

CHARLES LA TROBE AND THE GEELONG KEYS

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Abstract

Five keys were found in an excavation several metres deep at Geelong in 1847. Superintendent La Trobe's interpretation of how they got there and how old they were formed the basis of the 'Geelong Keys' story. In 1977, Kenneth McIntyre used that story to support his hypothesis that the Portuguese discovered Australia around 1522. The story is re-examined here in the light of new evidence.

FEW PEOPLE TODAY WOULD HAVE HEARD of the 'Geelong Keys' were it not for Kenneth McIntyre (1910–2004). When he published his book, *The Secret Discovery of Australia*, in 1977, he focused attention on the possibility of Portuguese discoveries in Australia in the 16th century, a topic of ongoing discussion to this day.¹ McIntyre's main hypothesis was based on evidence from the Dieppe maps, which are 16th century French maps, supposedly copied from Portuguese originals that no longer exist. Following from his rather complicated argument involving the limitations of 16th century navigation and cartography, and after applying a series of 'corrections' that he worked out, McIntyre proposed that the Dauphin Map of South-East Asia (one of the Dieppe maps) showed the northern and eastern coastlines of Australia. He argued that a Portuguese navigator, Mendonça, discovered and mapped these in about 1522. Others with expertise in navigation and cartography have criticised McIntyre's conclusions.²

However, McIntyre also gathered evidence from several other sources to support his main hypothesis. For example, he included a chapter about the Warrnambool ‘Mahogany Ship’ in his book. The present author recently reviewed that evidence and concluded that it did not support McIntyre’s Portuguese hypothesis.³ McIntyre devoted another chapter of his book (Chapter 18) to the story of ‘The Geelong Keys’. The ‘Geelong Keys’ story began in 1847, when several keys were found in an excavation for a new lime-kiln at Limeburner’s Point, at the eastern edge of Geelong. Charles La Trobe, Superintendent of the Port Phillip District of New South Wales, examined the excavation the next day when he happened to be visiting there and was given some of the keys. His interpretation of how and where the keys were found, and what he observed, became the basis for the story of the ‘Geelong Keys’ story that has repercussions to this day. McIntyre suggested that the keys may originally have been dropped on the beach at Limeburner’s Point by a Portuguese navigator in the 16th century. If that were so, it would strongly support his Portuguese hypothesis. To test that hypothesis, we need to consider the following questions: how old were the keys? How did they come to be where they were found? And who owned them previously?

The aim of the present article is to re-examine the story of the ‘Geelong Keys’, using evidence from a variety of different sources, some of which was not available to McIntyre. First, we shall examine the details of the story and how it evolved after La Trobe’s visit to the site in 1847. To interpret the story, we need background information about local geology and the construction of lime-kilns in the mid-19th century. These matters are at the heart of the mystery.

The Involvement of La Trobe and his Friends

Charles Joseph La Trobe (1801–1875) came to Australia in 1839 when he was appointed Superintendent of the Port Phillip District. In 1851, he became the first Lieutenant-Governor of the newly separated Colony of Victoria. Apart from his official duties, he was an enthusiastic amateur naturalist with an interest in geology. He had been well-educated in England and was a competent writer and painter.

La Trobe visited Geelong during the second week of August 1847.⁴ This was not an official visit, but a geological excursion to satisfy his own interests. Told by the Commissioner of Crown Lands, Edward Addis, about a large new lime-kiln being constructed at Limeburner’s Point, La



*An engraving of Charles Joseph La Trobe
by Samuel Bellin, after a painting by Sir
Francis Grant in 1855.*

*(Courtesy of the State Library of Victoria,
H115575.).*

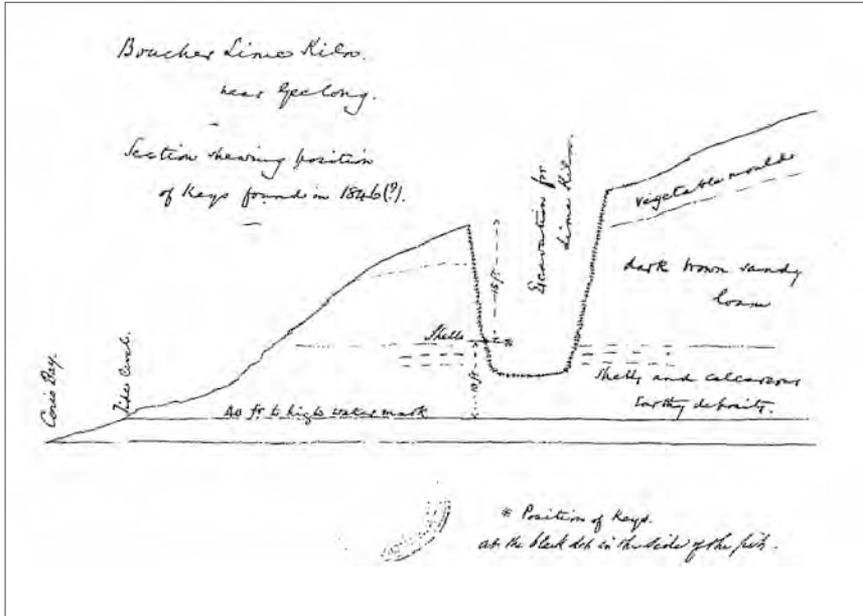
Trobe decided to visit the site to see the geological section revealed by that excavation. As he later wrote, ‘I thought it would give me some further information on the geological structure of that portion of the coast line.’⁵

Lime-burning in Geelong began on the western side of Limeburner’s Point in about 1838.⁶ By 1865, there were four lime-kilns there, as shown in a contemporary map.⁷ James Boucher built one of these kilns in 1847, and it was in the excavation for this kiln that the ‘Geelong Keys’ were found in August 1847, the day before La Trobe arrived.



