

John Henderson, Thomas Mitchell and the First Publications on Cave Science in Australia

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Abstract: The work of NSW Surveyor-General Sir Thomas Mitchell in investigating and publicising the megafauna fossils at Wellington Caves is well recorded. Little known are the contemporaneous investigations carried out at Wellington and Boree (Borenore) Caves by John Henderson in 1830. Both were accomplished explorers and organisers, and between them they produced the first reports of scientific investigations of Australian caves and karst, yet in none of their publications did either acknowledge the presence or work of the other. The reasons appear to lie in personalities: Mitchell's ego, vanity and ambition, Henderson's injudicious and capricious behaviour, their common jealousy, energy, possessiveness, and intellectual rivalry, and their respective relationships with the Governor of the day, Ralph Darling. The saga throws light on why neither acknowledged the work or even presence of the other, why Mitchell tarried a day before proceeding on his Australia Felix Expedition, why his account of that expedition devoted a whole chapter to an otherwise peripheral investigation – the bones at Wellington Caves – and on the supporting role played by Assistant Surveyor John Rogers.

Keywords: John Henderson, Thomas Mitchell, Cave Science

PROLOGUE: SRINAGAR, KASHMIR, 18 NOVEMBER 1835

On 18 November 1835 the Austrian naturalist and explorer Baron von Hugel reached Srinagar on his extensive travels through that remote land, then beyond the frontiers of the British Empire. Within an hour or two of setting up his camp:

'There shambled through the door . . . a long skinny figure with a bony nose and matted red beard. His clothes were Tibetan but too dirty and tattered to be picturesque. His face was haggard and red, the skin torn to shreds by wind and cold. The Baron, normally a most courteous man, stared in amazement. "Who on earth are you?" he demanded. Unabashed, with great dignity and in a strong Scottish accent which rolled the r's the stranger replied, "You surely must have heard of Dr Henderson?" It was a fine effort from someone who cannot have spoken a word of English for several months.'

'The Baron had heard of John Henderson, as indeed had most of Upper India. He was the bête noir of the East India Company even before he disappeared between Ludhiana and Calcutta earlier in the year. Unfortunately no record of his indiscretions has survived. Von Hugel just says that he was such an inveterate critic of the government that he was banned all access to the press.' (Keay 1977, p. 81)

Who was this John Henderson? In 1835 barely 20 Europeans had ever visited Srinagar. Perhaps half a dozen had crossed the Great Himalaya and Karakoram Mountains to the north. Henderson had survived a remarkable journey in search of the source of the Indus River, traversed Karakoram Pass and apparently reached Yarkand, south of Kashgar in present-day Xinjiang, China. His disguise as a fakir exposed, he was arrested several times, had escaped from Ladakh and without money or food begged his way down the Indus to Baltistan, then lost or was robbed of his journals, his baggage and his servants, and from the few extant accounts, seems to have 'gone native' to survive.

Von Hugel and his companion Godfrey Vigne informed Henderson that in British India there was a warrant out for his arrest, and they clubbed together to enable him to continue his travels. A few days later he set off down the Jhelum heading for Balkh in Afghanistan, and after eight weeks reappeared in Lahore, where von Hugel met him again. But by then he was very ill, and he died at Ludhiana, between Lahore and Delhi on 12 March 1836. A death notice in the Agra Ukhbar (anon. 1836) regarded his talents as being 'of no common order' and as being 'unremittingly devoted to the public good'.

These circumstances also deprived us of an opportunity to read Henderson's own account of a singularly remarkable life, although von Hugel (1845) drew heavily on information gleaned from his journeys. Fortunately, Henderson had by then published an account of his travels in Australia, and we can piece together the activities of an accomplished pioneer in Australian cave science, investigations which, as Hoare (1968) observed, have been largely overlooked.

DRAMATIS PERSONAE

Buckland, Fitton and Mitchell

In 1824 Rev. W Buckland published his influential treatise attributing the occurrence of animal bones in caves to the Great Flood. In February 1827, having just been appointed NSW Assistant Surveyor-General in London, Thomas Mitchell made the acquaintance of both Buckland and his colleague W.H. Fitton (1780–1861), both of whom had studied Australian rocks, albeit from the collection of others (Fitton 1826). On their proposal Mitchell became a member of the Geological Society on 20 April 1827 and sought instruction and advice from them and other experts in geology, astronomy, botany, even taxidermy. Arriving in Sydney on 23 September 1827 he assumed the title of Surveyor-General upon the death of John Oxley in the following year. Quickly establishing an interest in searching for bones in Australian caves, on 13 November 1829 he explored the Grill Cave at Bungonia. He wrote that '*my chief interest in visiting there (was) to look for antediluvian remains, like those found by Mr Buckland*' (Mitchell 1838). He did not find any but his interest was whetted.

