Bikes and Bloomers

Victorian Women Inventors and Their Extraordinary Cycle Wear

Kat Jungnickel
Most people who have followed the recent discussion of the dress question must have marveled at the rapid change in public opinion. It is only within the last few weeks that we have begun to realize that the time of our emancipation from a dangerous and incongruous riding skirt is at hand.

Of course, there will be a terrible outcry against it, and an attempt will be made to denounce it as immodest, but time will work wonders. Perhaps in time, even it will be understood that women should be judged by their lives and not by distinct dress.

All we can do now is persevere.

Ada Earland
Dress Reform For Women
Bicycling News, 1893
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Why does cycle wear matter?

Look closely at the range of cycle wear in a shop and you will likely see quite a lot of men’s wear and smaller ranges for ‘Women’ and ‘Kids’. It is similar online. Women’s clothes are often marked for ‘Ladies’, but there is very rarely a ‘Gentlemen’s’ category. These gendered categories of cycle wear also tend to differ in terms of colour palettes and technical quality.

Do an internet search for ‘cycling’ or skim read a cycling catalogue and note the kinds of bodies doing challenging or risky riding. Who is racing, doing BMX tricks or mountain bike jumps? The majority of the cyclists represented will most likely be male. There are of course notable exceptions to this. Over the last few years we have witnessed the growth of women specific brands and events that place women at the heart of their designs and communications. Yet, on the whole the cycle wear industry and how cycling is represented remains male dominated.

This imbalance continues through the discipline of professional cycling. While Olympic track events have reached gender parity – achieved in 2012 – other forms of cycle racing have not. The immensely popular Tour de France is for men only. Women are present on stage as presentation hostesses, more commonly known as podium girls, who pose in press photos with male winners. At the time of writing, the biggest international road race for elite women, the Giro Rosa which has been running since 1988, was still not been covered by an English language broadcaster. And the cycling’s worldwide governing body, the UCI (Union Cycliste Internationale), currently only legislates minimum wage for professional male cyclists.

One area that women continue to lead in relation to cycling is street harassment. Ask a group of women if they have experienced unwelcome responses on the road. It is likely they will recount harrowing stories of verbal abuse and even physical assault. 101Wankers (a map of sweary male car drivers), Hollaback (a non-profit movement about public harassment) and the Near Miss Project (a study into non-injurious cycling incidents) are just few projects that document anti-social behaviour towards mobile women1.

Why is this the case? Given there are more women cycling today than ever before, why is women’s cycling so beleaguered by these issues? Where do the perceptions come from that women are not good at or not interested in cycling or that viewers would not want to watch them compete? Why aren’t more women represented doing dirty, sweaty or risky cycling? Why do they suffer such abuse on the road?

My interest in these questions had been around for a while but emerged more distinctly when I was a postdoctoral research fellow working on Dr Rachel Aldred’s ‘Cycling Cultures’ research at the University of East London. The project involved ethnographic methods, visual analysis and semi-structured interviews in four relatively high-cycling urban areas: Hull, Hackney, Bristol and Cambridge. We wanted to find out why cycling thrives in particular places. It was an idyllic job for a cycling academic. I was tasked with hanging out, talking and riding with lots of UK cyclists for two years.
Cycle wear was not a primary focus, yet I became intrigued when many respondents, and particularly women, repeatedly talked about what they wore and the reactions their clothing catalysed from others. Looking like a ‘proper cyclist’ in some cases helped them carve out legitimate space on the road. At other times it resulted in unwelcome abuse. Wearing ordinary clothes, such as skirts, might be suitable for the destination but did not always work well on the bike. Many also lamented the limited range of cycle wear available to them, which meant they often had to buy and adapt men’s wear or hack non-cycle wear to fit. What women wore to ride played a significant role not only in actually doing the cycling, but also in how they saw themselves and in how they were seen as cyclists.

Cycle wear, it seems, mattered.

It turns out that it has always mattered.

I began to explore these critical contemporary concerns by journeying back over a century ago to the 1890s and the advent of popular cycling and the emergence of cycle wear in Britain. I started to ask: What were some of the problems early women cyclists faced in late nineteenth century? How did they respond? What did they wear? What might we learn about cycling today?

Victorians enthusiastically took to the bicycle. Yet, women cyclists quickly discovered that not only was society initially largely inhospitable to this new form of feminine mobility but their garments were vastly unsuitable. Appropriate cycle wear did not exist. They had to make it themselves. As many cyclists know, there are abundant studies about the history of the bicycle and its technical trajectory over the last century. We know a lot about what we have ridden over the years. We know much less about what we have worn.

While the activities of Dress Reformists are well known in this period, it turns out they were not the only Victorians responding to these challenges and agitating for change. There were many others protesting against restrictive ideas of how newly mobile women should act and move in public through their clothing. Women interpreted and creatively enacted a variety of strategies for dealing with the irrationality of conventional feminine fashion. The bicycle in late nineteenth century Britain is often celebrated as a vehicle of women's liberation. Yet, much less is known about another critical instrument that enabled women to forge new mobile public lives – cycle wear.

This book focuses on lesser-known stories about Victorian engineering, early wearable technology, hacker culture and radical feminist cultures of invention. More specifically, it is about cycle wear inventors and their contributions to cycling’s past. Contemporary cyclists may well find many of the concerns that plagued early women cyclists in the 1890s familiar – skirts that blew in the wind and caught in pedals and wheels, tailored pieces that restricted breathing, inappropriate cuts and fabrics for active lifestyles and on top of that, a hostile public who jeered and catcalled them as they cycled by. This is a book about how inventors before us dealt with these challenges.
This project started with a personal curiosity about cycle wear and, as is often the case when you study something you love, transformed into fully-fledged, life-absorbing, interdisciplinary archival and practice research project. The following chapters are underpinned by over four years of in-depth qualitative research in Goldsmiths’ Sociology Department, initially funded by an Economic and Social Research Council Knowledge Exchange grant with support from Intel Corporation. Part of the appeal of the research for me lay in the nature of the journey. There were many unexpected twists and turns to my planned route. In the process of doing archival research I stumbled across patents lodged by Victorians, many of them women, for radical new forms of cycle wear, such as convertible costumes. These designs specifically responded to the dual “dress problem” faced by newly mobile women – how to cycle safely and comfortably and evade looking too much like a cyclist, so to minimise the social hostility from those who disproved of newly mobile women. These costumes cleverly enabled wearers to convert their reputable and respectable urban wear into more comfortable and safe cycle wear, and back again when required. To do this they feature a range of strategies for getting fabric out of the way of the wheels and pedals such as weighted pulleys, gathering straps and complex button systems built into the infrastructure of skirts. Convertible cycle wear represents a remarkable form of Victorian engineering, and much of which was designed by and for women.

Unable to locate existing material examples of these extra-ordinary British inventions, I set about to (re)make a collection of them, taking inspiration from the step-by-step descriptions in the patents. In doing so I gained a glimpse into what early cyclists were dealing with and how they creatively responded to social and material challenges to their freedom of movement. This method affords a different kind of sense making and mobile material encounter, rather than relying solely on written accounts, and goes some way to ‘reveal dimensions of political and social transformations that cannot be discerned in observed social behaviour or verbal and written articulations’. Paying close attention to the materiality of process, and with it the mess, mistakes, and tangential happenings, brings to light new and different ways of exploring mobile bodies, gender relations, and inventive practice at the turn of last century. In previous work I have termed this ‘making things to make sense of things’.

As a result, this book presents a mixed-methods story of cycling, sewing and suffrage. It combines archival materials, patent studies and cycle wear designs with genealogical stories about inventors, their influences and lives pieced together with an ethnography of making a collection of convertible cycle wear. Sewing patterns inspired by this research are also available. Perhaps some of the inventors’ insightful technical and material responses will once again find home in contemporary cyclist wardrobes.


Chapter 1
“One wants nerves of iron” Cycling in Victorian Britain

Minnie says “Oxford is the most begotted place in the world, and the meeting is likely to raise a great protest in the papers which will deter followers”. It certainly cannot be worse to ride in Oxford than in London, especially London suburbs. It’s awful – one wants nerves of iron. The shouts and yells of the children deafen one, the women shriek with laughter or groan and hiss and all sorts of remarks are shouted at one, occasionally some not fit for publication. One needs to be very brave to stand all that. It makes one feel mad and ones ideas of humanity at large sink to a very low standard. When one gets out into the country there is little trouble beyond an occasional shout, but it takes some time to get away from these miles of suburban dwellings.

Letter from Kitty J. Buckman to Uriah, August 23, 1897

Kitty loved cycling but given the fact that it took “nerves of iron”, it clearly wasn’t always a relaxing or indeed safe past time in late nineteenth century Britain. This is an excerpt from one of many letters she and her cycling companions – Minnie, Jane, Uriah and Maude – wrote to each other about their experiences. In 1897 Kitty was 23 years old, and the younger sister of Sydney Savory Buckman, also known as S. S. Buckman, the Treasurer and Secretary of the English Rational Dress League. Kitty and her friends were keen cyclists and, fortunately for us over a hundred years later, ardent letter writers. Every missive describes recent or planned rides in and around Dorking, Hammersmith, Rickmansworth, Cirencester, Chippenham and Shrewton amongst other southern English towns. We learn much about what these women loved about cycling in the 1890s. They tell lively stories of the weather, length and landscape of journeys, state of the roads, cost and quality of meals and accommodation, details of companions, mechanical issues, and increasing skills and fitness. Yet, as evoked in this aging cursive scribe, they also convey how cycling was often fraught with verbal and sometimes even physical assault. Why was this? Why did some women get treated in this way? What were Kitty and her friends doing and wearing that elicited such social violence? And how did they respond

At the turn of the century, new mobility technologies like the bicycle were seen as quintessential symbols of modernity and imaginings of the future. The radical shifts they promised for independent mobility and social networking were eagerly embraced; especially by women. Yet, some bodies initially fitted better with this technology than others – some had to be made to fit. Clothing is a critical means through which different bodies were made to fit with new ideas about being in and moving through public space. This is a story about how women’s clothed bodies didn’t initially fit well with the bicycle and how they made through material means, hacking, re-imagining and performing new mobile futures. This book is set in a small historical window of 1890 to 1900. It was a time of radical social, cultural and technological change. The intersection of which comprises a vivid and dynamic backdrop to the story of the advent of cycle wear.
A cycling craze swept through Victorian society in the 1890s. Although the bicycle had been around since the early nineteenth century, it was the ‘Safety Bicycle’ (diamond and step-through framed bikes we still use today) that took the nation by storm. Prices were dropping, the invention of pneumatic tyres made for a more pleasurable ride and velocipedes were being actively marketed at women. People of all ages took to cycling and evangelized its benefits. In 1895 Frances Willard of the Women’s Christian Temperance Unit learnt to ride a bike ‘Gladys’ at the age of 53 and wrote *A Wheel Within a Wheel* to encourage others. ‘I always felt a strong attraction toward the bicycle, because it is the vehicle of some much harmless pleasure. […] Nor could I see a reason in the world why a woman should not ride the silent steed so swift and blithesome’¹. However, even within this popular wave, it was still considerably easier for middle and upper class men to embrace this new modern means of moving. Socially accepted ideas about masculine mobility and period clothing conventions meant that male bodies fitted much easier with bicycle technology. Women’s dress, combined with the highly defined gendered norms that shaped their engagement with technology and public space were much more complicated.