Map of lime-kilns at Limeburner's Point in 1865. Boucher's kiln was the second from the left, opposite Allotment 12. It was about 300 metres from the jetty at Galena Point. (Courtesy of the State Library of Victoria, 10381/161477.)

Soon after La Trobe entered the excavation, he observed what he variously described in 1847 as ‘a thin layer of shells’ or an ‘inclined stratum of shells’, and, in 1870, as ‘a line of calcareous matter’.⁸ He said it was ‘consolidated’ and much harder than the ‘loam’, either beneath it or above it. It was at head-height in the wall of the excavation (that is, about 1.5 metres from the bottom), as marked in his sketch of 1847.⁹ He thought he saw ‘a cluster of wombat teeth’ and some shells in this ‘calcareous matter’. Then Boucher, the lime-burner, appeared. He told La Trobe that, on the previous day, a bunch of five keys had been found in the excavation. La Trobe understood that the keys had been found in the ‘thin layer of shells’ that he had noticed at head-height. He concluded that those shells ‘marked the position of the shore at a very ancient period’. By La Trobe’s estimate, those shells were then about 10 feet (3 metres) above sea level, and buried beneath 15 feet (about 4.5 metres) of ‘solid undisturbed soil’. The whole excavation was about 25 feet (7.5 metres) deep, which meant that the bottom of it was about 1.5 metres above sea level. Boucher gave La Trobe three of the five keys. His children had already taken one to play with, and he had given the fifth to a passer-by.



*La Trobe's diagram of Boucher's excavation for a lime-kiln, drawn in 1847, but not dated until 1870.
(Royal Historical Society of Victoria.)*

La Trobe faced a dilemma. If the keys had been dropped among shells on a beach that was now well above sea level and covered by many metres of sediment, he understood that they must have been there for a long time. Yet the appearance of the keys belied that. As he wrote soon after, 'I cannot suppose that 50 years had elapsed since they were dropped or washed upon that beach.' There was considerable discussion about the keys among La Trobe's friends, but none of them at Port Phillip knew any more about geology than he did. There was no report of these events in the local press at the time.

One of La Trobe's friends, Alexander Fullerton Mollison (1805–1885), visited Boucher's excavation a day or so after La Trobe. He provided no additional information and simply agreed with La Trobe's observations. Mollison had settled at Tarringower, on the Coliban River near Kyneton in 1837. He became a prominent grazier and colonial activist, with interests in public education. He returned to England in 1851 and stayed there until 1873, after which he returned to Victoria. He is not known to have had

much knowledge of natural history, but he did play an important role in this story (see below).

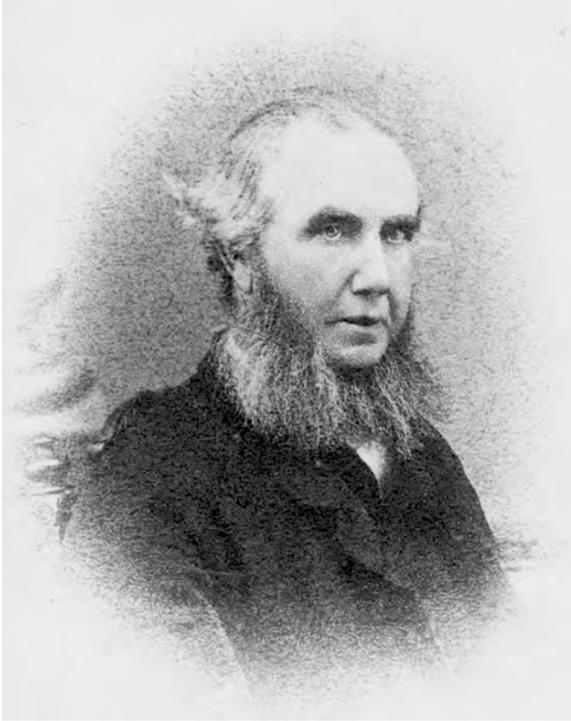


A.F. Mollison.

(Courtesy of the State Library of Victoria, H15532.)