Ranken and Mitchell

Then, on 25 May 1830 the Sydney Gazette published a letter dated 21 May, signed 'L' (attributed to Dr J.D. Lang), announcing that George Ranken of Bathurst had '*in a late excursion to Wellington Valley . . . visited and ex-*

plored a remarkable cave about two miles from the settlement, the existence of which had been known for a considerable time and the entrance of which is in the face of the limestone range'. It went on to describe Ranken's discovery (in Breccia Cave) of '*a vast quantity of bones of various sizes and generally broken, some strewn on the floor of the cave, but the greater number embedded in a sort of reddish, indurated clay along its side*'.

According to Foster (1936), Mitchell had at the time been about to leave Sydney to examine progress on the Great West Road to Bathurst. Indeed, only 3 days after the Gazette's announcement he left Sydney, joined Ranken in Bathurst, and on 22 June they hastened towards Wellington¹. By 25 June they were digging in the Breccia and Cathedral Caves, and in a third cave which, however, '*did not reveal any bones*'. On the following day they rode a hard and fruitless 45 miles to investigate a report of another large cave north of the Macquarie River. On the 27th Mitchell made his well-known survey of the Wellington bone cave, and for the next few days mixed business with intellectual pleasure. On the 29th he examined another small bone cave east of Wellington Valley, and on the following three days combined surface surveying during the day with sketching the caves at night. Packing the bones carefully, he left for Molong on 3 July, reached Bathurst on the 9th and Sydney early in August. Two weeks later Dr Lang sailed from Sydney for London with preliminary details which he duly forwarded to Robert Jameson, Regius Professor of Natural History at the University of Edinburgh, and a preliminary note appeared (Mitchell 1831).

By 13 October Mitchell had written another account and despatched it to London where it was read to the Geological Society on 13 April 1831 (though not published until 1834). He was at pains to remind readers of this earlier date in publishing his studies more accessibly in 1838, as a whole chapter in his 'Three Expeditions' book (Mitchell 1838).

1. From the time he left Sydney until he reached Bathurst on the return journey (when he corrected it with two entries for 10 July), Mitchell's journal entries show dates one day of the month later than the correct date. The dates shown in this paper are the correct calendar days of the week and month. Another discrepancy in Mitchell's dates was noted by Foster (1836): Mitchell's paper to the Geological Society (see below) was apparently dated at Sydney one day after the ship on which he despatched it had left Sydney.

Dr John Henderson

But also in July 1830, armed with some scientific credentials and also looking for bones, John Henderson appeared in Wellington, then a tiny, remote, military outpost on the frontiers of white settlement. His ideas (Henderson 1832) on cave genesis were not pursued in Hoare's (1968) paper on Henderson's time in Van Diemens Land, but were discussed briefly by Frank (1972, based on a doctoral thesis). Later, in a historical survey of scientific studies of the red earth and bones Osborne (1991) devoted a few paragraphs to his work, but his very existence apparently escaped the notice of Foster (1936), Lane & Richards (1963) and Augee (1986) in their respective comprehensive papers on Wellington. The task here is not to evaluate Henderson's science but to draw attention to a curious juxtaposition of the first two scientific studies on Australian caves.

Dr John Henderson was Surgeon to the Bengal Army, serving in Cawnpore, Aligarh, Mathura, Nemuch, Agra and elsewhere between 1815 and 1829. By his own account, he proceeded from Bengal to Van Diemens Land '*on account of my health*', arriving in Hobart on 29 August, 1829. According to the Asiatic Journal (quoted by Hoare) he left Bengal '*with shattered health, and in embarrassed circumstances*'. Unhealthy, embarrassed or otherwise, he was a whirlwind of activity during his time in Australia.