Up until the mid 1800s, clothing was expensive and tailor-made, handed down or remade and repurposed. It was a precious commodity. According to Diana Crane in *Fashion and its Social Agenda*: ‘Until the Industrial Revolution and the appearance of machine-made clothing, clothes were generally included among a person’s most valuable possessions’². To have a garment specially made for sport or physical activity was unthinkable for anyone apart from the aristocracy. It required not only disposable income, but also the leisure time to enjoy it. Most people’s wardrobes were limited and shaped according to vocation, class, gender, religion and place of birth. As a result, what you wore in public revealed a great deal about your life and firmly located you in the social spectrum. But the latter part of the century brought with it opportunities to make, buy and wear new kinds of clothing, and with it the chance to shift and press against conventional boundaries.

Although patented in 1851, the Singer Sewing Machine’s popularity boomed in the 1890s, dominating the world market³, and vastly reducing the time it took to construct garments. Sewing patterns were becoming more widely distributed and targeted to specific consumers, such as Butterick’s *New Styles for Bicycling*⁴. New machined materials, such as wool, jersey and silk, were also becoming widely available and were swiftly adopted by cyclists for their beneficial properties in active wear. Added to this were fresh ideas about the possibilities of other kinds of mobility cultures and clothing. The Great Exhibition of 1851 in Crystal Palace had generated an appetite for inventive ideas and unusual goods, as had people with ideas from new worlds in their travels into Europe and beyond on ‘Grand Tours’. The circulation of news and images about social events at home was also accelerating with the growth of mass media in the form of newspapers and popular periodicals.

The late nineteenth century was also a time of dress reform for both sexes. The Dress Reform Movement had been around since 1830s, but it gained renewed drive in the UK in the 1890s in line with the growing popularity of sports and active lifestyles, particularly for women.
Broadly, supporters sought to free Victorian women from the restrictions of conventional fashion, in the form of tightly laced corsets, layers of up to seven pounds of heavy petticoats and floor length skirts. The *Rational Dress Society*, led by Lady Florence Harberton, was one such organization under this banner that campaigned in various ways for *rational* dress over *irrational* fashion. Dress reformers believed that ordinary fashions were not only uncomfortable for everyday wear and any kind of physical activity, but also dangerous to health; they became waterlogged in rain, dragged in the dirt and caught on things. Newspapers regularly reported nasty incidents caused by skirts, such as a women catching alight or being dragged along the road after being snagged on a carriage. The *Rational Dress Gazette* voiced concern with these gendered disadvantages: ‘Do we ever hear of a man being caught by his dress, or that his clothing catches fire? When will women awake to the dangers of skirts?’ On a more mundane level, with one hand managing a wayward skirt women often needed assistance to enter and exit carriages, carry goods and care for children. As such, women’s fashions, and skirts in particular, were seen to inhibit personal, social and political freedoms. The Dress Reform Movement gained traction in the latter part of the century due to increased interest in active lifestyles. The *Rational Dress League*, formed in 1898, promoted the ‘wearing by women of some form of bifurcated garment, especially for active purposes as cycling, tennis, golf and other athletic exercises’. With a core aim of ‘utility’, Rational Dress comprised a range of styles but was ostensibly recognised as a looser corset (or no corset at all), a shortened skirt (or no skirt) and a bifurcated garment such as bloomer or knickerbocker.

Like Kitty, many Victorian women enthusiastically took to cycling. However, cycling highlighted the problems of ‘ordinary’ fashion more than any other sport or activity. It was not only uncomfortable. Tightly fitted garments restricted breathing and excess fabric could catch in pedals and wheels. Yet, it was not necessarily safer to dress in more ‘rational’ attire, as Kitty’s letters attest. Kitty and her friends were strong supporters of Rational Dress. Her brother, Sydney Savory Buckman, was the secretary of the Rational Dress Movement and confidante of Lady Harberton. Their letters provide insights for contemporary readers into what it must have been like to cycle in public in some form of rational dress such as bloomers and without skirts. Although she persisted, and developed “nerves of iron” along the way, Kitty empathized with others who might not be so brave. “I don't wonder now in the least so many women having given up the R. D. [Rational Dress] Costume and returned to skirts”. However, wearing skirts to cycle did not necessarily remove the potential of negative experiences. In a letter to the editor of *The Daily Mail*, Two Wheelwomen write: ‘It is not only ladies who wear the rational costume who are hooted and abused in ordinary everyday dress, yet we never go out without receiving a fair amount of this so-called chaff… and occasionally we have had caps, etc, thrown at us’.

The fact that cycling took place in public gained much needed exposure for the Dress Reform Movement but also greatly divided reactions. Even within the movement, there were some that wondered if ‘how far dress reform will be of benefit to cycling’ and if cycling was a ‘mere playful handmaiden to dress reform’. Some parts of society felt threatened by this highly visual symbol of women carving out new modes of freedom in public space. Although
emancipists had been agitating for women’s rights throughout the century, the 1890s brought with it significant moves across a spectrum of social, political and economic spheres, which women marching for the rights to education, work, equal pay and representation with the vote. Women’s rights activists wanted to expand women’s freedom of movement, physically, economically, culturally, socially and materially, with many arguing that women’s bodies needed to be freed from the constrictive costumes as much as they needed freeing from social restraints.

Fig. Some of the popular Victorian periodicals that regularly covered happenings in the cycling world – The Lady Cyclist, The Hub, The Queen, Bicycling News, Cycle Touring Club (CTC) Gazette, The Rational Dress Gazette
Mater Familias: *Shirts are all very well perhaps, when one's hands are free to hold them.*

Fig. An illustration of some of practical problems of women’s clothing - in the rain, carrying goods and looking after children, *The Rational Dress Gazette*, 1899

Fig. ‘Visiting Gown’, an example of high-class fashion, *The Queen*, 1896
Fig. An ‘ordinary’ dressed cyclist is ‘An item of interest’ for lots of men in the street, *Bicycling News*, 1893

Fig. A ‘rationally’ dressed cyclist passes through town with ‘Dignity’ in the face of ‘Impudence’ from local men, *The Lady Cyclist*, 1896
While a plethora of rational dress variations existed, taken up by women’s sporting advocates in many forms, it was cycle-oriented garments that became visual shorthand for the ‘New Woman’ with her ‘independent spirit and her athletic zeal’\textsuperscript{14}. The New Woman’s desire for progress was deeply unsettling to some as it was seen to jeopardize many of the taken for granted assumptions underpinning the home, relationships and masculine power. In her research into the history of sporting women, Jennifer Hargreaves writes about direct links between cycling, clothing and women’s emancipation: ‘Suffrage, dress reform and liberty’ – these were the most common demands of British and American feminists, and the evidence suggests that the invention and subsequent popularity, from 1885, of the safety bicycle advanced the cause of female dress reform\textsuperscript{15}. What women wore on the streets to cycle swiftly became representative of a rider’s politics, even if she was not aligned to emancipist ideologies. Therefore to be recognisable in cycle wear of any kind in public required a great deal of courage to deal with responses ranging from gratuitous attention to verbal and physical abuse.

A cycling costume in the 1890s was also a luxury that required a substantial investment of money, labour, time and courage. Not only did women have to work up the nerve to convince those nearest to them of the value of the idea, they had to source an appropriate costume. Before the wide availability of ready-to-wear clothing, this involved much independent research; women had to assemble ideas, designs or patterns, then make or adapt existing garments themselves or commission a sympathetic dressmaker or tailor – and not all were willing to support the idea of this newly mobile woman. To make such a garment could be interpreted as supporting a subversive political act. As Sarah Gordon writes: ‘With notions of gender so deeply embedded in clothing, changes in styles portended changes in the social structure’\textsuperscript{16}. On top of this, the ontological nature of the cycling costume was unstable. How should it look? What should it do? There was no one answer.

Everyone had an opinion on women’s cycling. Countless supporters and detractors of dress reform made a heady mix. Even within the Dress Reform Movement, the Rational Dress League, women’s rights and associated emancipation groups and emerging cycling clubs, there was little consensus. What constituted acceptable cycle wear for women was a hotly debated topic. So, entrenched were the rules of what women should wear in Victorian society at large, that the ensuing ambiguity around cycle wear provided little guidance for early adopters. Pressure was placed on each cyclist to make a garment that not only fit and worked well on and off the bike but also embodied feminine charm while defusing all manner of social criticisms. As Lady B warns in a regular \textit{Lady Cyclist} column ‘Why Lady Cyclists Should Always Dress Well’: 

The day of feminine cycling is yet young, wherefore it behoves all those in whose hands the moulding of popular prejudice and opinion is left to do their utmost to disarm the too ready criticisms of their self-appointed mentors… But, in the matter of dress, much is still left to be desired\textsuperscript{17}.
Why is clothing interesting? Clothing is a ubiquitous, mundane and essential feature of everyday life. We all need and wear clothes. It is central to how we protect ourselves from the elements. It is also how we perform, organise and make sense of society, each other and ourselves. Clothing reflects and produces social change. It is political, cultural and (still in many ways stubbornly) gendered. As Barbara Burman and Carole Turbin have argued: ‘Clothing is one of the most consistently gendered aspects of material and visual culture’\(^{18}\). It is made and shaped in particular places and it also places people. You only have to wear the wrong thing to feel its exclusionary power and vice versa. For centuries, according to Diana Crane, it has also operated as a ‘form of social control’\(^{19}\). It provides valuable insights into ‘how people in different eras have perceived their positions in social structures and negotiated status boundaries’\(^{20}\). Yet, despite all of this, the study of clothing is often marginalised and overlooked. Patricia Campbell Warner counters the argument that the study of clothing is trivial by reminding us that it is precisely because ‘[c]lothing can be a headache, a source of anxiety or self-consciousness, a cause of despair, a reason for envy, a focus for contention, a wrap of anonymity’\(^{21}\) that we need to study it. In some ways clothing and fashion are understudied because they have historically been the purview of women who, in the absence of being able to own property or live independent lives, have creatively and imaginatively used clothing for the purposes of self-expression and identity, claiming power or declaring allegiances. Yet, in the context of the histories of technology, inventive clothing practices by women and for women have not generated the attention they deserve.

So, how do we know about their clothing inventions? It turns out that Victorian inventors not only imagined, designed, made and wore radical new forms of cycle wear but they also patented their cutting-edge ideas. They recognized the value of their ideas, described them in detail, worked with an illustrator to visually represent them, and in most cases with a patent agent registered their design in the British patent system. The Victorians were keen inventors and the 1890s was a time of immense creative experimentation across many disciplines; from mundane artefacts such as toilet paper to devices of mass industrialization, like electricity. It is well known that the bicycle proved to be an exciting catalyst for Victorian patenting. What is less known, is how the bicycle also motivated people, and particularly women, to invent and patent radical new forms of cycle wear.

Why study patents? First person historical accounts about women by women are rare. Women were rarely storytellers and their contributions to society are often ‘hidden from history’\(^{22}\). The study of patents serves as a powerful tool to counter invisibility, because they provide an invaluable ‘continuous source of information’\(^{23}\). Patenting, as I hope to convey, is not at all dry or boring. These historical artefacts provide rich detailed accounts by inventors of the problems they sought to fix and step-by-step instructions for their proposed solutions. Patents get us closer to the experience of women cyclists than most other sources because we can hear their voices, see the breadth of their skills in the composition of the design and choreography of materials at play. We gain glimpses of where they were living and a sense of their daily lives. Their descriptions and images reveal norms about how women’s bodies were seen, known and expected to move. We also see into their imagined futures, how they saw themselves and others moving in and through public space in new ways. Patents provide
clear evidence of women actively driving change. They were not passively waiting for the situation to change. Rather, by making and declaring their designs in public they became important actors in the process of legitimizing women’s cycle wear as valid inventions and in doing so also set out to claim a place for women in business. Alongside physically protesting in the streets, the act of patenting can be seen as a tactic for political change.