A few weeks after returning to Melbourne, La Trobe received the latest volume of the *Tasmanian Journal of Natural Science*, edited in Launceston by his friend, Ronald Gunn. This prompted La Trobe to write to Gunn on 23 September 1847, including an outline of his story of the ‘Geelong keys’.¹⁰ Ronald Campbell Gunn (1808–1881) was a very experienced and astute observer of natural history, particularly of Australian flora, about which he became a world authority. He first came to Tasmania in 1838 as Assistant Police Magistrate, but then became Private Secretary to the Governor, Sir John Franklin, in 1840–41. Gunn was a regular visitor to Port Phillip

and published his 'Observations on the Flora of Geelong, Port Phillip' in 1842.¹¹ He sent plant specimens to W.J. Hooker in Glasgow for several years. Gunn was elected Fellow of the Royal Society in 1854 and was also a Fellow of the Linnean Society in London. He edited the *Tasmanian Journal of Natural Science* from 1842 until 1849. Later, he was a member of the Tasmanian Parliament.



Ronald Campbell Gunn, ca 1855.
(Courtesy of the Tasmanian Archive and Heritage
Office, PH31/1/229.)

A few months after the 'Geelong Keys' were found, La Trobe wrote to Gunn again, commenting that he had 'secured one of the keys' for him and expressing the hope that he would come to Port Phillip to see the site for himself.¹² Gunn did not visit La Trobe in Melbourne until the end of September 1849, when he saw two of the keys. La Trobe planned to take Gunn to Geelong to see the site of Boucher's lime-kiln on 4 October, but

had to cancel that at the last minute. Instead, he asked Addis to escort Gunn to Limeburner's Point the next day. This was two years after the keys had been found. The construction of Boucher's lime-kiln would have been completed by then, with a lining of firebricks (see below). This meant that Gunn would not have been able to inspect the inside of the excavation, as La Trobe had done.

Gunn specifically questioned Boucher about the discovery of the keys. As he described in 1875, he ascertained that the keys had not been picked 'out of the stratum of shells' at head-height—which La Trobe had focused on—and as he had shown in his diagram.¹³ They had been found 'at the bottom of the hole, mixed with some shells'. It seems that Boucher had wrongly assumed, and had then misled La Trobe into thinking, that both the keys and the shells had been dislodged from higher up. Gunn concluded, 'I have little doubt that they had been dropped by some inhabitant of Geelong, lay in the grass for some time—not very long—and fell to the bottom of the hole from the surface after the excavation was made.' He told La Trobe about his observations and conclusions when he returned to Melbourne, and he 'thought that the whole question had been considered as settled'. That was not to be the case.

La Trobe retired to England in 1854 and the story of the 'Geelong Keys' lay dormant for several years. Then, in April 1870, La Trobe met Mollison in England, and they talked briefly about the 'Geelong Keys'. La Trobe sent Mollison the sketch he had made in 1847, and also some notes that he had recently dictated, under the title 'The Boucher Lime Kiln, near Geelong, and a Memorandum about Three Keys found there'.¹⁴ La Trobe had not put the date on the sketch when he drew it in 1847. In 1870, he was unsure of the date, and he incorrectly thought it was 1845 or '46. He also thought he had communicated with Gunn at the time, but wasn't sure. By 1870, La Trobe's health was failing, especially his vision, and he relied on his daughter as his scribe. He sent his 'memorandum' to the *Australasian* newspaper in Melbourne, where it was published (without the diagram) on 3 June 1871. La Trobe died in 1875.

In the same edition of the *Australasian* in 1871, James Harrison (1816–1893), who had been editor of the *Geelong Advertiser* and was the inventor of commercial refrigeration, commented on La Trobe's story of the 'Geelong Keys'. He had not seen Boucher's excavation or the keys. He suggested that the keys may have been placed purposely in the excavation by a local person, to see if the iron became coated with copper. He cited

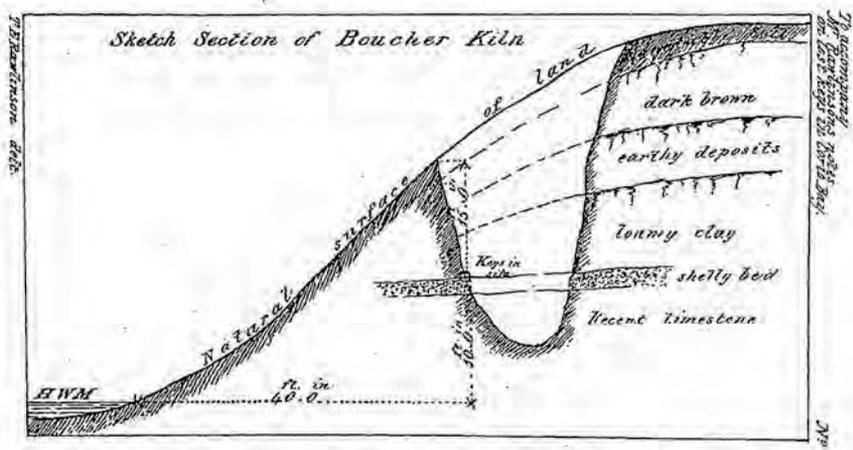
an example where a man left his spade in a pool of water overnight in a quarry near the banks of the Barwon, and it was supposedly coated with copper next day. Harrison went on to say that no copper deposit was ever discovered and this was an 'imaginary find'. Nonetheless, he thought that some people may have been tempted to repeat the test in Boucher's excavation. This seems unlikely, given that there was no water in which to immerse the keys in the bottom of Boucher's excavation, as there had been in the quarry.