He soon recognised the need for a Society to collect and publish information peculiar to that colony, and to establish a natural history museum. Within four months he had the support of the colony's elite for a Van Diemens Land Society, been elected President, and obtained the patronage of Governor Arthur, who delivered the address at the Society's inaugural meeting on 16 January 1830. Nevertheless, within a few months he had managed to alienate powerful members of the colony, and the Society itself did not survive the year. By then Henderson was in New South Wales, having left Hobart on the Medway rather suddenly on 20 March 1830. Henderson wrote:

'From Van Diemen's Land I proceeded to New South Wales; and continued to reside at Sydney'

for several months. With the view of examining the Geological formations of the country, and comparing it with Van Diemen's Land, I made another pedestrian excursion, in a westerly direction, into the interior of the country. Having arrived at Wellington, which is about 240 miles from Sydney, I remained there for some time, in order to observe the phenomena attending the deposition of those fossil remains which have lately been discovered in the Limestone Rock. Having, at the request of General Darling, prepared on his account, a collection of these for transmission to England, I addressed him a Report on the subject; and the one here published, has been prepared from my notes, which I happened to have retained in my possession.'

This account is dated at Wellington, 1 July 1830. Henderson was an accomplished traveller but he would have had to move quickly to leave Sydney after the Gazette account appeared on 25 May, travel to both Boree and Wellington (a remarkable journey if indeed it was entirely 'pedestrian'), carry out some excavations and write up the results by 1 July! As we will see, in fact this date could not be correct.

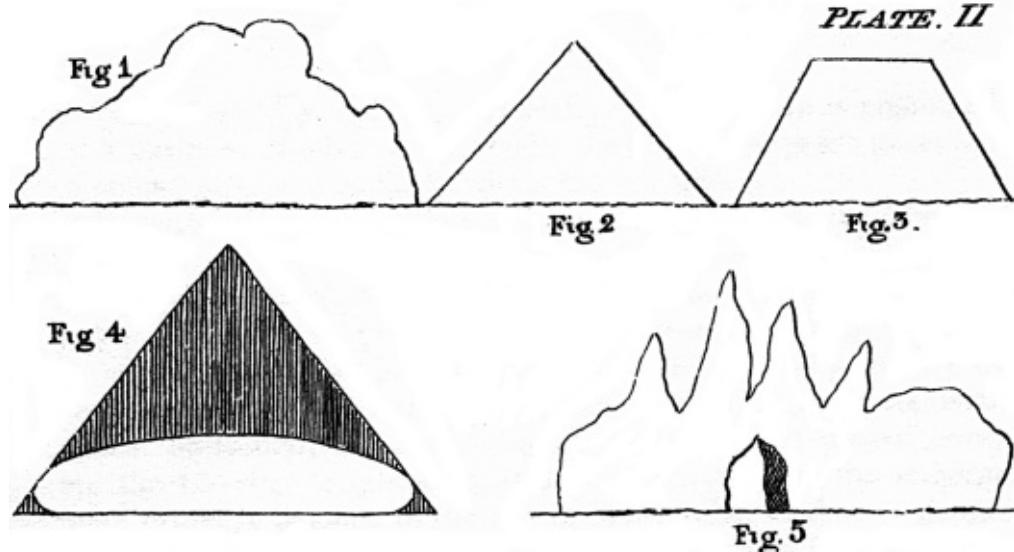
Henderson and Mitchell

With such common interests, one would surmise that Mitchell and Henderson would have made a point of meeting in Sydney. It was a relatively small place and, being on leave from India, Henderson was a man of leisure if not means whose scientific credentials gained him access to the Governor, and on whose request he gathered a collection of bones '*for transmission to Doctors Fittan and Buckland of London*' (Henderson 1832, p. 109). His book devoted no less than six pages to the administration of the Surveyor-General's Department. He would therefore surely have found time for discussions with Mitchell.

Like Mitchell, Henderson must have realised the significance of the Gazette account of megafaunal fossils. They each spent time only days apart in some new discoveries in rarely visited caves near a tiny village at the very frontier of white settlement, and they each examined Boree (Borenore) caves for evidence of red earth and bones, although Mitchell's cursory visit on 4/5 July 1830 is described only in

his unpublished journal, his main investigation being delayed until 1836. In a report addressed to the Governor and reproduced in his book, Henderson produced rough sketches as Plate II, Figs. 5-12 (opp. p. 113) to illustrate his discussion of cave genesis (Figs. 8 and 9 being the first published plans of Australian caves), dating the account at Wellington the very day

(1 July 1830) on which Mitchell worked in the bone cave. Yet neither mentioned the other in their respective accounts of the bones (Henderson 1832 in Calcutta; Mitchell 1838 in London) or in any other publications. It is simply not credible that they failed to meet before, during or after a sojourn in the Wellington of 1830. So, what is the explanation?