As a sociologist, I approach clothing patents from a Feminist Science and Technology Studies perspective, which means I think about clothing as a technology or device of mobility. I am interested in how clothing mediates between bodies and society and technology; the way it categorises and organises people; who gets to move and gain access to particular places and resources; and how it shapes interactions and relationships. Cycle wear enables (and inhibits) bodies in particular ways and both shapes, and is shaped by, ideas around public space and citizenship. Much like the bicycle, cycle wear is also a technology of emancipation. It is a direct interface between the body, other technologies and society. In this book I consider cycle wear as a critical means through which different bodies are made to ‘fit’, both physically and ideologically, with new ideas about being in and moving through public space. While middle and upper class men, for the most part, were able to more easily adapt their clothing to this new form of mobility, the case was not the same for women. As a result, women’s cycle wear affords physical as well as socio-political dimensions. Women, like Kitty and her friends, used their specifically clothed cycling bodies to carve out new ways for women to be in and move at speed in public. Yet, as we can see, it was not without friction. Early women cyclists found that their bodies clothed in conventional costumes shaped by period feminine conventions didn’t fit so easily with new mobility technology. They had to be made to fit. Clothing was a powerful way that they set about to do this.

Cycling opened up for many new worlds of social, physical and cultural freedoms of movement. While women had been riding horses for a long time, this was often away from urban centres and intense social scrutiny. The custom to ride sidesaddle in long concealing habits that covered a woman’s legs did not directly challenge the establishment. Amongst other issues, the fact that cycling demanded legs move independently provided a new and distinct design challenge to women’s clothing. Although men were also inventing women’s cycle wear at this time, my focus is on women because it is clear that solving the “dress problem” in relation to the bicycle was so mobilising that cycle wear inventions became a primary vehicle for women’s entry into the patenting world. The sheer volume of their inventive capabilities in the mid 1890s rendered them statistically relevant for the first time in UK Comptroller’s Annual Patent Reports, marking out new territory in what had previously been a wholly masculine domain.

Despite this, these stories are not well known. The resulting garments are not on show in museums or galleries. We are not familiar with inventors’ names. There are many reasons for this related to how women’s inventions related to the domestic sphere have not historically been recognized as valuable, the unappreciated nature of fashion and clothing studies and how sewing has long been unwaged, unrecognized and undertaken away from the public gaze. This book is underpinned by the desire to remember and reclaim an important part of British women’s cycling history. It is written from a Feminist Science and Technology
Studies perspective, which means that I aim to give voice to and put bodies and characters back into these costumes and stories. As a result, I have attempted to write the following stories, as much as I can, from the perspective of the women themselves. The reality of writing from multi-dimensional artefacts - patents, costumes, archived periodicals, genealogical records, personal correspondence - is to recognize multiple and partial accounts, to acknowledge gaps and overlaps, and resist the desire to tidy up and erase ambiguity. My navigation through these multi-dimensional pieces involves stitching some parts together while unpicking others. It is a deliberately messy intervention in the smooth narrative of technological history that has concealed them till now. This method of sense making also proved difficult to know when to stop. Much like a treasure hunt, shiny things kept appearing, layering and building thicker and richer stories, even while I was writing them together that gave me pause to re-work and re-configure the narratives. Critically, what the nature of these dynamic historical materials remind us is that we can never capture or fully know the entire story and that there were many stories yet to tell. This is just the start.

This approach shapes how I give voice to my subjects. Readers will note that I use inventors’ first names when writing about and with their inventions. This is a deliberate political provocation and world-making claim. In a patriarchal society, women’s last names are not their own. Historical documents render all too visible the dominance of men through time; and even when women feature, they are blind to the lineage of matriarchal kinship. To continue this practice serves to reproduce this erasure. Instead the book follows in the footsteps of nineteenth century French seamstresses who, as Maria Tamboukou notes, ‘signed their articles with their first names only, as a mode of rebellion against the name of the father or the husband that was imposed on them’.

Structurally, the book tells tales of cycling, sewing and suffrage in three parts. I begin by exploring the nature and shaping of the Victorian era on women’s freedom of movement in order to identify what these women were facing which motivated many to engage materially with the bicycle’s “dress problem”. I outline a number of strategies they used to forge new ways of being in and moving through public space with their differently clothed bodies and introduce changes to the patenting system that enabled women to make and claim their inventions in public. This section ends with an overview of the breadth of inventive outputs of the last decade of the nineteenth century. The second part focuses on the least known category of invention of the period - convertible cycle wear. The chapters following are led by the biographies of five inventors. There were more but an initial choice had to be made. These designs were not all conventionally successful in terms of standard economic registers. Yet they each attempt to make change in a distinctive way. I start with the inventor’s patent and analyse archival and genealogical materials, in order to explore the influences and capacities of the invention and inventor. I then draw on them to animate a specific theme emerging in the research – collaboration, experimentation, activism, early technological adoption and circulation of knowledge. Each chapter ends with ethnographic insights garnered from sewing and wearing the garments, following the detailed instructions outlined in the patent. The book concludes with attempts to answer the starting question – Why do stories about cycle wear still matter?
With this book I aim to make a small contribution to the history of British cycling with fascinating lesser-known tales of some of first wheelwomen as ingenious inventors and hackers. These women pushed at the parameters of established forms of mobile gendered citizenship and forged new paths into social, political and economic worlds that helped to shape the urban landscape for today’s generation of cycling women. While this is a critical account that draws from multiple sources and is located within a sociological framework, my writing is clearly imbued with respect and admiration for these women’s creative responses and radical imaginings. Learning about past lives invites us to reflect on our own. Perhaps we too can channel “nerves of iron” that arise from contending with social mistreatment into some small yet vivid interventions and play a role in making life better for future generations. Clare Hemmings has written about how she ‘always loved feminist theory for its utopianism’ and ‘dogged optimism that allows its practitioners to understand and experience life differently’25. I also write in this spirit, in the hope that these women’s stories might become a catalyst to re-write our own.

1 Willard, Frances (1895) A Wheel Within a Wheel: How I learned to ride the bicycle, with some reflections along the way, New York: Flemming H. Revell Company, p.13


5 See: The Yorkshire Herald (as cited in The Rational Dress Gazette) (1899) ‘A Skirt Responsible for “Serious Injuries”, No.9, June, p.86 and The Lady’s Own Magazine. (1898) p.23 which recounts a tale of ‘a lighted match thrown from the top of an omnibus, fell beneath the clothing of a lady who was standing on the pavement’ which resulted in her garments erupting in ‘a mass of flames’, In: The Buckman Papers, of Sydney and Maude Buckman relating to the Rational Dress Movement and Cycling for Women, Accessed at The Hull History Centre. Ref: U DX113.

6 The Rational Dress Gazette (ibid)


8 Daily Press. (1899) Pathos of Chaff, 16 Sept.

9 CTC Monthly Gazette (1894) The Ladies’ Page, Feb, p.62

10 The Rational Dress Gazette, Organ of the Rational Dress League (1899) A Weather Forecast, Illustration, No. 6, Feb, p. 1

11 The Queen, The Lady’s Newspaper (1896) No. 4. Visiting Gown, 11 Jan, p.73

12 Bicycling News (1893) An item of interest, 25 March p.189

13 The Lady Cyclist (1896) Dignity and Impudence, 29 Aug, p.456


16 Gordon, Sarah (2001:27)

17 The Lady Cyclist. (1898) March, p.30


19 Crane, Diana. (200:5)

20 Crane, Diana. (200:1)


Chapter 2
From the Victorian Lady to the Lady Cyclist

‘Fortunately,’ he said, demonstrating the ideological underpinnings of many doctors arguments, ‘most women are engaged in house-keeping duties, and except for the want of open air, housework is probably the healthiest occupation a woman can have’¹

Patricia Vertinsky
The Eternally Wounded Woman: Women, Doctors, and Exercise in the Late Nineteenth Century

To understand the many challenges facing early women cyclists, and what motivated them to materially respond, it is important to locate them in the framework of Victorian life and the many shifts taking place at the turn of last century. Ideas around citizenship and freedom of movement have always been closely aligned with power and gender. In Victorian society, women’s mobility was physically and ideologically shaped by social codes and behavioural norms and closely linked to their clothing.

Up until the mid nineteenth century, the moral responsibility of reproduction, the bearing and caring of children, defined middle and upper class women’s lives. Strict gender divisions and the ‘principle of division of labor was here brought to bear: men produced, women reproduced’². For this class of women, this role was deeply rooted in one particular place – the home. It was an inward looking domestic role, distinctly different to that of the public life of men. According to Robinson’s The Art of Governing a Wife (1747) women were ‘to lay up and save; look to the house; talk to few; take of all within’, while men were encouraged ‘to get; to go abroad and get his living; deal with other men; to manage all things without doors’³. Men were about being out in the world, while women’s worlds were very much inside which led to the idea that housework was more than ample exercise for them.

Movement for most middle and upper class women beyond the boundaries of the home was not only difficult in these socio-material confines but also further inhibited by the pathologising of their health. A common belief in early Victorian times held that woman had only a limited supply of energy and that she should conserve it to protect her reproductive potential. Many experts believed that exercise in particular was unnecessary for middle and upper class women, and even potentially detrimental to their ability to reproduce; an opinion reinforced by the medical link between a woman’s brain and her womb. The accepted notion of women as the ‘weaker sex’, came in part from the idea that they were disabled by their reproductive organs. Patricia Vertinksy has deeply researched the origins of this long-standing belief in her book The Eternally Wounded Woman. She writes: ‘Since a woman’s chief function was motherhood, the laws of nature demanded that not only should a bountiful energy supply be reserved for reproductive demands, but that more energy still should be earmarked to compensate for the monthly menstrual drain’⁴. Earmarked energy in this context was so broadly defined that it included the efforts of women who challenged social
and gendered norms by reading too much, wanting an education, not wanting to marry or otherwise demanding more freedoms and forms of mobility than those allocated to her gender and class.

It was a difficult position to challenge. Becoming agitated as a result of feeling dissatisfied by this arrangement could result in a diagnosis of hysteria, which was convenient catch-all label for troublesome women, and often came with terrible consequences. Elaine Showalter’s *The Female Malady* tells harrowing tales of women whose desire for independence often found them labeled and punished. Her vivid account about ‘women, madness and English culture from 1830’ explores in detail the threats to social order catalyzed by women’s desire to break free from repressive patriarchal society and in many cases, the horrific ramifications of their actions: ‘During an era when patriarchal culture felt itself to be under attack by its rebelling daughters, one obvious defense was to label women campaigning for access to the universities, the professionals, and the vote as mentally disturbed, and of all the nervous disorders of the fin de siècle, hysteria was the most strongly identified with the feminist movement’.