In 1870, Mollison had written to Sir Charles Nicholson in London, asking him about his recollections of the Geelong keys.¹⁵ Nicholson had been a prominent landowner and member of the Legislative Council of New South Wales, representing Port Phillip. He replied that he had 'a very distinct recollection of the incidents connected with the keys', which made 'a deep impression' on him. Nicholson was convinced that the keys provided evidence for European visitors to Port Phillip before colonial times. However, when he presented that idea to R.H. Major, who was writing a book about the discovery of Australia, published by the Hakluyt Society in 1859, Major regarded it as unsubstantiated. Mollison eventually brought La Trobe's sketch and letters back to Australia. In Melbourne, he told Thomas Rawlinson about the 'Geelong Keys' in 1874.

Rawlinson was a civil engineer of some note in Victoria. He had co-authored a report on the proposed location of infrastructure in Victoria in relation to water supplies, ports and railways.¹⁶ He was also actively interested in natural history, as an amateur, and wrote several scientific papers on a variety of subjects, including zoology and meteorology. In 1874, Rawlinson read a paper at the Royal Society of Victoria, of which he was a Life Member. Titled 'Notes on the Discovery of Some Keys in the Shore Formation of Corio Bay, Near Geelong', it was later published in the transactions of the Society.¹⁷ Most of the article simply reproduced La Trobe's 'memorandum', already published in the *Australasian*. However, Rawlinson also included his own observations and speculations about Boucher's excavation. He canvassed La Trobe's idea, that Port Phillip Heads had once been closed off, and that the whole of Port Phillip Bay had been a large freshwater lake with water levels high enough to explain the shell-beds occurring above sea level.

In 1874, Rawlinson visited the site of Boucher's kiln, which by then had been abandoned, with only 'the remains of an old excavation' visible. However, he saw the sequence of sedimentary rocks in the cliff nearby.

He showed samples of those rocks and ‘the old sea beach shells from the locality of Boucher’s kiln’ to the assembled audience at the Royal Society meeting, which would have included McCoy, the palaeontologist. They concluded that the shells were of marine origin, deposited on an old beach. However, they also recognised that the overlying clay, silt and sand at Limeburner’s Point was an alluvial deposit, formed in the fresh water of a river or swamp, whereas the underlying limestone had been deposited in a freshwater lake. This was a complicated geological section. Rawlinson included a ‘Sketch Section of Boucher Kiln’ in his paper.



Rawlinson's interpretation of the geological section through Boucher's excavation.
(*Transactions of the Royal Society of Victoria*, 1874–5.)

At first sight, this may seem to be a copy of La Trobe’s diagram, but it is not. Rawlinson included measurements of distance and elevation that he had evidently copied from La Trobe. However, Rawlinson’s also includes his interpretation of the geological sequence in Boucher’s excavation, inferred from his observations of the cliffs nearby. The sketch shows a ‘shelly bed’, with ‘keys in situ’, at a height of 10 feet above sea level. Unlike La Trobe’s diagram, Rawlinson shows ‘recent limestone’ beneath the ‘shelly bed’. However, he has confused the ‘shelly-bed’, which he had observed nearby, with the ‘calcareous matter’ that La Trobe had observed at head-height in the wall of the excavation. This diagram added to the general confusion about the ‘Geelong keys’.

Rawlinson faced the same dilemma as La Trobe. He could see no alternative but to extend the time necessary for the geological processes to occur (change of sea level and deposition of several metres of sediment) 'from 200 to a little over 300 years back'. In so doing, Rawlinson was extending the age of the keys to accommodate his ideas about the timescale of geological processes. Rawlinson's ideas of that timescale, like La Trobe's, were grossly in error. Nevertheless, he went on to speculate that the keys may have been dropped by 'buccaneers' from pre-colonial days, about which he said, 'we know that some of them visited Australia in their wanderings, and it is almost a certainty that many of them left little trace of their presence, except in traditions of lost ships and ruined towns'. The story of the 'Geelong Keys' was taking a new and imaginative turn.

Soon after Rawlinson had read his paper at the Royal Society of Victoria, the Secretary of that society, Frederick J. Pirani, wrote to Gunn, who was then living in retirement at Launceston, to seek his understanding of the 'Geelong Keys' story. Gunn wrote back in May 1875, giving his version of the story as outlined previously. However, Gunn's letter was not made public until more than a century later, when it was brought to light by Ian McKiggan in 1987.¹⁸ McKiggan rejected all of Gunn's evidence, because he thought he had been a hostile witness, with ongoing antipathy towards La Trobe. This is a criticism which, to the present author, seems quite untenable. Gunn was a very reputable scientist. He had been a friend of La Trobe for many years, and their families had exchanged visits. La Trobe had written to Gunn more frequently than to most other people when he was in Port Phillip. It is unlikely that a difference of opinion over the interpretation of scientific evidence would remain a source of great antipathy between them.