*Printed by T. Black. Middle Temple Press. No. 9½ Chawringhee.
CALCUTTA.*

Extracts from descriptions of Henderson (1832)

Figure 1. Where Greenstone is most silicious, without possessing an abundant proportion of Hornblend, also when it receives quantities of clay into its composition, the mountains approximate to those of Sandstone, and more particularly in the latter instance. In the previous case they are rather more detached, and evince less inclination to form ridges. Where the rock protrudes much, and assumes a granitic appearance, it likewise contains but little of the Hornblend.

Figure 2. Where the mountains rise in regular, and almost perfect cones, they generally contain a larger proportion of this mineral. Many of the above descriptions have a rock projecting from their summits, as in several of the mountains in Van Diemen's Land, and in some of those situated in the vicinity of Cox's River, in New South Wales.

Figure 3. There is also a species of abtruncated cone, a form of mountain which I several times observed in the midst of the Sandstone stratum; but had neither opportunities of visiting them, nor of learning their composition.

Figure 4. Next comes the Basalt, which in Van Diemens Land, constitutes lofty table mountains. There are also others, having crater-like summits, resembling irregularly truncated cones, and upon which those enormous crystals are observed to be extremely perfect.

Figure 5. The hills which the Limestone composes, are rarely an hundred feet above the surface of the fresh waters, whose elevation again, above the level of the ocean, is dependant on the height of the Sandstone. These hills present, generally, a smooth surface, but in certain situations, the rock protrudes in large masses, assuming sometimes, the appearance of the spires and ruins of a deserted city. This is particularly observable in the vicinity of the caves at Boree.

PLATE. II

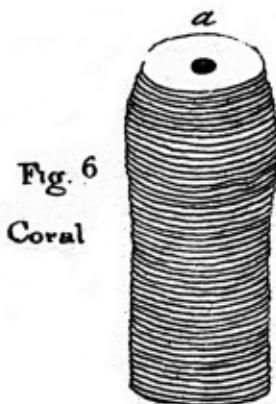


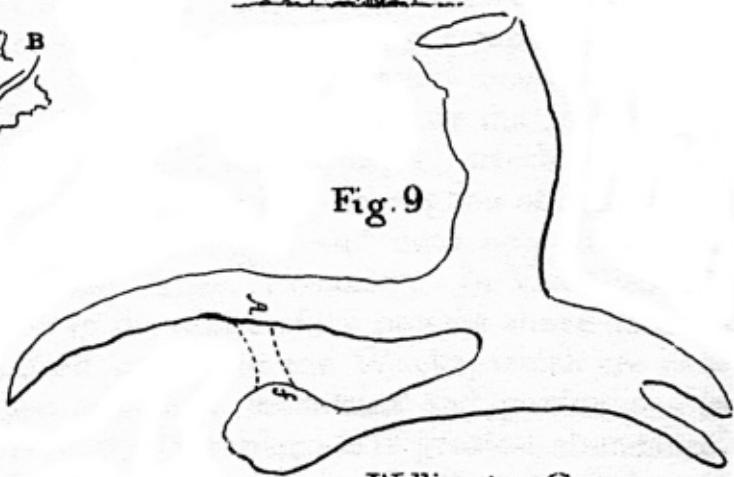
Fig. 6
Coral



Fig. 7



Fig. 8.
A . Boree Cave



Wellington Cave.

*Printed by T. Black. Asiatic Litho. Press. N^o 6½ Chowringhee.
CALCUTTA.*

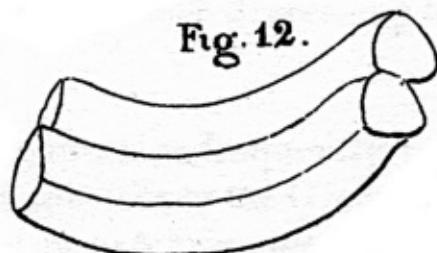
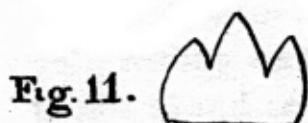
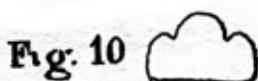
Extracts from descriptions of Henderson (1832), continued.

