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## ARCHAEOLOGY IN NEW ZEALAND



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## **Velocipede Mania Hits Whanganui**

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### **Introduction**

For the last two years of the 1860s New Zealand, like the rest of the world, was gripped by an epidemic of ‘velocipede mania.’ This disease was characterised by an obsession for new two or three-wheeled vehicles which were powered solely by the feet. Excavations at the Victoria Retail Centre (VRC) site, Whanganui (R22/523), in 2010 unearthed a huge amount of archaeological material, including the rusted frame of such a machine. This paper follows on from a presentation given by the author (Woods 2014) and provides a brief introduction to velocipedes, describes in detail the VRC example, and then attempts to place it in an archaeological and historical context.

### **A Brief History of Bicycles**

While there were some machines which worked on similar principles as early as the mid-eighteenth century, the earliest recognisable ancestor of the modern bicycle was invented in France by Baron von Drais around 1816 and was patented in 1818 (Goddard 1869: 10). Known variously as the draisienne (after its inventor), hobby-horse or dandy-horse, this simple vehicle consisted of two wheels connected by a straight wooden bar which the rider straddled and pushed off along the ground with his feet. Several of the earliest examples had elaborate horse-head carvings at the front of the bar. The dandy-horse enjoyed a very brief period of popularity in France and New York especially, but was ridiculed by most and was largely forgotten, as a method of transport at least, by the start of the 1820s (Velox 1869: 41). However the world was not to be rid of Baron von Drais’ contraption entirely, as it made regular appearances in satirical representations of the French for years to come and to this day a smaller version is a popular children’s toy.

For forty years the idea of a bicycle was forgotten until in 1866 when another Frenchman, Monsieur Lallement, debuted a machine that on the surface resembled Baron von Drais’ dandy-horse but with an important addition. Attached directly to the slightly larger front wheel were pedals, or ‘cranks’ which allowed the rider to power the vehicle in a slightly more dignified manner than scurrying along the ground. Known as the velocipede (literally

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translating as ‘swift foot’), Lallement’s invention was initially, like the dandy-horse, viewed with disdain. For two years people watched with great scepticism as a few brave souls navigated the streets of Paris precariously atop velocipedes but then in 1868 something changed. No one is quite sure why, but in the northern hemisphere summer of that year Velocipede Mania began to spread around the world like an epidemic. Areas worst affected were metropolitan France and the east coast of the United States of America, but by the following year reports of outbreaks were reported across Britain and continental Europe and as far afield as Japan, China and even New Zealand (Goddard 1869: 26). This fever raged for two years before disappearing as quickly as it emerged.

Part of the problem with the velocipede was the fact that it was a very inefficient way of propelling yourself. Because the pedals were directly fastened to the front wheel meant that one revolution of the pedals only produced one revolution of the wheel, and the machine was consequently very slow. The development of the penny farthing (or the ordinary bicycle as it was more commonly known at the time) was one answer to this problem, as the larger front wheel meant that a single rotation would allow the bicycle to travel much farther than on a velocipede. But the rider still had to be constantly pedalling to keep the bicycle in motion, and the increasing size of the front wheel made it an ungainly device. The penny farthing never quite experienced the same level of hype as its predecessor, but instead enjoyed fairly steady popularity for most of the 1870s.

The introduction of gears was the next major innovation in the evolution of bicycles and would result in the form we are familiar with today. By around 1880 geared bicycles (or ‘safety’ bicycles) with two wheels of the same size, and with the drive to the rear wheel rather than the front wheel, had almost completely replaced the penny farthing.

### **French vs American**

There were two main types, or patterns, of velocipede of which it is helpful to describe. Both were almost always made of wrought iron and had wooden wheels, but the frame design and components had several key differences. The original patent taken out by M. Lallement came to be known as the French pattern (Figure 1). Its defining characteristics were a frame made up of multiple pieces and a braking mechanism which was operated by rapidly cranking or winding the handlebars which activated a series of levers and applied a pad to the back wheel. It also had a footrest above the front wheel to allow the feet to be kept free from the pedals when moving at speed.