Hysteria was a diagnosis that could catalyse a spectrum of traumatic treatments from the ‘rest cure’ to admission to an asylum. The former entailed being kept in bed and isolated from stimuli until the woman calmed down and became more resolved to her life course. Charlotte Perkins Gilman was an American utopian feminist renown for her novels, fiction and non-fiction, and social reform activities. In 1892 she wrote what is now a famous short story *The Yellow Wallpaper*, which presents an account of the rest cure being administered to a woman by her medical husband after she was diagnosed with an unnamed nervous disorder. Contemporary readers have recognized her symptoms as postpartum depression. Rather than providing support or care, her husband shuts her away from family, friends and the outside world. The story ends with the protagonist slowly descending into psychosis, as illustrated by her obsession with her room’s yellow wallpaper. Although it is a fictional account, Charlotte was prescribed this treatment and the story draws upon her personal experience. Virginia Woolf also wrote about her experience of a version of the rest cure. She was not bedridden but was sent to stay with an aunt in the country, of which she was less than happy. ‘I have never spent such a wretched 8 months in my life’. Gilman’s doctor Silas Weir Mitchell, who was also happened to be the rest cure’s inventor, illustrates the extent of this immobilizing treatment:

> In carrying out my general plan of treatment in extreme cases it is my habit to ask the patient to remain in bed from six weeks to two months. At first, and in some cases for four or five weeks, I do not permit the patient to sit up, or to sew or write or read, or to use the hands in any active way except to clean the teeth. In some instances I have not permitted the patient to turn over without aid. [...] In all cases of weakness, treated by rest, I insist on the patient being fed by the nurse.

Although it was prescribed for many reasons, from anorexia nervosa to hysteria, it was administered to more women than men and could be used as a means of breaking the will of
outspoken, overly emotional or independent individuals. Some have called the cure ‘sadistic, controlling and intrusive’8. The extremity of the rest cure provides contemporary readers with a sense of the dangers posed by women who did not conform to social and gendered norms. The fact that immensely influential women, such as those listed above, were prescribed this treatment points to the kinds of feminine behaviours frowned upon at the time. As Elaine Showalter so clearly articulates, the ‘hungry look’ in the faces of patients ‘was a craving for more than food’. These women ‘were ravenous for a fuller life than their society offered them, famished for the freedom to act and to make real choices’.9

What catalyzed such fear? Today we think about gender as something that is constructed and performed on a daily basis and not as something you are born with. The Victorian’s believed gender was biologically inherited and the ‘primacy of the reproductive organs in women was used to support the notion that a woman's major responsibility was to propagate the race’10. Therefore, if a person appeared to be abandoning their ‘natural’ gender, they were also abandoning their nurturing role in the family unit and with it the very essence of procreation. ‘The dominant point of view’, writes Diana Crane in Fashion and Its Social Agendas, ‘allowed for no ambiguity about sexual identification and no possibility for evolution or change in the prescribed behaviours and attitudes of each gender’11. Together, these labels and cures and the rise of the Victorian madwoman in late nineteenth century tell us much about social anxieties of the time and why the idea of mobile women threatened to unsettle the very fabric of society.

Clothing of the time produced and reinforced many accepted beliefs. It signaled respectability, decency and class: where a person was located in society. For middle and upper class women, fashions comprised up to seven pounds of heavy skirts and layers of petticoats, binding corsets, tailored jackets, fitted blouses and veils. Together these restrictions on the Victorian lady’s body communicated clear class markers and also produced the perception, if not the reality in some cases, of a largely immobile citizen, considered incapable of much physical or indeed mental, economic or political movement. She was ‘bound by the code of behavior as tight as the stays she was compelled to wear’12. Combined with apparent medical weaknesses, and legal and economic marginalization women faced a plethora of barriers to the public sphere. It became ‘one of history’s self-fulfilling prophecies’, writes Elaine Showalter. Social attitudes and treatments were ‘used as a reason to keep women out of the professions, to deny them political rights, and to keep them under male control in the family and the state’13.

Women’s desire for new kinds of mobile freedom also usurped the foundations of respectable masculinity. In Victorian society, immobile women, or ladies of leisure, were viewed as the pinnacle of the feminine ideal and symbol of masculine achievement. To be free of work was indicative of higher class. To do nothing and to waste time was indicative of economic ability. To have to work was considered degrading not only for the woman but for her husband as well. He was not accomplished enough if he failed to support his dependents. As Lee Holcombe writes in Victorian Ladies at Work, the term ‘working ladies’ had degrading connotations at a time when ‘leisured, or idle, wives and daughters had become expensive
status symbols for successful middle-class men\textsuperscript{14}. Restrictive clothing, with tightly laced corsets, made it physically difficult if not impossible to do mundane domestic activities such as cleaning or even walking any distance. In this way her immobility alluded to the wealth and status of the household – servants undertook these mundane tasks for their mistress. Diana Crane argues that the ‘restrictive conception of women’s roles’ was ‘reflected in the ornamental and impractical nature of fashionable clothing styles’ and ‘contributed to the maintenance of women in dependent, subservient roles’\textsuperscript{15}.

There were of course notable exceptions at both ends of the class spectrum. Lower class women’s ability to undertake hard physical labour was indicative of the potential of robust female capacity. Yet, their mobility in all other social and cultural contexts was differently curtailed. While there are many examples of working women who embraced practical garments related to their employment, as Diana Crane notes, the public spaces where they ‘violated Victorian norms for clothing behavior… were frequently “invisible” to the middle classes, permitting these women to wear trousers and other items of masculine clothing’\textsuperscript{16}. There were also higher-class women and members of the aristocracy who were able to shake off some of the stultifying restrictions of home when they took grand tours. Continental grand tours offered a welcome relief to the confinements of English society. Mary Berry, writing to her friend Gertie Greathead in 1798 proclaimed: ‘Most thoroughly, do I begin to feel the want of that shake of our English ways, English whims, and English prejudices, which nothing but leaving England gives one’.\textsuperscript{17} However, even these women who enjoyed more masculine freedoms of movement and had opportunities to create alternative gender narratives in the form of travel writing were still encumbered by clothing restrictions, which were harder to shake. Tim Cresswell has written about how new geographic and social freedoms were not always translated in clothing ‘as women were forced to take ‘home’ with them as they moved’\textsuperscript{18}. The Victorian Lady might well have escaped the confines of society at home but she was unable to fully escape these feminine ideals abroad, as the respectability they imbued provided the means through which she was awarded these freedoms.

The ‘New Woman’ and changing social fabric

By the late nineteenth century, however, things were changing. The suffrage movement was gaining traction agitating for women’s freedom of movement out of the home and into education, business and politics. Some agitated for women’s emancipation from patriarchal control on all fronts. Others took a less radical approach. They claimed that educating women, and granting them admission to the workforce and healthy outdoor sports actually prepared them better for marriage, to run complex households and produce healthy children, so ‘far from subverting homes, and family life, would actually improve them’\textsuperscript{19}. There was also a change brewing in the medical profession. Doctors who had previously vigorously denounced women’s physical activity started to cautiously encourage it. Irrespective of political platforms and leanings, opinion makers and medical practitioners were becoming united on a shared desire for women to lead more active lives and clothing played a pivotal role.
Masses of middle and upper class Victorian women eagerly embraced these new active opportunities by taking up swimming, golf, fencing, gymnastics, tennis and athletics as well as cycling. The sheer delight of finally being able to move freely was difficult to contain for some women. *The Hub* exclaimed: ‘Many women seem to have gone daft over wheeling’.20

Humorous accounts of women going missing from their domestic, wifely and daughterly duties started to appear in periodicals:

> A gentleman recently bought his wife and two daughters a bicycle apiece. It was not very long before he had occasion to regret his generosity. Returning home late one night he was annoyed to find the house deserted, Mary Jane out and no supper prepared21.

Active lifestyles demanded new active clothing and with it, as Sarah Gordon writes, an opportunity ‘to produce a new conception of what it meant to be feminine’.22 Women’s clothing became a site for negotiation around what was possible, with many imagining and experimenting with new ways of being in and moving through public space. However, the fact that cycling was done in urban streets and parks meant that it garnered much more attention that other sports such as swimming, where new radically (un)clothed female bodies could be at least be partially concealed from the critical social gaze, in water within the bounds of the pool or segregated seaside swimming area. Claire Parker writes about how ‘the water always hid the effort of female swimmers and spectators rarely got close enough to see a swimmer in any discomfort’ so there was no visible ‘sweat, bulging muscles or signs of distress’. This tactical concealment led to swimming becoming accepted as a ‘uniquely appropriate feminine sport’.23 Interestingly, British women’s style of swimwear was considered more relaxed than their American sisters, which, as Patricia Campbell Warner explains, had much to do with ‘the English segregation of men and women at the seaside until the end of the century’.24

Although public debate around the importance of exercise for women was gathering momentum, medical professionals were quick to remind women of their weakness and limitations. Articles in popular cycling periodical, such as *The Hub*, and commonly written by male doctors, propagated the notion that too much exercise would directly lead to injuries to women’s health. Columns titled ‘Should women cycle? A medical view of the question’ warned women that they ‘must remember that they belong to a sex which for centuries has not been accustomed to prolonged exercise in the open air and therefore must act with that discretion and caution which would often be quite unnecessary on a mans part’.25 Others spoke of more ambiguous threats to a woman’s health: ‘Every woman who rides a wheel should understand that she can do so in moderation only, and if she attempts more she will pay for it dearly. The penalties may not be inflicted this year or next, but they are bound to come’.26 The idea that women had a limited pool of energy that should not be wasted was an enduring trope used to regulate how and in what ways women could move in public space. Yet around these articles espousing moderation arose an enthusiasm for cycling and with it, a dynamic new consumer culture.
The Construction of the Lady Cyclist

Women were fervent participants in the cycling craze that swept the nation in the late nineteenth century. The aristocracy started to cycle, which legitimized it as a respectable activity, and emboldened even timid cyclists to take to the streets and parks. Editors and columnists as well as advertisements presented visual representations and stories about how women could claim a new mobile presence at home and abroad. Further to tales of adventures was a plethora of instruction and advice about dress styles, underclothing, shoes, veils, hats, hairpins, gloves as well as skin and hair care. Brands, tailors and companies plied their wares to women and new products emerged or were specifically shaped to this new market. Many promoted products that purported to solve many problems that women did not even realise they had. So motivating were these market forces that many existing products took on a cycling shape. Even new hairstyle fashions were not immune to the cycling craze. An advertisement for ‘The Pneumatic Tube Coil’ hairstyle was promoted as the ‘latest novelty’ for newly mobile women. Inspired by the invention of pneumatic inner tubes, these hair wrapped coils had the effect of making hair look fuller and did not get ‘ruffled or out of order’. The ‘clip on cycling fringe’ was similarly marketed to newly mobile women.

Examples like this show how compelling new intersections of bodies, technology and freedoms of movement must have been at the time. Even if you were not a cyclist, items like this mean you could still consume cycling. Victorians were literally embodying modernity. Together, these materials advocated a powerful new technological imaginary of and for mobile women.

The lady cyclist was a popular subject for discussion and debate in the media through the 1890s. Cartoons, articles, fiction, and poems on the topic guaranteed a readership, especially in satirical publications. Fears of impropriety of a sexual nature were not far from these early cycling discussions. Sitting astride a saddle with legs moving independently on the pedals raised concerned about the moral purity of the ‘weaker sex’. Jennifer Hargreaves writes about how cycling was seen by some as ‘an indolent and indecent practice that could even transport girls to prostitution’. The link between a woman’s brain and her delicate reproductive system remained persistent. Historian Shelia Hanlon has argued that the ‘lady cyclists portrayed in these comic images tend to fall into two categories: the naive butterfly rider unsteady on her machine and the manly scorcher with her bold mannerisms and bifurcate costume’. However, Marilyn Constanzo in her study of *Punch* magazine argues that representations were not always trivialising and degrading to sportswomen. Skilled women were sometimes shown engaging in serious sports, which ‘suggests that women challenged the dominant ideology simply by participating in sport and leisure activities alongside men’.