In 1970, and again in 1975, the historian L.J. Blake brought La Trobe's version of the 'Geelong Keys' story to public attention.¹⁹ He was evidently not aware of Gunn's evidence. Blake also published La Trobe's original sketch of Boucher's excavation and reproduced his 'memorandum', and Rawlinson's discussion of it from a hundred years earlier. That is how McIntyre came to hear the story of the 'Geelong Keys'. However, he heard only La Trobe's version of the story. It seems that McIntyre did not know about Gunn's very different interpretation of the story, which ran counter to McIntyre's ideas about 16th century Portuguese visitors to Port Phillip.

Descriptions of the Keys

The five keys found in Boucher's excavation in 1847 were initially tied together, but they were quickly separated. The day after their discovery, Boucher could find only three of the keys to show La Trobe. By 1870, long after the event, and probably with failing memory, La Trobe thought there had only ever been three keys. He vaguely remembered giving them to the Mechanics Institute, which evidently lost them. Today we have no drawings or photographs of the keys, and the only descriptions of them came independently from La Trobe and Gunn.

When La Trobe saw the keys initially, they had some 'soil' adhering to them, consistent with them having been in the clay at the bottom of the excavation. That would not be consistent with the keys having been embedded in limestone. Both La Trobe and Gunn said that the keys had very little rust on them. Neither of them stated specifically that the keys were made of iron, but the reference to rust implies that they were. The absence of much rust is good evidence that they had not been buried for very long, especially not for many years, or several centuries. La Trobe described the keys as 'about two inches in length' and 'very similar to those of the present day, except that they were a little longer in the shank, and the wards smaller than is now usual'. They were the kind of keys that were 'still used for a box or trunk, or seaman's chest'.²⁰ Similarly, Gunn described the keys as 'small, about the size ordinarily used for chests of drawers, of very modern make'.²¹ In retrospect, it seems extraordinary that, with such evidence about the likely age of the keys, based on their condition and shape, the story of the 'Geelong Keys' was perpetuated. La Trobe's description of Boucher's excavation for a new lime-kiln at Limeburner's Point in 1847 played a crucial role in that story. To better understand that, we need to know more about the geology at Limeburner's Point, and how lime-kilns were constructed in the middle of the 19th century.

Knowledge of Geology: Then and Now

In 1847, the discipline of geology was in its infancy. Many geological concepts had yet to be developed, and few people would have been able to work out local geology from their own observations. The age of rocks, in terms of years, was largely unknown. Different rocks were ascribed to geological Eras (for example, Cainozoic), with subdivisions into Periods (for example, Tertiary) and Epochs (for example, Pleistocene), based on their relative stratigraphic positions, their chemical and mineral

composition, and their fossil content etc. That is still the case today. Their age was not calibrated in terms of years until the second half of the 20th century, when isotopes could be measured. In 1847, most people believed that the earth was only about 6,000 years old, based on biblical genealogy. For them, it would have been unthinkable that some of the rocks around them were more than a 100-million-years-old.

Charles Lyell, one of the founders of geology, had published his monumental work, *The Principles of Geology*, in three volumes between 1830 and 1832. The institution that became the Geological Survey of Great Britain was only established in 1835. There were no experts in geology in the Port Phillip District in 1847, as La Trobe would lament. It was not until 1851, after gold had been discovered, that La Trobe wrote to Earl Grey in London requesting that an expert geologist be appointed to the new colony of Victoria.²² Alfred Selwyn (1824–1902), who had several years' experience working in the Geological Survey of Great Britain, was appointed, and he arrived in Melbourne in December 1852. Selwyn and his small team of pioneer geologists produced the first geological map of the whole of Victoria in 1860, as well as more detailed maps of particular Parishes. The first geological map of the Geelong district was published in 1863, and many more details of the local geology have been identified since.²³ None of that information was available to La Trobe in 1847.

In the foreshore cliffs near Limeburner's Point today, there is a shell-bed, approximately 1.5 metres above sea level, overlying limestone. The shell-bed, in turn, is overlain by poorly stratified alluvium of variable thickness, up to several metres, with soil at the top. The shell-bed includes well-preserved marine fossils, loosely embedded in a layer of dark grey clay and silt. Whole shells can easily be removed from this sediment by hand. It is only 10–20 centimetres thick, but it is quite extensive in the area and extends to the north of Corio Bay. It can still be seen in parts of the cliff on the western side of Limeburner's Point, close to where Boucher's kiln was located, although much of the original landform there has been altered by the dumping of waste from the lime-kilns and, in more recent years, by earthworks to make the road. This shell-bed extends to, and is more continuously visible on, the eastern side of Limeburner's Point. It is an old beach deposit formed when sea levels were higher. It is geologically recent (Holocene), 2,360-years-old (plus or minus 50 years), by radiocarbon dating of the shells.²⁴

By contrast, the limestone beneath the shell-bed is much more consolidated. It was formed in a freshwater lake after a basalt flow blocked the ancestral Barwon River about one and a half to two million years ago (Lower Pleistocene). There is a similar limestone deposit at Lara, north of Geelong, which formed in another lake after basalt blocked the ancestral Hovell's Creek. These limestone deposits include some fossils, such as freshwater mollusc shells and the remains of extinct mammals, including the teeth of an extinct wombat and a Diprotodon.²⁵ Those fossils do not occur either in the shell-bed or the overlying alluvium. The limestone is



The shell-bed sitting on top of limestone, which was quarried to make lime. The shells are loosely embedded in dark grey clay, some of which is adhering to the geological hammer. The shell-bed is overlain by alluvium and soil.