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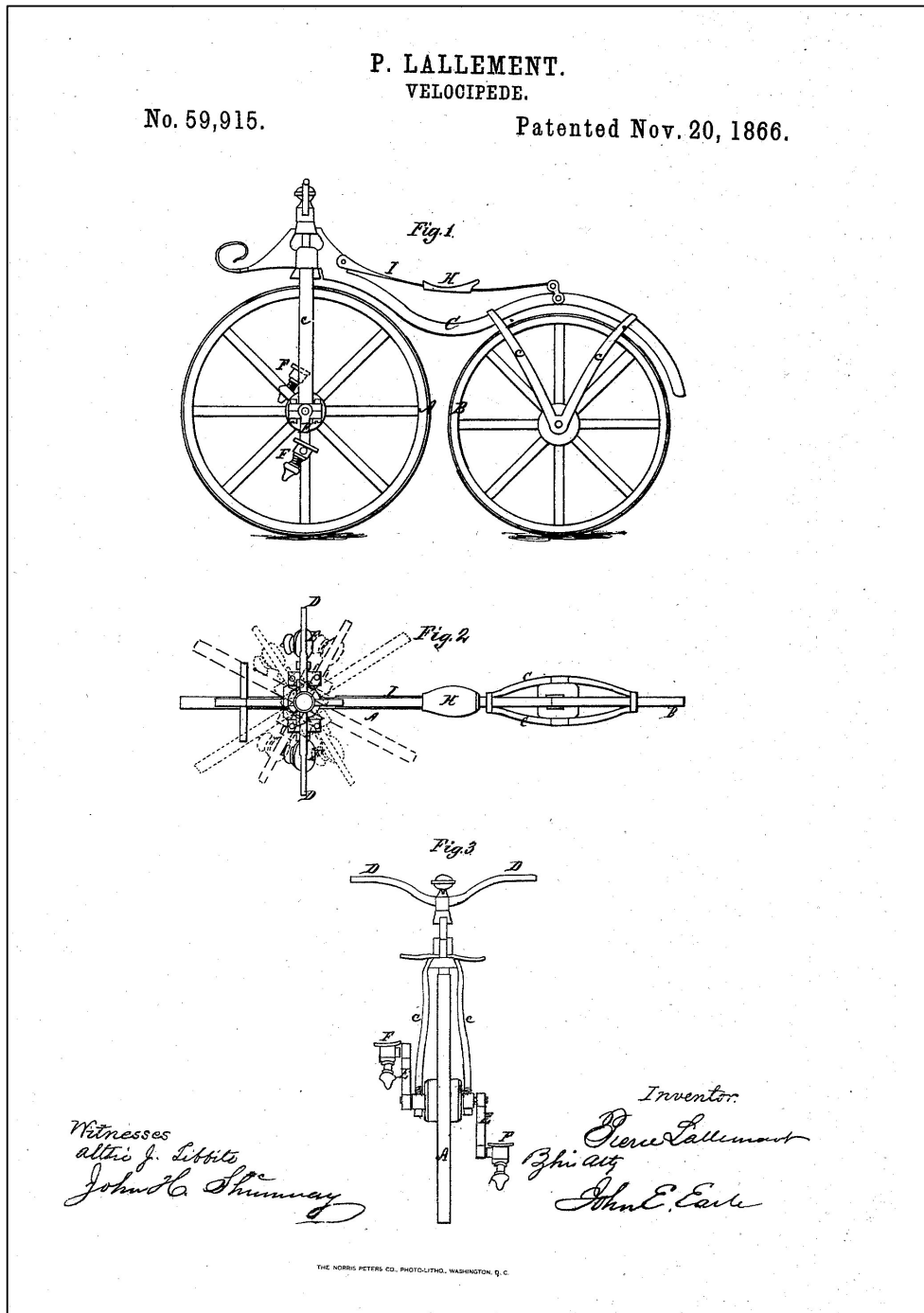


Figure 1. Lallement's 1866 patent for the original French velocipede ([www.google.com/patents/US59915](http://www.google.com/patents/US59915)).

The other most popular model was known as the American or Pickering's pattern, named after its creator (Figure 2), and was lauded as a simpler, lighter and more durable alternative to the French pattern. The frame was mostly one piece and the complicated braking mechanism was replaced by a set of springs and a brake pad attached to the underside of the seat which

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required the rider to do nothing more than lean back in order to slow down. Overall the lines of this pattern were much cleaner than the French version due mostly to the removal of the front footrest and multiple saddle supports. The price also compared favourably with M. Lallement's version, which almost certainly contributed to the popularity of this pattern.



