong Kong (en route to Kobe, Japan)
September 1880	Kobe
September 1880–February 1881	Shanghai
February 1881	Hong Kong
March–November 1881	Shanghai
January 1882	Hong Kong
May–August 1882	Kobe
February 1883	Shanghai
June 1884	Hong Kong (en route to Nagasaki, Japan)
February 1884	Nagasaki
December 1884–January 1886	Hong Kong (his book was published during this period)
August 1887	Nagasaki (had arrived from Hakodate, Hokkaido, Japan)
October 1889	Rotherfield, Sussex, England
December 1889	Montevideo, Uruguay

He died at the Station Hospital, Montevideo, in early 1893 from "prostration brought on by general debility" and was buried in the British Cemetery (31 July 1893 letter from Mr Alfred Grenfell, H.M. Acting Consul General in Montevideo).

In 1886 Gould published *Dragons, Unicorns and Sea Serpents – A Classic Study of the Evidence for their Existence*; a reprint was published in 2002. As well as giving an insight into Gould and his thoughts on evolution, evidence of his latter life is given by the publishers who state the manuscript was submitted by Gould in mid-1884 and that he spent an extended period in China.

In fact, this little-known (and somewhat bizarre to a modern reader) book makes it very evident that Gould was both a believer in evolution and a great admirer of Charles Darwin, as attested to by the following quotes:

"The great era of advanced opinion, initiated by Darwin, which has seen, in the course of a few years, a larger progress in knowledge in all departments of science than decades of centuries preceding it ..."(p. 1)

"I propose ... to examine them, as at the present day we are fortunately able to do, by the lights of the modern sciences of Geology, Evolution and Philology." (p. 2)

"Before the days of Darwinism, what courage was requisite in a man who propounded any theory a little bit extravagant!" (p. 12)

"The alleged proofs of the existence of pre-historic man were for a long time jealously disputed, and it was only by slow degrees that they were admitted, that the tenets of the Darwinian school gained ground ... Mr Darwin shows that the struggle is more severe between species of the same

genus, when they come into competition with each other, than between species of different genera." (p. 80).

He also referred to "masters" of geological science – Sedgwick, Murchison, Jukes, Phillips, Lyell and others – and said of Lyell:

"We can never, I think, more highly appreciate Sir Charles Lyell's freshness of mind, his candour and love of truth, than when we compare certain portions of the first edition of the *Principles* with those which occupy the same place in the last, and trace the manner in which his judicial intellect was eventually led to conclusions diametrically opposed to those which he originally held." (p. 81)

An interesting Tasmanian connection with the book came to light during the researching of this paper. An undated and apparently incomplete item in the archives of The Royal Society of Tasmania (RSA/A17 (G)) contains the following notes in Gould's hand-writing:

"Having arrived thus far I was much gratified by seeing in the Mercury of the 26th April 1872 an extract from then Wagga Advertiser which I copy as follows –

Newspaper cutting on alleged sighting of bunyip near Murrumbidgee (?River) is enclosed"

His writing continues:

"And I was still more interested by the spontaneous information received a few days back that several townsmen of their city had seen a remarkable beast in Lake Tiberias, while on a shooting expedition – my information is from Mr Howe, Market Gardner of Campbell St, a keen sportsman and a lover ..."