Figure 6. In New South Wales, the traces of marine productions are less perfect; they are, however, distinctly marked; as, for instance, in the principal cave at Boree, where large quantities of a species of Coral may be observed.

Figure 7. There are two species of Stalactics; the first or common kind, takes place from the roof, assuming the figure of a water-fall or fountain, while the place where the drop or stream falls, has a tendency to form a succession of cones, one above the other, so as to constitute a pillar; the superior cone being generally smaller than the inferior.

Figure 8. The great cave at Boree, is situated on the edge of a tolerable strong stream, which flows to the Northward, A A. Another rivulet pierces the Limestone at B, passing through it under ground for about 200 yards, after which it reappears, and joins the principal stream at C. The cave into which the water has thus found an opening, is extensive and lofty, having numerous smaller ones ramifying from each side.

Figure 9. Wellington Cave. All the bones found in this cave are either mixed with the red earth, or are enclosed in red rock ...

PLATE. II

*Printed by T. Black. Asiatic Litho Press. No 6½ Chowringhee.
CALCUTTA.*

Extracts from descriptions of Henderson (1832), continued.

Figure 10. Has in both jaws, tricuspid teeth of the canine description, resembling rounded tridents; size perhaps equal to that of a mastiff.

Figure 11. The same; but somewhat larger; the tridents mitre-shaped; apex, sharp-pointed. Most probably, part of the remains of the Van Diemen's Land Tiger.

Figure 12. Molares teeth tubular, curved; three of them would enclose a circle the size of a penny; has more than four molares, about the size of a small dog.

Recent research has revealed that the two did in fact meet, albeit briefly, for Mitchell's unpublished journals reveal that on Monday 5 July (wrongly diarised as the 6th), two days after leaving Wellington, he wrote:

'On our arrival at Molong we found a Dr Henderson waiting for us – by the bye we found it difficult to cross the river which I believe is the Bell or a branch of it – the other at Boree with the bridge empties into the Lachlan. Dr Henderson seemed a very odd personage – he walked with a black boy. He said there was no granite nor any primitive rock in the country – that he was making a section of the strata. He was going to Wellington and wished to have gone 70 miles further – he rode on drays to carry him over the rivers. He read a book of his to Rankin and on financial arrangements and said he was come from Van Diemens Land where he had done much good, to set us right too, for we were all wrong.'

The implication is that they were not previously acquainted, but no doubt Mitchell described his load of bones from Wellington and mentioned that he had come from Boree that very day, probably only emboldening Henderson, who in turn quite likely mentioned his permission from the Governor to collect bones. Henderson left next morning for Wellington with a Mr Walker, visiting Boree on his return journey, while Ranken left for Bathurst.

Mitchell says he continued completing the plan of Wellington Valley before setting out the following day for Bathurst and Sydney with the bones. No wonder he needed a rest day: he had been in caves on 12 of the previous 14 days, ridden about 250km, and diarised that '*I was much inconvenienced by the boils in riding back*' (to Molong the previous day)!

We are now able to examine the motives of the players. Perhaps, upon learning of the cave discoveries Mitchell used the power of his office to decide he urgently needed to inspect the road to Bathurst, visit Wellington to plan the survey, and simultaneously seize the opportunity to boost his profile and credentials in the home country. He may not at that stage have been acquainted with Henderson, but later in the saga, quite probably Mitchell's ego did not allow him to associate or be identified with someone who he privately described as '*an odd personage*', who had obtained vice-regal support in collecting bones, who had designs on exploring country he wanted to examine for himself, who had confided those intentions in and sought support from the Governor, who had criticised his administration, and whose views about the bones were at odds with his own anyway.

Darling, Mitchell and Henderson

Governor Darling appears to have played off one protagonist against the other, in particular using Henderson as a foil against Mitchell. He had approved collection of bones by Henderson, probably knew or suspected that Mitchell's journey beyond an inspection of the road to Bathurst would involve bone collection, and may well have been instrumental in Henderson's depreciation both of the professionalism of the Surveyor-General's Department and specifically of the wisdom of expending public money on the road to Bathurst.