*Figure 2. An engraving from Harper's Weekly (1868) showing the American velocipede.*

### **Velocipede Mania Comes to New Zealand**

New Zealand was not immune, and the Velocipede was innovative enough to warrant regular newspaper articles, which provide a means of tracing the mania. As early as 1868 (for example *Otago Daily Times* 7/1/1868, page 5; *West Coast Times* 16/10/1868, page 3) New Zealand newspapers were reporting on the spread of the velocipede craze through Europe and North America, but velocipede mania proper reached New Zealand in June 1869, with the first reported case striking Wellington (although there were reports of a velocipede being sold at auction in Dunedin in January (*Otago Daily Times* 28/1/1869, page 3)). Mr Fitchett was seen riding his home-made velocipede up and down Willis Street, much to the amusement of passers-by, many of which tried (and failed) to master the vehicle (*Wellington Independent* 19/6/1869, page 4). Once on our shores the fever took hold

quickly, and by the first of July ‘The French Velocipede Company’ were advertising in the *Wellington Independent* offering ‘velocipedes of every description for gentlemen, ladies and children’ made of ‘the best forged steel, with brake and best hickory wheels’ with a price range of £6-£14. While these particular bicycles would have been imported to order, many New Zealanders chose to follow in Mr Fitchett’s footsteps and build their own, some with the help of instruction manuals which were readily available (for example an 1869 volume by ‘Velox’ titled *Velocipedes: Bicycles & Tricycles: how to make them and how to use them*). Numerous locally made examples were reported within three months of the first’s appearance from Southland (*Otago Daily Times* 8/7/1869, page 2), Dunedin (*Otago Daily Times* 9/7/1869, page 2; *Wellington Independent* 17/8/1869, page 3), the West Coast (*Daily Southern Cross* 3/8/1869, page 4; *West Coast Times* 23/8/1869, page 2), Canterbury (*Press* 5/8/1869, page 2; *Star* 6/8/1869, page 2), Auckland (*Daily Southern Cross* 24/8/1869, page 4) and Oamaru (*North Otago Times* 27/8/1869, page 2).

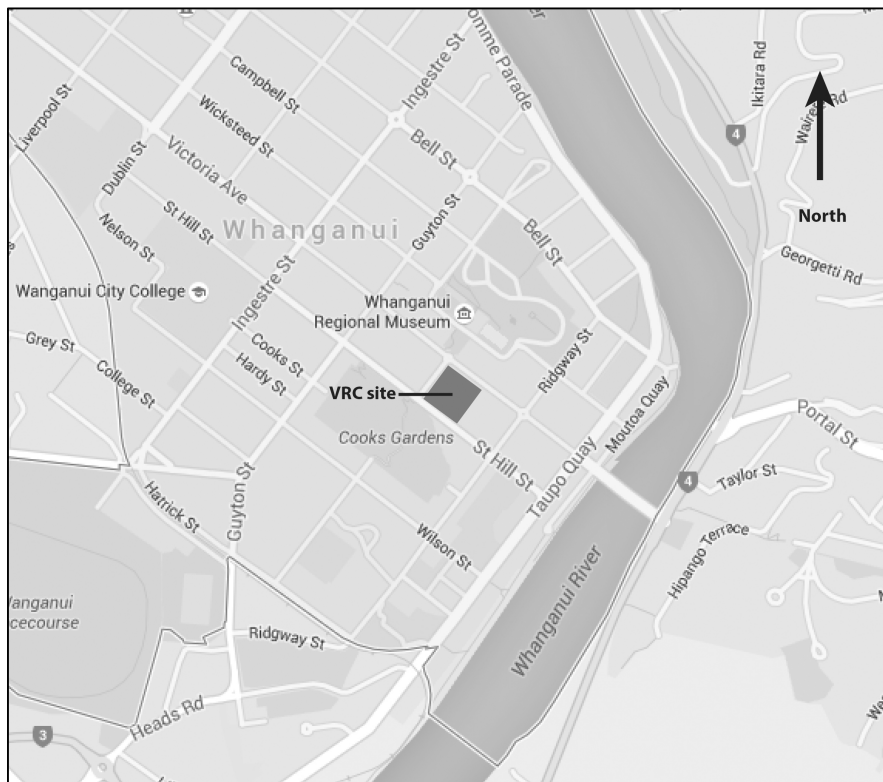
During this frenzy Whanganui saw the import of its first velocipede. On July 12<sup>th</sup> Mr W F Russell collected a three wheeled velocipede which attracted much public interest (*Wanganui Herald* 19/7/1869, page 2). Also by July several individuals had placed orders (*The Evening Herald* 20/7/1869, page 2) and Anderson Bros (a Whanganui undertaker firm) had a case of the machines on their way (*Wanganui Herald* 13/7/1869, page 2) which arrived in September (*Wanganui Herald* 22/9/1869, page 2).