24
Fig. Ad for the ‘Latest Novelty’ Pneumatic Tube Coil, *The Queen*"^{10}\)

Fig. A rationally dressed women is called a ‘Forward Girl’, *The Cigarette*, 1899"^{11}
The Lady Cyclist was one of a slew of popular cycling periodicals that emerged at this time. Launched in 1896, although edited by man, Charles P. Sisley, it featured many contributions from women, and provided much encouragement for women to cycle. Charles was supportive of the ‘New Woman’ arguing that ‘women who are striving in various parts of the world to secure equal rights in political and governmental affairs for themselves, or their fellow-women should welcome the bicycle as one of the influences which will help them succeed in their efforts’. He also regularly responded directly to cycling’s critics. ‘The well meaning but mistaken people who argue on the bad influences of the bicycle for feminine riders, on account of the “hard work and consequent intense fatigue”, are simply ignorant of the subject on which they are so fond of airing their opinions.’ The magazine featured an enormous array of information to satisfy the cycling craze, from how to learn to cycle and what to ride, how to sit and not to slump, to where one should cycle, for how long and how fast. It covered the popular cycling shows in great detail and featured the newest design developments as well as how to fix puncture, adjust handlebars, clean and grease parts and the best tools to carry. Writers discussed what ‘Lady Cyclists’ should and should not do in regular columns entitled ‘Why a Lady Cyclist Should Always Dress Well’, ‘Cycling Fashions’ and ‘Mainly About Skirts’. There were helpful illustrations of ‘The Ideal Lady Cyclist’ and columns about ‘The Lady Cyclist at Home’ as well as ‘Which Are The Most Graceful Riders?’ These pages, and many like it, set the etiquette for cycling and regulated it with many textual and visual examples.

Middle and upper class women were encouraged to take up this new leisurely activity provided appropriate gendered decorum was maintained. She should, for example, try to avoid becoming ‘a woman who allows herself to be seen hot and red with exertion’ as it was through this condition that she ‘loses much of her feminine dignity’. Fashion played a pivotal role in the drive to imbue women’s cycling with respectability. A regular column in The Hub called ‘What Wheel-Women Should Wear’ reminded women about how ‘[t]he grace of a lady cyclist’s movements on her machine are in a large measure dependable on the manner in which she is clad, for it should be remember that what is very dainty and pretty for ordinary walking exercise is decidedly out of place on a bike’. On the whole, women were discouraged from showing effort or strain. Instead, emphasis was placed on being ‘graceful’, ‘neat’, ‘sensible’, ‘becoming’, ‘charming’, ‘dignified’ and ‘modest’. It was deemed imperative that women appear feminine, and exhibit the desirable immobile characteristics of conventional upper class femininity, even while mobile. As the editor of The Lady’s Own Magazine declared, there is no ‘lady scorcher’, for ladies never scorch:

An exceedingly fast pace on a wheel ridden by a hump-backed caricature of the New Woman is a picture perfectly devoid of dignity and grace. There are, of course, times when exceptional pace is demanded, but this may be accomplished without assuming the ridiculous bend of the scorcher. A sensational gait or posture is always scrupulously avoided by the wheelwoman who would appear dignified and modest when awheel.
Of course, what was written in the popular press and how women experienced everyday life were not always the same. But, what we can read into these various examples is the shift of conventional feminine values from the largely immobile body to the mobile one. Women were required to behave like a lady even while cycling. Why did this happen? Why were social regulations that were limiting and curtailing middle and upper class women’s lives being transferred onto women cyclists? Scholars have argued that this was in fact a deliberate tactic to encourage women’s cycling. This seemingly counter-intuitive strategy operated by assigning conventional respectability of middle and upper class society onto women’s cycling. Imbuing cycling with these identifiable ‘ladylike’ characteristics was a way of making cycling a decent and socially accepted activity. Claire Simpson explains the contradiction at play: ‘In order to convince their critics that, despite riding the bicycle, they were still feminine, some middle-class female cyclists tried to reconcile the ideology of the New Woman with conventional beliefs about femininity to create an alternative, yet still respectable, identity’.

This alternative identity fused familiar conventional gendered elements with new progressive ones, but stopped short of embracing all of the ‘New Woman’ ideals of equal freedom of movement.

The editor of Bicycling News and Tricycling Gazette illustrates this tactic in action, by taking pains to point out that a woman could be a cyclist and not a threat to society: ‘[T]he lady who is a cyclist gives up none of her femininity, she is none the less to be domestically useful, she is not a “woman’s rights” phenomenon’. This pervasive attitude helps to explains why many otherwise pro-cycling columnists voiced such vociferous opinions against women’s racing. For them, racing was an extreme departure from feminine ideals. ‘The Ladies Page’ in Bicycling News lamented: ‘Those of us who remember how the same thing affected feminine cycling some years ago, and how long it took us to recover ground then lost, will feel that it is to the interest of all who have the real good of cycling at heart, to do all in our power towards discountenancing what has been, and is, so prejudicial to the pastime’.

Fundamentally, what is central to these arguments is the influence and significance of being recognised as a Victorian ‘lady’. Cecil Willett Cunnington’s English Women’s Clothing of Nineteenth Century provides insight into the nature of the shifting yet pervasive significance of this label. He writes: ‘[T]he term ‘lady’ became progressively more and more generous in its embrace, so ultimately it denoted not only an inheritance but an acquired status, even including some who earned their living. But always it implied a special attitude of mind, of which correct conduct was the outward expression. This was largely symbolised by her costume’. Fundamentally, appropriate costume was critical. Provided a woman dressed like a lady, there was some flexibility through which she could press against and attempt to re-configure deeply entrenched social norms and codes.

The physical reality of ladylike cycling

Illustrations and studio portraits in popular periodicals reinforced the idea that ‘ladylike’ effortless cycling in conventional fashion was possible. These cycling women appear elegant,
modest, charming and feminine. Their multi-layered fashionable costumes fit well with this new mobility technology. Skirts and hats remain in place, hair is unruffled and faces unblemished. These women cut a gentle silhouette with their corseted waists and tailored coats. They are in control of their machines and, for those in the studio, their upright postures cut dashing figures in front of painted parkland scenes. These representations exemplified the ideal lady cyclist; a fusion of respectable Victorian femininity and new progressive principles.

The reality however was considerably different. Wearing ordinary Victorian fashions on a mechanical object that moved at speed in varying environmental conditions sits in striking contrast to that of a staged studio portrait. Victorian streets were narrow and winding, paved with stone cobbles, wooden blocks or packed dirt, which turned to mud with inclement weather. They were crammed with horses and carts, omnibuses, new horseless carriages, darting pedestrians and stray dogs, and scattered with horse manure and rubbish. Cycling was a tricky pursuit. It was even more hazardous in ‘ordinary’ dress. Even with skirt guards, short nose saddles and step-through frames, petticoats caught in chain rings, flew into spokes and wound around pedals. Skirts could fly up and obscure the cyclist’s view when coasting down hills. Newspapers regularly noted with gruesome detail accounts of women dying or becoming disfigured in bicycle crashes, with specific reference to their clothing.

Fig. Representations of lady cyclists achieving ‘grace’, ‘modesty and ‘charm’ on the bike.
The following account of an accident was given us by an eye-witness – “I was in Landsdown (Cheltenham) one evening last week, and two young ladies were riding side by side, It was very windy, and the skirt of one blew into the wheel of the other, where it got caught. They both turned somersaults. When they were picked up, their skirts were very nearly taken off them – well, I found it necessary to look the other way” — Daily Mail, 11 April 1897.

Sir – I see in your columns a doubt expressed as to cycle accidents due to dress. We have had a terrible one in these parts, which can clearly be traced to the skirt. I allude to the death of Miss Carr, near Colwith Force. The evidence of her friend who rode just behind her, says that “Miss Carr began the descent with her feet n the rests, but finding the hill become much steeper, she strove to regain her pedals and failed”. I think she failed because she could not see the pedals, as the flapping skirt hid them from her view, and she had to fumble for them. Could she have taken but a momentary glance at their position, she would have had a good chance to save her life. The poor girl lingered a week, Yours Truly (Miss) E. Whittaker - Daily Press, 20 Sept 189742.

The Daily Mail for Wednesday, January 11th, contains a report of the death of Mrs. Annie Metcalf, which occurred at the Leeds Infirmary as the result of a cycling accident. The deceased lost control of her machine while descending a hill, and was thrown to the ground. Her dress becoming entangled in the pedals, the unfortunately lady sustained injuries which proved fatal – The Rational Dress Gazette, Aug 189943.

This discourse reinforced the idea of women as weak and technologically incompetent. They were lacking in confidence and skills. They were not good cyclists, despite the fact that many of their crashes were caused by their clothing. S. S. Buckman, Kitty’s brother and the secretary and treasurer of the English Rational Dress Society was a regular contributor to The Lady’s Own Newspaper writing under the pseudonym ‘A Wheeler’ in a column ‘Wayside Jottings’. He often put forward a different opinion, arguing that ‘[t]his mishap are the experience of everyone riding in skirts’. Instead he offered an alternative reading of these grim stories. ‘[T]hat more serious accidents do not occur often is… only due to the fact that those who ride in skirts are so handicapped with weight of machine and wind resistance that they cannot, and do not, ride at any pace’44. It could also have been the case that women were more skilled and careful riders as a result of having to adapt to these material impairments.

The social dangers of cycle wear

Although many cyclists were aware of the dangers of wearing ordinary dress on a moving bicycle, the choice to wear more appropriate cycling attire was not necessarily safer. Women felt the impact of this radical image not only in vigorous media debates, but also personally on the streets in everyday life. Why was the bifurcated garment, in particularly, so provocative? Women had been adapting masculine clothing in other sports, such as horse riding with its tailored jacket, silk hat and cravat, and even Queen Victoria had worn a version of a men’s military jacket and cap in the early eighteenth century. Diana Crane
argues that the trouser catalyzed such ferocity because it was ‘associated trousers with male authority’\textsuperscript{45}. Knickerbockers and bloomers might have kept skirts out of the wheels and women safer from cycling incidents but it exposed them to new dangers in the form of verbal and physical abuse on a daily basis. Women’s cycling companions were sometimes shocked at how the public treated them:

> What females who adopt the semi-masculine costume have really to put up with I had no idea till the other night, when as I was walking home, I was passed by two girls who were thus attired, and they were being assailed by such a torrent of foul and obscene language… I am sure that no man, however much he might be in favour of the “new woman attire”, would ever submit any female for whom he had the slightest regard to the change of such a disgusting attack\textsuperscript{46}.

The \textit{Rational Dress League} regularly voiced concerns about the unacceptable nature of abuse that women were facing in public was shaping their clothing decisions.

> We are told by The West End that the crux of the matter, i.e., the wearing, or not wearing of rational dress, depends not on what women wish to wear but upon what the cab drivers, the omnibus conductors, the corner loafers and the street boys \textit{will permit them to do}. But this is perfectly monstrous\textsuperscript{47}.

The hostile attitude of road users towards women cyclists became so present that it was raised in a Cycle Touring Club (CTC)\textsuperscript{48} meeting in 1898.

> A new and important point is the decision to take legal action against drivers who willfully endanger the lives of “rational” cyclists and against any persons using insulting or obscene language at rational dress wearers. This is in a field in which, it is though, much may be done to shoe the loafer and the street-urchin that they have not more right to use foul language to a lady in knickerbockers than to a lady in a skirt\textsuperscript{49}.