It is a matter of record that he and Mitchell were never on good terms. He had thwarted Mitchell's plan for an expedition to the north or west coast of Australia. For his part, Mitchell had written directly to Colonial Secretary Hay in London (a breach of protocol scarcely endearing him to Darling) on the day before the Sydney Gazette item (i.e. 24 May, 1830), seeking permission for such an expedition i.e. beyond Wellington. Then, shortly after Mitchell's return to Sydney in July, Darling complained to Colonial Secretary Hay that: '*The attention of the Surveyor-General, who seems injudiciously anxious to do everything himself, is so much occupied in the Road Branch, that, to say the least, the more important duties of his Office (i.e. the trigonometrical survey) cannot be attended to in the same degree as if that Department had not been placed under his superintendence*'. He was often critical of Mitchell's tardiness in producing the map (e.g. letter to the Under Secretary for the Colonies on 28 May, 1831) (Historical Records of Australia XVI, p. 222), and within months he attempted to strip Mitchell of responsibility for Roads and Bridges and to secure his dismissal. But by then Darling had himself been recalled, leaving in October 1831.

Upon returning to Sydney, Henderson also unsuccessfully petitioned the Governor to assist him in an endeavour to travel (at his own expense) on explorations beyond the Nineteen Counties and in particular west of Wellington (Henderson 1832, pp. ix–xi). Rebuffed, he returned to Wellington anyway, and without map, compass or local guide, travelled east

through unexplored country to the Hunter Valley, accompanied only by 'a servant, a native of Hindostan'.

Rogers, Mitchell, Ranken and the Australia Felix Expedition

There are some other clues explaining Mitchell's actions and motives. On 24 July 1830 (while still in Bathurst on the return journey) he wrote recalling Assistant Surveyor John Rogers from uncompleted work in the Goulburn River area and despatched him to Bathurst, Molong and Wellington, *inter alia* with specific instructions (given also to other surveyors) to mark occurrences of limestone: '*You will also note particularly where limestone occurs in all your Survey and this you will tint on your Map by a grey made by mixing blue and red together shewing something like the extent of the limestone rock*' (Mitchell to Rogers on 24/7/1830, Rogers 1830).

Rogers' notebooks reveal on September 9th: '*Plotting – Sent two Men to dig for Bones at the Caves near Wellington Valley NB informed that there are other and more extensive caves in the neighbourhood of Canobolas not yet visited by persons collecting therefrom.*' Although they are not in fact more extensive than Wellington, this could only refer to Boree (i.e. Borenore) Caves, a surmise supported by the fact that despite this area not being in his new brief, Rogers went there on 28 September, 30 November and again on 25 and 26 December, 1830. However other than for his '*cursory visit*' on 4/5 July 1830, Mitchell's investigations did not occur until the very beginning of his Australia Felix expedition (Mitchell 1838, pp. 6–7). On 18 March, 1836, one day after leaving Orange, he stopped at Borenore, diarising that the time for cave exploration was available '*as it was necessary to grind some wheat with hand-mills, to make up our supply of flour*'. This is curious: surely an expedition would not depart before preparing its flour supplies? Fortunately, George Ranken was at hand, having accompanied him from Bathurst and together they spent a full day in exploration. It is difficult to escape the inference that Ranken, who was not part of the expedition and lived over 100km away, had been asked to come specifically to help in the

cave exploration, and that on a pretext, the expedition was delayed a day to enable them to do so. Mitchell wrote:

'The limestone occurs chiefly in the sides of vallies (sic) in different places, and contains probably many unexplored caves. . . I had long been anxious to extend my researches for fossil bones among these caves, having discovered during a cursory visit to them some years before, that many interesting remains of the early race of animals in Australia were to be found in the deep crevices and caverns of the limestone rock. . . I was anxious to ascertain, by a more extensive examination of the limestone country, whether the caves containing the osseous breccia, presented here similar characteristics to those I had observed in Wellington Valley. . . It may be imagined what a vast field for such interesting researches remains still unexplored in that district, where limestone occurs in such abundance.'