(Photo: M. Johns, 2012)

Pleistocene, and approximately one million-years-old. The sea encroached on that area of land about three thousand years ago after worldwide sea levels rose by about one metre.²⁶ Previously, the upper surface of the limestone had been eroded to form a wave-platform upon which the shell-bed was deposited on an old beach. Sea level subsequently fell to its present

level, which is why the shell-bed at Limeburner's Point is now above sea level. Very little of that geology would have been known to La Trobe.

Construction of Lime kilns in the 19th Century

The quarrying of limestone, and then its heating in special kilns to produce quicklime (known generally as lime), had been widespread in Britain and Continental Europe for centuries. The lime was mixed with water and sand to make lime-mortar, used in building since Roman times. It was not until the 1880s that lime-mortar was largely replaced by cement. In the middle



The present-day remains of one of the lime-kilns built on the eastern side of Limeburner's Point, ca 1870. The arched tunnel at the bottom of the kiln can be seen heading into the cliff face. The metal frame was not part of the original kiln, but was installed in recent years to protect the structure.

(Photo: M. Johns, 2012.)

of the 19th century, lime was still very much in demand in the developing colonies of Port Phillip and elsewhere.

In recent years, remains of the lime-kilns at Limeburner's Point have been studied archeologically and partially conserved, as described by Harrington.²⁷ Such lime-kilns were usually built into the edge of a steep rise or cliff, close to the source of limestone, which in Boucher's case was only a few metres away. The kiln had to be above the watertable to operate efficiently, which meant that it would not be constructed near a spring, where the watertable would be at the surface. It is very unlikely, therefore, that a kiln would be built at the site of an old water well, whether dug by aborigines or Europeans. This is important when considering any suggestion that the 'Geelong Keys' may have been dropped down a water well by an early European visitor to Port Phillip, to be uncovered later by Boucher's excavation at the same site.

Nothing remains of Boucher's kiln, but we can assume that it would have been similar to the one in the photograph showing the remains of one of the lime-kilns constructed on the eastern side of Limeburner's Point around 1870. It is likely that bricks and other material from Boucher's lime-kiln would have been salvaged to construct these newer kilns. The excavation for such a lime-kiln would have been two or three metres in diameter and six to eight metres deep, depending on the height of the cliff. The excavation would subsequently be lined with bricks, and the whole structure would be supported and further insulated by the sediments surrounding the bricks. There would be an opening at the top of the kiln through which alternate layers of fuel and limestone would be loaded. Access to the bottom of the kiln would be a horizontal tunnel that went several metres into the cliff.

The lime would have been scraped from the bottom of the kiln through the small hole that also provided access to the air necessary for the fuel to burn. The lime would be put into bags and shipped away, mainly to Melbourne, but with some going interstate, particularly to Launceston. Wood, and sometimes coal, was used for burning the limestone, and that had to be brought to the kiln site from elsewhere. All these kilns had ceased working by the 1880s.

During construction of such a lime kiln, which in this case would have been in the edge of a steep rise about 10 metres high, there would not have been a winch or bucket operating from the top to remove spoil, as there would have been if it were a vertical mine shaft. Nor would there have been ladders down which workers climbed into the excavation. Access to



The present-day remains at the bottom of one of the kilns at Limeburner's Point, at the end of the tunnel into the cliff. The hole through which the lime was scraped is partially covered by loose bricks.

(Photo: M. Johns, 2012.)

the excavation would have been via its open front. Perhaps 30 or 40 cubic metres of spoil would have been shovelled out through the front of the excavation. Finally, the interior would have been lined with bricks, the front of the kiln and the arched tunnel would have been constructed from bricks, and then covered with some of the spoil. The entrance wings of the kiln would be made with stone blocks (local basalt) to hold back the remainder of the spoil.

Sorting out the Evidence

La Trobe gives a false impression of Boucher's excavation in his diagram of 1847. He shows it as a vertical pit or shaft rather than an open excavation, facing Corio Bay. La Trobe confirmed that he had walked into the excavation 'from below over the rubbish which had been thrown out'.²⁸ Both La Trobe and Addis gained ready access to this excavation after arriving there unannounced, which suggests that anyone else who visited the area at the time could have done the same. This has important implications when it comes to deciding whose keys they may have been, and how they got into the excavation.

La Trobe's sketch also fails to distinguish clearly between the shell-bed and the underlying limestone at the bottom of the hole. He wrongly implies that the shell-bed extends up to head-height. When Boucher's excavation had reached a level that was 1.5 metres above sea level, it would have encountered part of the same shell-bed (shown in the photograph of the shell-bed). When Gill and Alsop showed by radiocarbon dating that other shells from the same shell-bed were 2,360-years-old (plus or minus 50 years), they concluded that the 'Geelong Keys' could not possibly have been incorporated into the shell-bed when it was being formed. We can now add that the keys could not have been embedded in the solid limestone when it was being formed either, because that occurred about a million years ago.