The threat of a woman in rational dress arose from the perception that they were transgressing not only into masculine wardrobes but also into masculine spaces. As the Editor of \textit{The Daily Telegraph} noted: ‘What with women voters, and women bicyclists in men’s attire, old fashioned doctrines of women’s place seem to be under going a process of rapid development’\textsuperscript{50}. Cycling unchaperoned and being outdoors at new times, such as the evening, was viewed by some as interfering with women’s ‘natural role’ at home caring for others. There were fears of cycling leading to even more bad behavior. A writer in the \textit{Lady’s Own Newspaper} mocks a claim made in other media that the ‘middle class is smoking as unconstrainedly as the aristocracy, and the working woman is fast following’ and that ‘the bicycle is responsible for much, as with wheel parties has arisen a freedom of manner unknown in the presence of chaperones’\textsuperscript{51}. This moral and gender instability confused people as to where an otherwise respectable woman could be located on the social spectrum, and some struggled with how to treat them. Media opinion, as Clare Simpson has argued, seemed
to flip between dichotomous positions of women cyclists as either ‘respectable or disreputable’ and in doing so tried to ‘make tidy an untidy situation’.52

Fig. ‘A little puff’, The Sketch 189653

Fig. A rationally dressed lady cyclist is mistaken for a man, CTC Monthly Gazette 189954

MATER – Flo, dear, did Mr Softop propose to you last night after the club run?
FLO – Yes, he proposed we should adjourn for drinks
He’s a little short sighted and mistook me for brother Bob
Mater – Well, I’m not surprised,

Bicycling News and Sport and Play 1895

Even as the end of the century loomed, Victorian society no closer to reaching consensus on an appropriate cycle garment for women. Rational dress remained deeply divisive. In 1893 the editor of The Ladies Page in Bicycling News provided this advice to a fledging new cyclist: ‘An ordinary walking skirt is by far the best for all-round wear, since it looks well in the saddle, and out of it, and it does not stamp “cyclist: upon its wearer”’. For those who persevered the social stigma could be harsh, especially when men in powerful positions took matters into their own hands. An article in Bicycling News under the heading ‘Dress Reform in Peril’ tells of the Prefect of Police’s personal distaste of rational dress. He apparently was so concerned that he ‘put in force a law against women masquerading in male attire’ and which had already ‘been served upon several women cyclists, more as reminder that they must abandon the practice than with any intention of further proceeding against them’. While not actually legal, and a clear abuse of power, his aim was clear: to prevent the increasing uptake of rational dress before it took hold. A similar stance was still being taken five years later. In 1898, Richard Cook of the White Horse Inn, Dorking, announced he would not allow women cyclists attired in rationals enter his establishment. It was an attitude supported by P. Maurice in a ‘Letter to the Editor’ in The Daily Mail:

To the proprietor of the White Horse Hotel, Dorking, earns the thanks of all lady cyclists for the plucky stand he has taken. We now know where we can take our sisters and other people’s sisters without fear of being sickened by the sight of these “middle-sex” women, who are neither true ladies nor true gentlemen. Three cheers for him.

To people like P. Maurice, rationally attired women were viewed as ‘sexless’, having given up their gendered rights, as a result of seemingly having rejected the home, the domestic sphere and associated wifely or daughterly duties. These women then lost social respect. The infamous incident of Lady Harberton being denied entry to the coffee room in the Hautboy Inn, Surrey, came not long after this. This altercation was on account of her wearing rational dress, and it drew even more media coverage, public opinion and a court case. In a society fiercely defined by gendered roles and responsibility, these were vicious attacks because they had deeply unsettling and upsetting social ramifications.

Another illustrative example of the extent that cycling and cycle wear was considered threatening to society came in response to a proposal put before Cambridge University’s Senate to grant full equal degrees to female graduates. Male students responded with a protest that featured an effigy not just of a female student but a woman on a bicycle dressed in rational attire. The dramatic hanging of this effigy represented the furious disdain to women’s multiple claims to public space – education, cycling and unchaperoned independence. As reported in The Cheltenham Examiner on June 2, 1897: ‘The effigy of a lady clad in
bloomers upon a bicycle was suspended opposite the Senate House, causing much laughter’. The female cyclist was apparently clad in ‘blue trousers, pink bodice, large goggles, boating shoes, yellow and mauve striped stockings, and an old college cap’. The violence continued in the aftermath of the protest when the news revealed that the resolution did not pass. Shelia Hanlon writes about how ‘the triumphant mob tore down the effigy’ and ‘savagely attacked the mannequin, decapitating and tearing it to pieces in a frenzy’. Afterwards, ‘[w]hat remained of the poor lady cyclist was stuffed through the gates of Newnham College.’

Fig. ‘The Bloomer War’ – Front page of *The Morning Leader*, 7 April 1899

Men, cycling and cycle wear

It is striking to consider the construction of the lady cyclist in relation to the history of men’s cycling. Middle and upper class men occupied a privileged position of power in Victorian society, dominating many aspects of political, commercial and public life. Bicycle riding presented no exception. It was initially considerably simpler for them to embrace this new modern means of moving. Social norms around masculine mobility combined with their clothing made for an easier ‘fit’ with the bicycle. Victorian high-class class men’s fashion initially needed little adapting: it encompassed narrow tailored trousers, shirts and waistcoats, jackets, lace up shoes and hats. Male cyclists could adapt their existing wardrobe; with the rolled trouser leg or clip. Although a new market for men’s cycle wear swiftly emerged, it was nevertheless practical for a man in everyday clothing to ride an Ordinary or a Safety bicycle. Sports clothing also already played a role in men’s clothing. As Patricia Campbell Warner explains: ‘Men had simplified their dress for sports early on beginning in the mid-nineteenth century, when they softened their shirt collars, donned the new rubber-soled shoes, shucked off their jackets, wore knickerbockers or other loose trousers, and played actively to their heart’s content’.

The CTC produced one of the first examples of cycle wear for men in 1882. The CTC uniform comprised a tailored jacket, breeches or knickerbockers, waistcoat, shirt, gaiters, helmet, polo caps, Deerstalker or Wideawake (soft felt hat), Puggarrees (thin scarf wrap) for helmets, cap covers, stockings and gloves. Members were allowed to simplify this to a ‘jacket, breeches or knickerbockers, stockings and cap or helmet’. Patterns were sent to a list of official tailors who provided the garments and designs were fiercely regulated: ‘No braiding, epaulettes or trimmings under any circumstances be permitted upon the uniform’.

Fig. An effigy of a rationally dressed lady cyclist hangs from a university building, Cambridge Daily News, 1897

Cambridge Daily News, 1897

Cambridge Daily News, 1897
with any introductions of ‘sweeping innovations’ dealt with swiftly. There was a responsibility not only to uphold the image of the club but also the respectability of cycling.

This uniform identified the male cyclist on and off the bike. Many middle and upper class men were quick to adopt this visual symbol because identifying as a cyclist was a social achievement. However, men’s cycle wear was not without anxieties at this time. Letters and columns in periodicals and newspapers speak of issues concerning the cost, difficulty of identifying a CTC member in the dark, what to do with an old uniform and discomfort in warm weather. There was also broader social consternation to this sartorial shift. A columnist in *The Queen* acknowledges that ‘[e]very variation, however, slight, from the conventional costume always meets this treatment at the hands of the most ignorant of the British public’.

But for men, this hostility was short lived and minimal compared to the wrath directed at women cyclists. ‘They were for a few weeks exposed to the same treatment that the lady cyclists have recently encountered’, but now ‘men can walk about in knickerbockers without attracting either offensive criticism or even eliciting a remark’.

Partly, this was because cycling reflected and re-produced the social mores of a highly masculine society. Bicycles were initially expensive to buy and in the case of the Ordinary (commonly known as the Penny Farthing) notoriously difficult to ride, especially on dirt roads and cobbles. For many, the unsafe qualities of velocipedes were attractive features, and young, agile men were quick to assume this new daring identity. Although cycling was a popular leisure activity, it was largely driven by the excitement and daring of sporting heroes and their accomplishments. New models were often launched with epic endurance or speed record attempts. The “Excelsior” Tricycle was advertised in the CTC as the ‘Easiest Running, Lightest, Strongest and Fastest machine yet introduced’ with ‘POOF! PROOF! PROOF! - More Races have been won upon the EXCELSIOR TRICYCLE than any other make’. In this context, the bicycle was discussed in terms of mastery, speed and distance thereby reflecting and reinforcing Victorian ideals of industrial progress and prowess.

The appeal of these daring feats and the popularity of cycle racing further refined men’s cycle wear, and reinforced cycling’s masculine appeal. In some cases there was very little material separating man from machine. Advertisements featured racing men in matching shorts and tops; a prelude to contemporary lycra racing skinsuits. Racing events were performed in specially built velodromes that drew mass spectatorship. It is telling that there was no equivalent *Gentlemen* version of the *Lady Cyclist*. Instead, a slew of cycling periodicals, such as *The Hub, The Wheeler* and *Bicycling News* emerged in response to the growing popular interest in cycle racing. These publications regularly published detailed dramatic accounts and showcased illustrations and photographs of bare chested male winners in collectable commemorative posters. A discourse of heroism embedded in accounts of racing events powerfully linked masculinity and cycling with language like ‘speed’, ‘agility’, ‘performance’, ‘champion’, ‘professional’ and ‘skill’. Cycle racing further demonstrated an easy coherence with and reinforcement of masculine forms of mobile citizenship. As Jennifer Hargreaves writes: ‘Sports constituted a unique form of cultural life; they were overwhelming symbols of masculinity and chauvinism, embodying aggressive displays of
physical power and competitiveness. In the nineteenth century there was no question that sports were the ‘natural’ domain of men and that to be good at them was to be essentially ‘masculine’.67

So accepted was this convergence between man and machine that even tragic accounts of male cycling deaths and crashes reinforced their technical competence. Journalists often lay blame on technical malfunction or road surface over rider mistake. Rarely was men’s skill or clothing at fault.

An exceedingly sad and harrowing tricycle accident, whereby a Mr A.A. Broad met with his death, has just occurred at Croydon, not far from his own residence. It seems that the deceased gentleman was a riding a new, but faultily constructed, rear steering tricycle… The deceased was comparatively a novice at the art, but even had he been an expert, the type of machine he rode would sooner or later have disastrously failed him - CTC April 1884.

On the morning named Mr. Lickfett, who has recently come to reside in Devonshire Road, went out for his maiden effort on a tricycle. He appeared to go on pretty well, but unwisely or unknowingly, he ventured his machine down the Tyson Road, where the gradient is 1 in 4 or 5. All control over the machine was gone in a moment as it rattled at a tremendous pace down the hill, precipitating the rider violently into the road… but for his robust constitutions, it is confidently believed, the accident would have terminated fatally - CTC May 1884, p.168
The “dress problem”

Unlike men, women were not easily able to assume a comfortable cycling identity, in sport or leisure. There was no single accepted ‘uniform’ that they could adopt or tailor to fit, nor could they start racing like men and simply discard useless and non-functional attire. Women’s clothing on the whole was considered more complex and difficult to adapt to the mobility challenge presented by the bicycle. The ongoing tensions inherent in the ‘dress problem’ were brought to life in ongoing discussions and debates about the cycling uniform in the CTC Gazette: ‘Into the vexed question of dress reform for ladies generally we do not propose to enter, but the enquiries we are constantly receiving from the fair sex or their natural protectors, demand that some step shall we taken in the matter of providing them a suitable costume in which to prosecute with freedom and pleasure the pastime they have happily honoured by their patronage’.