Neither Mitchell nor Henderson was particularly qualified academically to study the deposits. Mitchell was a surveyor with some geological training; Henderson a surgeon whose writings reveal a well-educated man and a sound facility with zoological nomenclature. Both had wide-ranging intellectual interests of that peculiarly nineteenth-century kind, although Mitchell was the more accomplished polymath. Mitchell had advantages to posterity in that he foreshadowed modern, post-Darwinian thinking, and had the connections to promote those views more widely. Indeed, Darwin visited Sydney in 1836 and Mitchell continued correspondence, meeting him in London the following year. Henderson attributed the distribution of bones to a flood sweeping down from Canobolas, past Boree and strengthening towards Wellington, and predicted the discovery of bones along the intervening river-beds. Not exactly the Biblical Deluge, but he was evidently influenced more strongly than Mitchell by Buckland's recently published treatise. Mitchell also suggested inundation of the caves, but subsequent to rather than a cause of the distribution of bones.

Characterising Mitchell as a 'colonial scientist', secondary to those in the home country, whose earnest goal was to have his full account published in the *Transactions of the Geological Society*, Oldroyd (2007) speculated

that Buckland may have thwarted this because '*modern Australian forms might not have been pleasing to those who had in mind universal catastrophes followed by creation of new forms.*' Indeed, in a letter to Ranken on 24 July 1833 Mitchell wrote: '*I understand Buckland's nose is put completely out of joint by the bones from Australia . . . and I have now heard from the best authority that the fact of their fossil bones not belonging to animals similar to those now existing has worked a great change in all their learned speculating on such subjects at home.*'

Mitchell's account is certainly more intellectually rigorous while his protagonist appears out of his depth. He had the benefit of peer review (e.g. from Professors Jameson and Owen in London, and from Lang who nevertheless remained anonymous, perhaps to avoid becoming embroiled in controversy). He had astutely arranged for Lang to convey the preliminary account to London and for a paper to be read before the Geological Society of London in 1831 (though published only in abstract), while Henderson had to be content with an obscure missionary press in Calcutta without benefit of peer review. His maps were, of course, professionally executed whereas Henderson's were no more than rough sketches. His discoveries were referred to in Lyell's great text (1833).

Just what happened to Henderson's bones is unclear. He reported to Darling that several boxes of bones '*are now ready for transmission to Doctors Fittan and Buckland of London*', but neither records receiving them. Owen (1877) does not mention Henderson in his seminal work, writing in the preface: '*The exploration of ossiferous caves has hitherto been limited to those originally discovered by Sir Thomas Mitchell.*' If Mitchell was merely a 'colonial scientist', Henderson must have ranked lower!

Finally, this saga throws additional light on Mitchell's motive for stopping at Borenore and for devoting an entire chapter of his 'Three Expeditions' book to the Wellington bones. It was not simply intellectual curiosity. Stung by Henderson's publication four years earlier and by a failure to have his own account published fully in the scientific community, he must have determined that his views would prevail in

a widely acclaimed volume that undoubtedly reached a wider audience.

HENDERSON IN RETROSPECT

It would be easy to dismiss Henderson as an opportunistic dilettante in matters paleontological, but then so was his nemesis, although as we have seen, Mitchell had at least sought advice and instruction from other experts and displayed a more disciplined mind. Henderson founded Van Diemens Land's first scientific society, which was second in Australia only to the Royal Society of NSW. He published a number of scientific papers catalogued by the Royal Society of London (1869). Reproduced in his Observations, his proposals for a new system of zoological nomenclature received the attention of the Institute of France in Paris, and were '*clearly not a result of uninformed amateur thinking*' (Hoare 1968, p. 18). Typically, he considered it futile to submit his ideas to the Royal Society in London, a body with '*a strong disinclination to change*'.

In a busy life in India he engaged in mercantile pursuits, attempted cotton improvement in Upper India, tried (unsuccessfully) to introduce the spinning jenny into Aligarh, and speculated (again without success) in the growing of indigo and other crops. Upon his return from New South Wales early in 1831, he apparently joined the East India Company, and variously in Agra and Ludhiana, founded a medical and public library (and, it seems, the Agra Bank), reorganised an orphan school, started a cornmill, tried to form a horticultural society, and ran an English, Persian and Hindi newspaper. We have already seen that he was an accomplished, if somewhat eccentric traveller.