This brings us to the discovery in 2010 of the almost complete velocipede in Whanganui.

### **The Victoria Retail Centre Site Excavations**

The Victoria Retail Centre site is located in central Whanganui in an area bordered by St Hill Street, Maria Place and Victoria Avenue (Figure 3), and is recorded as Archaeological site R22/523. Archaeological investigations under the direction of Mike Taylor and Archaeology North Ltd took place at this site in 2010 as part of a redevelopment project under Archaeological Authority No. 2010/121, and found extensive evidence of the historical occupation of the area from the mid nineteenth century to the present day. Over 2500kg of artefacts were recovered from more than 700 features across five areas, and much of this material is now being analysed by the author in the Otago University Archaeological Laboratories. This paper concentrates on one of those artefacts: the iron frame of a velocipede found discarded in a rubbish pit (Feature 23) in Area 1 (Figures 4 and 5).

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*Figure 3. Location of the VRC site, Whanganui (R22/523).*



*Figure 4. Plan of VRC excavation areas with approximate location of Feature 23 (original image taken from Taylor & Sutton 2009).*



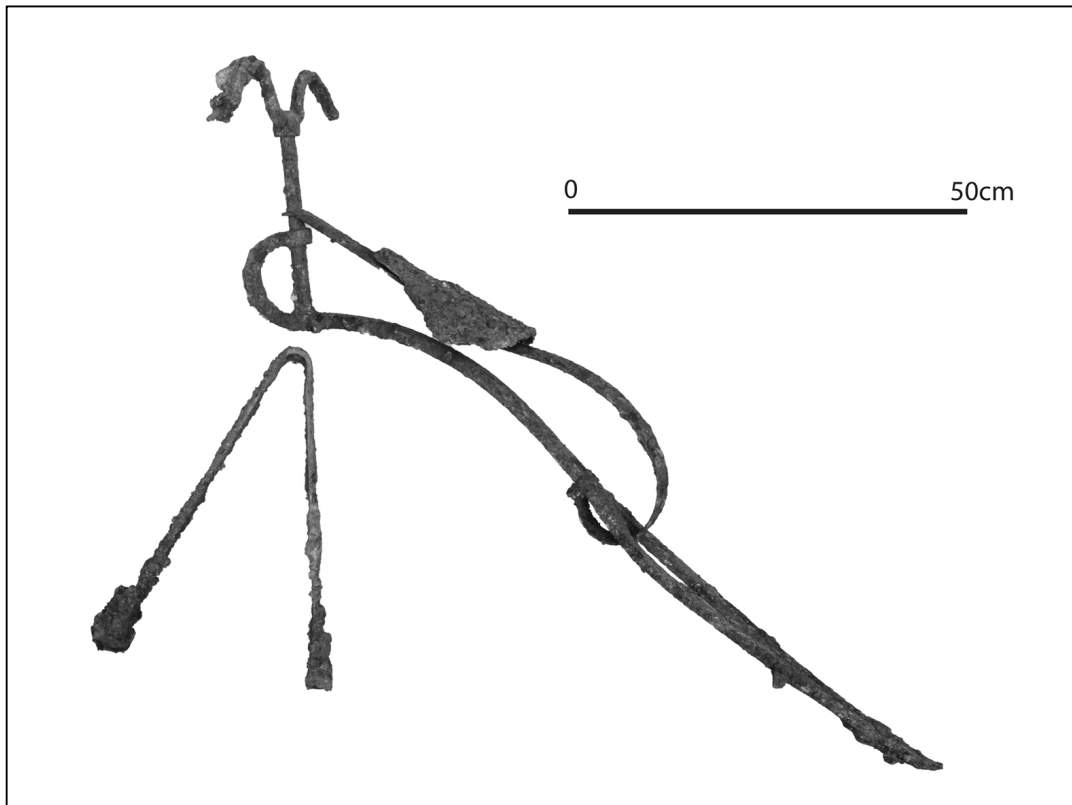
*Figure 5. Feature 23 being excavated. The front wheel fork of the velocipede is visible in the foreground (Photo: Sian Keith).*