While the men’s CTC uniform launched in 1882 and was shortly afterward declared a ‘success’, the women’s version took many years, discussions, letters, exhibitions and meetings to resolve. Tailors, health professionals, clergy and men and women cyclists put forth many different opinions and designs and the CTC provided criteria by which they should be judged:

1. Absolute freedom of movement for all parts of the body
2. As great lightness as is compatible with warmth, with both lightness and warmth equally distributed. To which we might add “a quiet and unobtrusive appearance”.
As hesitant as the CTC were to becoming involved in the debate, they nevertheless exhibited their own opinion that women’s cycle wear should not be too ‘obtrusive’. By this they were making reference to, and attempting to distance themselves from suffrage activities, the public persona of Lady Harberton and the increasingly maligned Rational Dress Movement. The CTC monthly gazette featured several updates indicating they were no closer to solving the issue because ‘the likes and dislikes of the fair yet fickle sex it is too much to hope to conciliate at the first trial’.

Although often referred to as the “dress question” or the “dress problem”, the issue was clearly much larger than the costume. The difficulty in stabilizing a design for women wasn’t perhaps due so much to the fickleness of the wearers or the challenges of environmental conditions but rather emblematic of far greater challenges that women faced in attempting to claim new vehicles of emancipatory practice. It was not simply a case of making minor adaptations to existing fashion but involved social and moral debates about the role of women in public space. It embodied the tensions, contradictions and struggle. Should women have independent mobility, mechanical competencies and attending social freedoms? What would this look like? What might it do to society?

Creating the conditions for invention

What is clear is that women’s bodies did not initially ‘fit’ socially or physically with the bicycle in Victorian society. Although many were aware of the dangers of wearing conventional ordinary dress on a moving bicycle, the choice to wear more appropriate cycling attire was not necessarily safer. As illustrated by Kitty and others, to cycle in more rational attire, such as bloomers and knickerbockers, could elicit result in verbal abuse and even in some cases physical assault. Women were subjected to rocks, sticks and rude remarks and denied entry to public places. Some viewed them as sexless, having rejected the roles and responsibilities of the home and their gender.

Little however appeared to dampen women’s enthusiasm for cycling. Once experienced, the unparalleled freedoms of the bicycle could not be easily forgotten or ignored. Some saw it as an opportunity to attempt to carve out new identities between conventional binaries of reputable and disreputable womanhood. What these conditions created was the impetus for many to take matters in their own hands - to do it themselves. Eager cyclists wanted to make their bodies fit with this new means of moving and found themselves negotiating conventional social norms along the way. This required a lot of work. Early women cyclists had to deal with personal issues, at home and in familial relationships. They had to mobilise resources at their disposal and come to terms with the level of distress they could tolerate in public. It turns out there was a spectrum of creative ways in which women rose to the challenge.


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Images from The Lady Cyclist – National Cycling Archives, Warwick University

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Chapter 3
Inventing solutions to the “dress problem”

Men can never know, unless they try the experiment themselves, how heavily a wheelwoman is handicapped by her skirt. Even without wind the loss of power through friction is immense, while with it the pleasure of riding is often changed to misery. The extra exertion required to propel the machine, when your skirt is acting as a sail to blow you back, is bad enough even without the consciousness of looking untidy and ungraceful.

Ada Earland
Dress Reform For Women, Bicycling News, 1893

The “dress problem” for women was two fold - how to cycle safely and comfortably while maintaining charm and decorum. The reality was that it difficult to cycle in ‘ordinary’ dress. It caught the wind like a sail, looked untidy and had the potential for danger when it flew into moving parts. As Ada Earland wrote in 1893, ordinary dress ‘handicapped’ a woman and caused ‘misery’. Although more rationally oriented cycle wear enabled women to travel further and for longer in more comfort and safety than possible before, it was not universally adopted. In a society founded on highly regulated rules and traditions, it could single a woman out as embodying a political act and she became a target for condescension or worse. While men could for the most part relish their public cycling identities, women were made acutely aware of the impact their mobile public presence had on others. Together these conditions created a new landscape of social, material and technological possibility. This chapter tells the stories of some of the creative and inventive responses to the “dress problem”. What emerges is that there was no one solution. There were many, and some of these inventive responses continue to shape how we cycle over a century later.

Bicycle design strategies

One of the more familiar creative responses to alleviate women’s dress problems emerged in relation to the design of the bicycle. Throughout the nineteenth century, the bicycle had undergone a dramatic and accelerated technological trajectory, from the Dandy Horse (an assisted running machine) to the Bone Shaker (with front wheel drive) and from the Ordinary or ‘Penny Farthing’ (with increased front wheel to maximise speeds) to the Safety (a diamond frame bike rear wheel drive which we are more familiar with today). With each of these designs, the mechanics and nature of cycling was radically changed. Improved gear ratios, pedaling systems and pneumatic tyres meant people could travel faster over greater distances and with increased ease. Women’s dress however remained consistently problematic.
Fig. A peloton of ordinaries and high wheel tricycles, *CTC Gazette* 1883²

Fig. Some of the velocipedes preceding the Safety³

Fig. An ad for a safety bicycle, *Bicycling News* 1893⁴
Fig. Ads for women specific bicycles, *The Lady Cyclist*, March 1896
With the Ordinary Tricycle, women sat on a platform seat located between large wheels. Skirts and petticoats gathered and rose problematically up the riders’ legs when she pedaled and tended to blow into pedals and spokes. While women were keen tricyclists, riding was an expensive and as a result exclusive hobby. This changed with the advent of Safety bike in the 1880s and women’s enthusiastic adoption of this form of cycling helped drive the cycling boom of the 1890s. This smaller wheeled velocipede was more affordable than the high-wheeler (and increasingly became more so over the course of the decade), lighter, easier to store and maintain and navigate in busy city streets. Initially, safety bicycles were diamond framed with a top bar that required the rider to mount their machine by lifting a leg up over the frame. This was physically taxing, often inelegant and potentially embarrassing, not to mention tricky, for women clothed in layers of petticoats and long skirts. Recognizing the potential of a new market of consumers, bike manufacturers began to add ladies models to their catalogue.

Cycle makers set out to adapt the safety bicycle to fit women cyclists, paying heed to the social and material restrictions at play. There were various iterations but ostensibly new designs worked with the status quo; they materialized accepted ideas about ‘grace’, ‘modesty’ and ‘charm’ and attempted to work around the problems of conventional dress. Manufacturers accommodated women’s skirts by removing the top tube of the diamond frame and creating a “drop frame”. These bicycles featured short-nosed, wider saddles, dress-guards on the rear wheel and chain covers. Women could mount the velocipede by stepping-through rather than over the frame and the extra space made room for bulky skirts. She could sit upright and cycle at a pace suited to her gender, avoiding unnecessary (and visible) exertion.

The “drop frame” bicycle soon became known as the “Ladies’ Bicycle”. The availability of this customised safety carved out a space for women in the male dominated cycling world. Lady cyclists appeared in advertising campaigns, were targeted as consumers and a new visual language placed women firmly in cycling’s fashionable set, giving many permission to continue their sport and providing incentives for the tentative. However, although these designs enabled many to take up cycling, and to do so in ordinary fashions, they were not without their critics. First, this design solution did not directly address the “dress problem”, as skirts could still entangle dangerously in the wheels and pedals. Second, many voiced their dissatisfaction with the design itself. Frustrations flared at specific times, particularly around immensely popular annual bicycle events such as *The Stanley Show*, where manufacturers exhibited cutting-edge innovations and inventions. As women were quick to note, inventions predominantly focused on men’s needs. Women wanted to see similar advancements in bicycles that they could ride. Marguerite, a regular writer of ‘Lines for Ladies’ in *Bicycling News & Sport & Play*, laments the limited range of bicycle designs aimed at women.

What a pity it is that manufacturers do not, as a rule, bestow the same amount of pains on the production of a machine for ladies’ use as they do upon those intended for the use of the stronger and sterner sex. The very extremes of lightness are reached, so far as men’s machines are concerned, men of twelve stone riding machines weighing
only about twice as many pounds; whilst a woman, who is lighter as well as weaker, and who is usually more careful as regards the usage of her machine, is obliged to be content with one scaling ten pounds heavier … the majority of ladies’ machines weighing considerably more than thirty pounds.

Ironically, even without the extra tube, women’s frames tended to be significantly heavier than similar men’s machines. *The Queen* noted how there was competition between manufacturers to build cutting-edge men’s machines, which mirrored the rivalry on the racing track. ‘It has been amply shown, by past experience, that the racing machine of one season often becomes the light roadster of the next’. This had encouraged makers ‘to gradually reduce weight by a careful study of the more minute details of construction’ so that men’s machines weighed only 20lbs. This was important, as the larger consumer market tended to follow racing trends, and racing was almost entirely for men.

In 1896, *The Hub* reports that women’s wheels ‘have been brought down from 50 to 24lbs, or under within a comparatively short time’ however, they remained ‘somewhat less rigid and strong than men’s wheels’. In addition to the disproportionate weight of women’s velocipedes, the range of sizes were limited in comparison to the male cycling market. As Marguerite points out, one size did not fit all women.

‘It would be only reasonable, however, on the part of manufacturers, to make machines for ladies as they do for men, in at least two sizes, when a tall girl would no longer have to ride in such a huddled-up position, nor would she be forced the only alternative which has hitherto been open to her of riding with handle-bar and saddle-pillar extended in a manner which not only spoils the symmetrical appearance of the machine, but is also a source of danger to herself.

This is particularly important, as women were regularly criticized for not sitting or pedaling properly, and this was often used as evidence of women not being ‘good’ or ‘natural’ cyclists. Observations such as this in *The Queen*, were common:

Everywhere the number of lady cyclists continues to increase, but it is a regrettable fact that the really graceful and efficient rider still remains a pleasing novelty. The majority of riders that one sees are sitting so low that their knees come up at right angles to their bodies, their insteps are on the pedals, and, to add to the general hunched-up appearance, they have their handles about six inches too high; the wonder is that they get along as well as they do, and it only shows what remarkably good riders most women would be if they only took a little trouble with their form.

As contemporary cyclists know, it is a difficult thing to do when the bicycle is the wrong size. Moreover, the step-through design and dress guards were also not universally welcomed. S.S. Buckman, again writing under the pseudonym ‘A Wheeler’ in *The Lady’s Own Magazine* conveyed his low opinion of the design, declaring: ‘An open frame is only an apology for a bicycle’. Some argued that these design solutions compromised the strength
of frames, and the additional features added further unnecessary weight and fiddly components. Many women, understandably, were against the idea of adding even more bulk to their bicycles, especially if they were persisting with skirts and petticoats. Some had extra parts removed; an act that was criticized by some opinion makers, such as this journalist from Harpers Bazar: ‘It seems to me that any woman who wears skirts when bicycling is reckless in removing her chain-guard’\textsuperscript{12}. Cynthia dedicated an entire page of her regular ‘Little Essay’s by Cynthia’ feature in \textit{The Lady Cyclist} to dress guards, which she thought could ‘scarcely claim to be an indispensible part of a bicycle’. She imagined a future in which ‘the dress-guard will only be in a cycling museum, along with the boneshaker, the rear-steering, single driving tricycle, and specimen cycling costumes of the years ’95 and ’96, with skirts five yards round’. Cynthia believed it was currently only tolerated by skirted riders and then was not always reliable. A self-identified ‘rationalist’, Cynthia declared that ‘we have already consigned our dress-guards to the “chamber of horrors”’\textsuperscript{13}. However others directed their frustrations not at the dress-guard but at the skirt. Marguerite of \textit{Bicycling News} was adamant that ‘in most cases the skirts of the riders rather than the inefficiency of the dress-guards, are conducive to accident’\textsuperscript{14}.