According to Gunn's interpretation of the story, the keys were found among shells at the bottom of Boucher's excavation. That is where the excavation would have intercepted the shell-bed. There is no comparable shell-bed at an elevation of 3 metres above sea level, the level at which La Trobe said he saw a 'thin layer of shells' at 'head-height' in the wall of the excavation, and from which he thought the shells in the bottom of the hole had come. It seems that he was wrong about that; but what was it that he saw in the wall of the excavation at head-height?

There are several clues in La Trobe's brief descriptions from 1847 and 1870. He wrote of an 'inclined stratum of shells' with 'loam' above and beneath it. It was a consolidated 'line of calcareous matter' that was very hard to break up. He thought he saw 'a cluster of wombat teeth' in it. None of those characteristics would have applied to the shell-bed at the bottom of the excavation. However, they were all characteristics of the limestone which lay a few centimetres beneath the shell-bed, of which La Trobe does not seem to have been aware. It is likely, therefore, that La Trobe

was looking at a slab of the limestone that had originally come from the bottom of the hole, and which had been shovelled up to head-height as part of the spoil near the open front of the excavation. La Trobe made no distinction between the sediments in situ and the spoil that was created when those sediments were moved during excavation. He misunderstood the local geology and misrepresented Boucher's excavation, and that has been a source of confusion ever since.

Conclusions

The story of the 'Geelong Keys' is largely attributable to La Trobe and his misunderstandings. He was an educated man, in a literary and artistic sense, and he had a desire to learn more about geology, but he did not have any local experts to help him. He failed to understand the fundamental relationship between the shell-bed and the underlying limestone in the area. On the basis of what Boucher had told him, he assumed that the shells and the keys had been dislodged from the wall of the excavation, at about head-height, or about three metres above sea level. In fact, they were found at the bottom of the hole, where the excavation intercepted the shell-bed overlying the limestone, about 1.5 metres above sea level. La Trobe wrongly assumed that the keys were as old as the shells, whereas we now know that the age of the shells has nothing to do with the age of the keys. La Trobe discounted his own observations about the apparent age of the keys (their modern appearance, with little rust) and tried to reconcile those observations with his idea of a geological timescale in years, which was grossly in error.

By contrast, Rawlinson's error was in thinking that the shell-bed he had seen in the cliff nearby (as in the photograph) was what La Trobe had seen in the wall of the excavation. Gill made the same mistake in 1985 with his diagram of the geological section.²⁹ Both Rawlinson and Gill perpetuated that aspect of La Trobe's misunderstanding, which is now clarified for the first time. Other commentators, such as Blake, McIntyre and McKiggan, were presumably not in a position to assess La Trobe's evidence from a geological point of view.

Gunn is vindicated in much of his explanation for the 'Geelong Keys'. He was an eminent scientist who made a lasting contribution to Australian botany. However, he was not particularly interested in La Trobe's dilemma about geological processes. Gunn concluded that the keys were dropped into Boucher's excavation from the top, *after the hole had been dug*. To

him, the keys were mainly of interest to the person who had lost them. The evidence presented here suggests a similar explanation. However, rather than the keys being dropped down a shaft from the top, they were dropped at the bottom of an open excavation by someone who walked into it in 1847, as La Trobe had done. The keys were probably discovered only a few hours or days after being dropped there, not years or centuries later, as La Trobe and Rawlinson, and later McIntyre and others, have suggested.

It is unlikely that the keys had been dropped by an early colonial visitor to Port Phillip, such as Bowen, Murray, Flinders, Grimes, or Tuckey (or even unnamed British or American sealers and whalers), as some have suggested.³⁰ Any of those people could have dropped a bunch of keys somewhere along the coast of Corio Bay when they visited there in the early 19th century, but not at the bottom of a hole excavated at Limeburner's Point in 1847. We may never know who owned the keys originally, but it was most likely someone from Geelong who walked into the bottom of Boucher's open excavation as a matter of curiosity, and who dropped the keys there by accident. That is entirely consistent with descriptions of the keys and their condition. This is the first time that historical evidence about the keys has been reconciled with local geology and with the history of lime-kiln construction, both of which are very relevant to the story.

By contrast, McIntyre summarized the issue of the 'Geelong Keys' as follows: 'anything of European origin discovered in Geelong in 1847 could not have been more than forty-five years old, unless some other European navigator had preceded the British into Corio Bay'.³¹ His mistake, therefore, was in believing that the keys must have been more than forty-five-years-old, based on La Trobe's misinterpretation of what he had seen, and his erroneous ideas of a geological timescale. McIntyre evidently made no attempt to assess the validity of that evidence. There is no plausible evidence to suggest that the 'Geelong Keys' had anything to do with Portuguese mariners from the 16th century, as implied by McIntyre.

In recent years, a stone monument has been erected near Limeburner's Point, with a bronze plaque which reads (inter alia), 'Some believe the keys to be a relic of a Portuguese expedition under Cristovao Mendonça which visited the coast in 1522'. By its very existence, that plaque gives credence to McIntyre's point of view, which is challenged here. The ongoing argument about the Portuguese discovery of Australia should be decided on its own merits. However, the story of the 'Geelong Keys' is no longer relevant to that argument.