### **The Whanganui Velocipede**

The velocipede frame was found without its wheels or pedals, but otherwise was remarkably complete (Figure 6). The frame was made of forged iron, and consisted of a single backbone that was forked at the rear end to accommodate the rear wheel, and curved back on itself at the front to mount the front forks. The backbone tapered from 3/4 inch (19mm) square at the front to 2/3 Inch (16mm) square immediately above the rear fork.

The forks were made from half-round iron, and were straight and vertically mounted. The steering stem simply passed through holes in the looped back frame, with no other bearings, and had fractured at the base of the bottom mount. The front wheel bearings consisted of cast iron housings bolted to the base of each fork leg. These bearing blocks were neatly made and fixed, and provide evidence that the velocipede was skilfully made (or was at least made using professionally manufactured parts). Nothing remained of the wheels.





*Figure 6. The complete velocipede frame.*

The handlebars were solid round section iron, and looped up to accommodate the rising and falling of the knees (a form more associated with Penny Farthings than velocipedes: this is considered further below). The saddle was a piece of shaped sheet iron bolted (with a wooden spacer) to a flat spring that was in turn mounted on the steering stem (above the top frame mount) and looped down through the rear forks and was attached to a bracket on the frame backbone.

Based on the frame measurements the VRC velocipede would have had a wheelbase of approximately 800mm (31.5 inches). The front wheel would have had a diameter of around 800mm (31.5 inches) and the rear wheel would have been slightly smaller at 700mm (27.5 inches). Given these dimensions, the standover height of the saddle would have been around 950mm (37.5 inches), although given the condition of the frame this is a rough estimate.

## **The Archaeological Context of the Velocipede: The Feature 23 Assemblage**

Feature 23 contained a variety of archaeological material including ceramics, metal and faunal remains. While the focus of this paper is on the velocipede, it is helpful to also provide a brief overview of the other material culture recovered in order to provide some context and a potential date range for the deposit as a whole.

A total of 83 ceramic sherds were recovered from the pit, representing a minimum number of vessels of 21. A complete Bone China saucer had 'COALPORT/A.D. 1750' underneath a crown printed on the reverse which is the mark used by the Coalport works from 1881 to 1891 (Macdonald-Taylor 1962: 199) and a Sylvan patterned tureen had a stamped registration number for the year 1884. Stamped registration diamonds or numbers in general refer to the year the vessel form rather than the pattern was registered (Kowalsky & Kowalsky 1999: 578). A European porcelain jug was marked 'MANUFACTURED IN GERMANY' and an undecorated semi-vitrified whiteware saucer with 'ENGLAND,' which places their manufacture post-1891 when the McKinley Tariff was brought into effect and required all export goods to bear their country of origin (Godden 1991: 11). Allowing some time for use of the ceramic vessels from Feature 23, a deposition date of around the turn of the twentieth century seems likely.

Four buttons were present: one white shell, three one-piece four-hole sew-through examples in wood, horn and pressed brass, and a Union Steam Ship Company brass uniform button embossed with a union jack flag. A different type of clothing fastener was represented by a brass knee buckle for securing breeches, along with the suspension ring, brooch and top bar of at least two medals. A copper alloy ladies ring with mounts for three stones (none of which are present) and a black celluloid comb hint at a female contribution to the assemblage, while children are represented by fragments of two dolls and a miniature porcelain saucer. The only other items recovered (other than the faunal remains which were not analysed) were a large iron skeleton key, a brass bullet casing and some scraps of strip iron.