A creative and insightful thinker, clearly possessed of considerable organisational skills and a finely honed mind for theoretical systems of zoological classification, Henderson's weakness was an inability to carry his numerous plans through to fruition. Notwithstanding great perseverance, determination and fortitude bordering on asceticism, he presents less as an explorer, more as a resourceful, observant, determined and adventurous traveller. Possibly he felt spurned by or resentful towards

Mitchell, but this does not excuse his shameless opportunism in dating a subsequently published report to the Governor before he had even reached Wellington. A contemporary reviewer (West 1852) described him as censorious and dogmatic, a judgment consistent with Henderson's depreciation of the Surveyor-General's Department, while the writer of his death notice (anon. 1836) felt that he was restless by nature and that his thoughts and schemes '*flowed too quick upon him to allow him to think as soundly as rapidly*'. Hoare concluded that he sought consolation in his failures by turning immediately to new projects and travels.

As we have seen, Henderson's report to Darling could not have been written by the date claimed by him (i.e. 1 July 1830). Putting this aside, we don't know whether that report reached the Governor first, or even when he returned to Sydney. In view of Darling's displeasure with Mitchell's tardiness in his official duties, there may not have been one from Mitchell; certainly he does not mention any. Henderson published the first detailed account, so there is a case for crediting him with Australia's first comprehensive paper on cave science. For all his shortcomings, he has three other noteworthy claims on the history of karst science in this country. His sketches of Boree and Wellington Caves were the first published plans of Australian caves, and he was first to comment, albeit in a rambling manner, on the supposed effects of fire or heat on limestone, erroneously attributing at least some of the product to volcanic activity. Finally, he appears to have been the first to sketch and write about karst topography: '*These (limestone) hills present, generally, a smooth surface, but in certain situations, the rock protrudes in large masses, assuming sometimes, the appearance of the spires and ruins of a deserted city. This is particularly observable in the vicinity of the caves at Boree*'.

There is one last curious coincidence in this saga. Pursuing his botanical interests, von Hugel came to Australia in 1834, visited Bunonia Caves, met Ranken in Bathurst and was deterred from proceeding to Wellington only by the distance and the apparently '*uninteresting*

flora' in between (von Hugel 1834). No doubt he and Henderson had much to talk about at that remarkable meeting in Srinagar the following year!

EPILOGUE

Within a year of the discoveries at Wellington, Darling had been dismissed, Henderson had returned to India and only Mitchell was left standing, his reputation intact. Indeed it was considerably enhanced when he finally completed and published his great Map of the Colony in 1834 (Mitchell 1834b, Beaver 1952), and after the Australia Felix expedition of 1836 and his 1838 book his unassailable stature led directly to a knighthood. Perhaps Mitchell had seized an opportunity and contrived to take advantage of it immediately, rather than being fortuitously '*about to journey to the Western Districts*' as Foster assumed. A long-awaited opportunity was presented, his motive had elements of ambition as well as almost obsessive intellectual curiosity, his means was the power of his office, and everything was driven by his energy and ego. Certainly his legacy was the fostering of scientific interest in Australian vertebrate fauna in the mid-nineteenth century.

Here, it seems, were not only the first scientific studies, but a pioneering example of intellectual rivalry, vanity, jealousy and possessiveness of a kind not unknown to later generations of speleologists and scientists! Here also was a classic example of the manner in which political patronage and rampant egos operated to the detriment of a common interest in science, and where overlooked, overshadowed and unremarked players such as Henderson and Rogers are forgotten. As Branagan (1992) noted in his overview of a symposium on aspects of the life of Mitchell and Sir Richard Owen, '*There would be little of interest in a bloodless history of science*'!

Henderson deserves a rightful place in the history of cave science, and indeed of science generally in Australia. Without Mitchell, his flawed but perceptive writings – remarkable for their time – might now be widely accepted as the pioneering scientific publication on caves and karst in Australia, and recognised in a

succession of studies of the Wellington bones. As it is, Henderson was memorialised only in his book, a plaque on the Isle of Chenars in Dal Lake, Srinagar (which apparently was destroyed by 1850), and an obituary in the Agra Ukhbar (anon.1836). Both recognised the significance of the bones, and both moved swiftly and determinedly to pursue their legacy. But history belongs to the victor. Major Mitchell was closer to the truth, his writings attracted more influential attention, he rose to greater honours, and in the process he became Australia's first speleologist.

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