NOTES

- 1 Kenneth G. McIntyre, *The Secret Discovery of Australia: Portuguese Ventures 200 Years before Captain Cook*, London, Souvenir Press, 1977.
- 2 A. Ariel, 'Navigating with Kenneth McIntyre', *The Great Circle*, vol. 6, no. 2, 1984, pp. 135–9; William A.R. Richardson, *Was Australia Charted before 1606?*, Canberra, National Library of Australia, 2006.
- 3 Murray Johns, 'Facts, Speculation and Fibs in the "Mahogany Ship" Story: 1835–2010', *Victorian Historical Journal*, vol. 82, no. 1, 2011, pp. 59–85.
- 4 *Geelong Advertiser*, 14 August 1847.
- 5 La Trobe sent his 'memorandum' to Mollison in 1870. It was published in *The Australasian* in 1871 and was presented again at the Royal Society of Victoria by Rawlinson in 1874.
- 6 Jane Harrington, *An Archaeological and Historical Overview of Limeburning in Victoria*, Melbourne, Heritage Council of Victoria, Department of Infrastructure, 2000.
- 7 This is part of a plan, 'The Town of Geelong', by Garrard, Melbourne, 1865; see also Ian McKiggan, 'The Geelong Keys—In Defence of Mr La Trobe', in Bill Potter (ed.), *The Mahogany Ship, Relic or Legend?*, The Mahogany Ship Committee and Warrnambool Institute Press, 1987, pp.73–81.
- 8 La Trobe 'memorandum'.
- 9 La Trobe's sketch of Boucher's limekiln excavation, 1847, is in the archives of the Royal Historical Society of Victoria; also in L.J. Blake (ed.), *Letters of Charles Joseph La Trobe*, Victoriana Series no.1, Government of Victoria, 1975, p. 74.
- 10 Letter from La Trobe to Gunn, 23 September 1847, in Blake (ed.), pp. 24–6.
- 11 R.C. Gunn, 'Observations on the Flora of Geelong, Port Phillip', *Tasmanian Journal of Natural Sciences*, 1842, vol. 1, pp. 203–7.
- 12 Letter from La Trobe to Gunn, 7 April 1848, in Blake (ed.), pp. 30–1.
- 13 Letter from Gunn to Pirani, Secretary of the Royal Society of Victoria, 1875, Matheson Library, Monash University, PAM 994.JR261NGUN.L.
- 14 Letter from La Trobe to Mollison, 29 April 1870, in Blake (ed.), pp. 73–5.
- 15 Quoted by L.J. Blake, 'The Mystery of the Geelong Keys', *Investigator*, November 1970, p. 242.
- 16 Thomas Oldham and Thomas E. Rawlinson, *Treatise on Railway and Harbour Accommodation for Victoria*, Melbourne, Herald Office, 1855.
- 17 T. Rawlinson, 'Notes on the Discovery of Some Keys in the Shore Formation of Corio Bay, Near Geelong', *Transactions of the Royal Society of Victoria*, 1874, vol. 12, pp. 33–43.
- 18 McKiggan, pp.75-78.
- 19 Blake, 1970, pp. 238–43; L.J. Blake, 'The Mystery of the Keys', *Investigator*, June 1975, pp. 34–8.

- 20 La Trobe ‘memorandum’.
- 21 Gunn, letter to Pirani.
- 22 E.J. Dunn and D.J. Mahony, *Biographical Sketch of the Founders of the Geological Survey of Victoria*, Geological Survey of Victoria, 1910, Bulletin no. 23, p. 7.
- 23 D. Spencer-Jones, ‘Geology of the Geelong District’, in J. McAndrew and M.A.H. Marsden (eds), *Regional Guide to Victorian Geology*, 2nd edn, University of Melbourne, 1973, pp. 53–8; J.J. Jenkin, ‘Port Phillip Sunkland’, in J.G. Douglas and J.A. Ferguson (eds), *Geology of Victoria*, Geological Society of Australia, Special Publication no. 5, 1976, pp. 305–9.
- 24 Edmund D. Gill and Peter F.P. Alsop, ‘Radiocarbon Date for Geelong Keys’, *Investigator*, 1983, vol. 18, no. 3, pp. 95–100.
- 25 G.B. Pritchard, ‘Notes on the Freshwater Limestones of the Geelong District’, *The Geelong Naturalist*, 1895, vol. 4, no. 3, pp. 37–40.
- 26 P.G. Flood and E. Frankel, ‘Late Holocene Higher Sea Level Indicators from Eastern Australia’, *Marine Geology*, 1989, vol. 90, no. 3, pp. 193–6; Gill and Alsop, pp. 8–10.
- 27 Harrington, pp. 32–6.
- 28 La Trobe, ‘memorandum’.
- 29 Edmund D Gill, ‘On the McKiggan Theory of the Geelong Keys’, in Potter (ed.), pp. 83–6.
- 30 A.G.L. Shaw, *A History of the Port Phillip District*, Melbourne, The Miegunyah Press, 1996, p. 10. Shaw suggested that the keys had been dropped by Tuckey in 1803.
- 31 McIntyre, p. 252.