### **Who Owned the Velocipede?**

The artefactual assemblage indicates a turn of the twentieth century deposition date, and can also provide some clues as to the owner of the velocipede. The most likely candidate is Walter Armstrong, a successful blacksmith, gunsmith, farrier, engineer and carriage builder, who occupied

this portion of the VRC site from 1888 to 1902, after which he retired and moved elsewhere (*Wanganui Chronicle* 12/2/1902, page 3). The Wanganui newspapers are full of references to his engineering and blacksmithing skills; he was a regular winner at local exhibitions and A and P shows for his work (for example *Wanganui Chronicle* 30/8/1877, page 2; *Wanganui Herald* 9/10/1884, page 2), and his own advertisements claim he was willing to make or repair ‘all kinds of machines’ (*Wanganui Herald* 26/10/1887, page 1). He was also an active member of the Wanganui Rifle Association and won numerous local and regional prizes for shooting (for example *Wanganui Herald* 28/2/1874, page 2). At least some of these prizes probably took the form of medals, and the top bar, brooch and suspension ring could have once attached ribbons to the medals and the clothing of the recipient. By the time Armstrong moved on from this site some of his shooting prizes would have been thirty years old, meaning they could easily have begun to degrade enough to have the ribbon portion discarded. The ring and comb could have belonged to Mrs Armstrong and they had a daughter who could have played with the dolls and tea sets in her childhood. The Union Steam Ship Company button could have been dropped by a member of the Company during a visit to Armstrong’s property as he was the local expert in construction and repairs for all types of engine.

A velocipede would have been of great interest to someone as obsessed with engineering as Armstrong appears to have been and he would have had easy access to the materials and tools required for its construction. As the machine was over 20 years out of date by the time Armstrong moved to this site, it is likely that if he did build the machine, it was constructed at an earlier residence. Alternatively, his interest in machinery may have led him to acquire an existing machine, which would already have been of some historical interest by the 1880s.

### **The Technological Context of the Velocipede**

The VRC velocipede is interesting for a number of reasons. On first glance it appears to be of the American pattern, but on closer inspection there are elements which are not quite right. First and foremost is the problem of the brakes, or, more accurately, the lack of them. This velocipede lacks either the French cranking mechanism and in the place of the American style combined saddle spring and brake pad is a simple saddle spring.

Another feature which does not fit with either of the established patterns is the presence of a small footrest, tacked on to the rear wheel fork. It is unlike the front footrest on the French pattern, but similarly positioned footrests can

be found on later penny farthings where their presence is a must for mounting the machine, but it is unclear just how useful it was on this velocipede.

In most contemporary models the handle bars are straight across, but the VRC velocipede has curved bars to allow for movement of the knees while propelling the vehicle. This feature is also common on penny farthings but appears less often on their predecessors. Instead the handlebars usually extended back towards the rider. The frame just under the handlebars on the VRC example seems to mimic the American pattern design which had a vertical U-bend, but in this case a vertical support is also present.

The only references to velocipedes in Whanganui newspapers relate to imported rather than locally manufactured examples but it is likely that local blacksmiths and engineering enthusiasts such as Walter Armstrong would have attempted to make their own. Such home made machines would have exhibited many small variations in design, just like the VRC example. As previously mentioned, however, most aspects of this velocipede do show signs of being professionally made, and without more information it is almost impossible to tell whether or not this is a homemade example or not. The small scale of the bicycle manufacturing industry at this time adds to the difficulty, as many velocipede manufacturers would have been operating out of their backyard or experimenting as an offshoot of their main business.

## **Conclusions**

Velocipedes perfectly characterise the Victorian period. People at this time were obsessed with being up to date with the latest fashions, whether in art, dress, science or engineering. An article from an August 1869 issue of the *Otago Daily Times* sums it up perfectly: ‘The velocipede chimes in exactly with the fast spirit of the age, and emanating as it does from the very stronghold of fastness, it has spread with all the rapidity of the newest fashion in dress.’ They provided a whole new way of transporting yourself, free from the reliance on horses with their often temperamental nature and high levels of maintenance.

The way they were talked about in the media, with words such as ‘mania,’ ‘outbreaks’ and ‘spread’ reflects the major changing ideas around disease and health that were occurring during this time. Louis Pasteur’s germ theory was gaining credence amongst scientists and the general public, shifting the blame for illnesses from harmful miasmas to micro-organisms spread from person to person (Porter 1997: 433). The velocipede was one of the first fads to

come along after this theory became commonly known and parallels between their spread and these new germs were quick to be drawn.

The speed of velocipede mania's spread also reflects the place New Zealand held within what by the 1860s was already very much a global society. With advances in communication and transport, New Zealand was no longer an isolated island nation at the bottom of the world but a participant and contributor to the Victorian world.

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