Clearly, the Ladies’ Safety did not solve the “dress problem”. Some women even refused outright to ride a ladies specific bicycle. Mrs Smith was one such cyclist who sent her illustrated testimony to ‘The Ladies Page’ in \textit{Bicycling News}, which prompted the editor to comment:

I must thank Mrs Smith who has just kindly sent me two beautiful photographs of herself in the rational dress in which she appeared a week to two ago at Ditton. In the photographs Mrs Smith is riding a man’s safety, her dress enabling her to overcome the difficulties of the top bar with complete ease. It is one argument the more in favour of rational cycling costume, that with it a woman may dispense with the drop frame, which always means a loss of strength to the machine\textsuperscript{15}.

A similar view was voiced by Ida Trafford-Bell in the \textit{New York Times} about pairing her rational dress with a diamond frame machine: ‘Of course, the knickerbocker and bloomer costumes go with the diamond frame or man’s wheel, which all sensible men and women are forced to admit is the only correct and proper machine and dress for long rides, touring, etc’\textsuperscript{16}. Mrs Hudders went one step further. She was a keen bloomer-wearer and adamant that riding a diamond frame was the only “wheel” worth riding.

And if I have to chose between giving up my wheel and giving up my diamond frame, I should give up the wheel altogether. You can get a better position on a diamond frame, do less work riding, there is less vibration, and there is greater safety. The wheel is lighter, too\textsuperscript{17}.

These accounts reveal how debates around bicycle designs for women were \textit{never} separate to dress. The dress problem was central. There was even talk at the time that the Ladies’ Safety frame would only be a temporary solution. A journalist in \textit{The New York Times} writes: ‘A
well-known manufacturer gave it as his opinion recently that there will be no women’s wheels made in three or four years, for all women riders will be wearing bloomers or knickerbockers or something like either or both, and will be able to mount their wheels as men do”\(^{18}\). A Wheeler (S.S. Buckman) conveyed similar attitudes of manufacturers in Britain. ‘It’s very sad – and more sad still to think, as my husband tells me – that behind the ladies backs the manufacturers grumble about ladies fads, about stupid drop frames, and about fiddling dress guards, and ask why ladies can’t dress so as to ride bar-frames’. He suggests that bike-makers actually wanted to build a much more suitable bike for women if they could just get beyond the dress problem. ‘Said a manufacturer a while back, “There’s a lady as light as a feather, how I should like to build her a little light bar-frame: she’d regularly fly on it. I could do it for £2 less money, and I could make it 5lbs. less weight, and stronger than the drop frame that I’m to build her ever will, or can be”’\(^{19}\). The problem, he thought, was also not just fashion and buyers but the distributors who had built up a new market around solving women’s “dress problem” in this way.

The adoption of Rational dress should mean the adoption of the bar-frame machine, and that would mean an enormous depreciation in ladies’ drop-frame cycles, and the parts thereof. Now there are thousands and thousands of pounds worth of drop-frame machines made up, and an equally great amount of fittings which can only be used in the construction of such machines. A change in fashion would be disastrous to those who hold this stock\(^{20}\).

This perhaps explains manufacturers’ lack of attention toward women’s machines. If Ladies’ Safety designs emerged in response to the “dress problem”, and this impediment was considered temporary, then the need for these velocipedes would cease to be relevant when fashion inevitably changed and women took to new forms of dress. The fact that some big brands like Triumph advertised their women’s velocipede as ‘A fashionable Machine’ points to transitory nature of the design. A Wheeler seemed convinced: ‘Hence much of the opposition from the wheel organs – opposition that will be swept away by the popular taste, at will most in a couple more season’\(^{21}\). Maybe designers did not think continuing to innovate in this field was a valuable investment of time and resources. Change would have felt constant for Victorians. Although it sounds strange to contemporary readers, it is useful to remember the accelerated trajectory of the bicycle and radical reform to dress in their lived experience. As this and the next chapter attests, late nineteenth century society was buzzing with the excitement of inventiveness. Even small mundane ideas held the promise of sweeping change.

Why is this controversy still important? Both women and men rode the ordinary tricycle in the 1880s. A limited number of models such as the 1876 Starley Coventry Lever Tricycle featured some adaptation for women’s dresses. However, it was the advent of the safety that directly shaped the velocipede we know today into two distinctly gendered objects – a men’s diamond or bar-frame and a ladies’ drop frame. These segregated designs continue to shape and influence cycling identities and behaviours today. Much has already been written about technical history of the bicycle, but what I hope to emphasize is that while the advent of the
Ladies’ Safety played a critical role in Victorian society, it was not a straightforward or universally agreed solution to the “dress problem”. It is easy to assume, given the Victorian ladies’ frame is still with us today over a century later, that it had a smooth and uncontested technology trajectory. It didn’t. The design of ladies’ bicycles was narrowly configured and critically received. Some favourably adopted it, while others did it grudgingly. Some complained and attempted to modified it to fit their needs. Others snubbed it entirely and chose to ride a men’s top-bar frame. For many, including manufacturers, it was as seen as a temporary fix to the immediate problem and to grow the cycling market. No doubt it would have come as a surprise to many Victorian cyclists to have known that versions of the Ladies’ Safety, with many of its attending problems of weight and lack of technical specificity, remain with us today even though the design assumptions borne of the social and material conditions of its origin do not.

**Cycle wear strategies**

Another strategy for addressing the “dress problem” was more direct. Creative attentions were focused on clothing as a means of mediating the relationship between the woman’s body and the bicycle. Designers sought to fix the skirt itself. There were a number of tactics involved. What follows are not separate groupings but rather a flexible and dynamic design spectrum within which women cyclists oscillated. Critically, what emerges is how women were constantly responding to changing conditions through creative combinations of their bodies, clothes, networks, skills and courage.

- **Rational Dress**

Cycling in identifiable rational dress is the most commonly known strategy in Victorian times. Most basically, this involved replacing cumbersome petticoats and skirts with bloomers or knickerbockers. While the Dress Reform Movement had been around for most of the century, the popularity of sport and particularly cycling propelled it into the public domain giving it the public attention it needed. While the wearing of Rational Dress did not always make for seamless social encounters, nevertheless there is significant evidence that many women did this. Kitty and her companions regularly wore their rationals in public and shared experienced of reactions to their costumes. Their letters describe how they dealt with emotional and material labour. One needed to be very brave not only to bear the vitriol but also to deal the dramatic shifts in observers’ responses from place to place.

Devises seems an uninteresting town and the waiting maid who served us with tea at ‘The Bear’ held her head in the air, sniffed and would not speak more than was necessary.

We stayed the night at the ‘Katherine Wheel’ Shrewton, kept by pleasant people who much approved of Rationals and we were very comfortable there and cost us 9/.

Two girls on bikes passed me one day and one shouted “You ought to be ashamed of yourself”. I was ashamed of her and her lack of manners.
There were cries of “Bloomers!” “Take em off” (so idiotic that) but nothing to hurt.

Some were less lucky. Occasionally reactions from the general public did hurt. Irene Marshall’s account of being a rationally dressed cyclist illustrates how viscerally difficult it must have been to claim a cycling identity at times.

But it took some courage five years ago to ride in rationals. The idea was almost entirely new and the British Public was dead against it. Hooting and screeching were then the usual accompaniments to every ride. Caps, stones, road refuse – anything was then flung at the hapless woman who dared to reveal the secret that she had two legs. And the insults were not confined to the lower classes. Well-dressed people, people who would be classed as ladies and gentlemen, frequently stopped and made rude remarks. In fact, cycling in rationals in 1894 was a very painful experience.

Lady Harberton recognized the importance of this (uncomfortable) attention and did not shy away from social strife. In personal correspondence to S.S. Buckman she writes: ‘On Sat I was in Tewkesbury, I noticed my appearance created much disapproval, so, if fine I am going there again tomorrow for tea’. She led by example and urged women to put their new radically clothed bodies on display in public to claim the right to cycle independently, safely and comfortably. Although, she knew this was not going to be easy for everyone, nevertheless she advocated wearing the costume at all possible opportunities, on and off the bike, in an attempt to normalize it through familiarity and ubiquity. She explains: ‘In the first place, while no absolute rules have been laid down to bind members, we naturally expect that those who earnestly desire freedom in dress will do all in their power to help; not only by donning the costume for special meetings and rides, but by wearing it on every possible occasion’.

Despite the breadth of coverage and debate generated by the Rational Dress Movement and reactions to those who embraced it, it was considered a failure. Lady Harberton expressed her disappointment in the movement in personal correspondence to S.S Buckman on 18 April, 1898. ‘Do you know I don’t much believe in a conversation on anything doing much good except people choosing to wear the dress. And how to get them to do this is the problem’. However, Lady Harderton was not easy swayed. She determinedly took to the next newest form of mobility technology – motoring – as soon as she could. She set up the Ladies Motoring Association in 1898 and led this into the new century. Lady Harberton was a woman committed to new technologies, women’s freedom and movement in any form.

- Strategies of concealment
In these conditions, some women were understandably hesitant to wear their rational costume in public. A related strategy involved interpreting or wearing more appropriate cycle wear in less overt ways. Replacing petticoats with knickerbockers or bloomers was one way of
preventing some of the mishaps caused by layers of heavy flapping fabric. With such radical undergarments hidden by a skirt, the potential for social friction was minimised. Marguerite of *Bicycling News* advocates such a concealment strategy:

I presume there are few ladies who ride in the old-fashioned under garments: I sincerely hope there are very few, as they give a most ungraceful appearance to the rider, and to ride in comfort with a number of petticoats to which some women so fondly adhere, is utterly out of the question. I know there are many who would not care to don the “rational” costume for riding, and whatever its votaries may say to the contrary I can assure my readers, from personal experience, that it is quite possible to ride in a skirt with complete comfort and immunity from danger providing the under garments be right. I have found that a pair of tweed or serge knickers worn over woolen combinations are quite sufficient underclothing and the dual garments is an absolute necessity for obvious reasons.

More dedicated rational dress supporters were less taken by this tactic. After all, their larger strategy was to claim the right for women to move in new ways in public space. Kitty’s cycling companions often discussed how they tried to encourage each other to embrace the garments. Jane writes: ‘Minnie wouldn’t let me ride in a skirt around Andover and as she did not herself, it seemed foolish for one and not the other to do it, but I hate skirts more and more and ride in one as little as possible’.

Many believed like Minnie that it was essential that rationally dressed women claim outside space en masse. Yet, it was a topic vigorously debated within rational dress circles. The *Rational Dress League* welcomed ‘ordinary dress wearers’ in the hope that ‘the gradual education of the public’. Members of the Lady’s Cyclists Association were more conflicted. They vigorously debated in their 1896 annual meeting if rational dressed riders should be allowed onto “skirted” rides when the reverse was not the case. Nevertheless it remained a popular strategy, and might well have been an initial step for newly minted riders to try out rational garments on route to becoming more fully fledged members.

- **Site-specific cycle wear**
  
  Another strategy involved site-specific cycle wear. Some women responded to social and material challenges by adapting their costumes according to place, type of cycling and anticipated social context. This meant choosing a more conventional fashion garment for social and more public forms of cycling, and at an invariably slower pace, and a more rational garment for ‘real’ out of town cycling or touring. This was not a secret strategy. Writers espoused this option for lady cyclists. “[C]ycling dress for town and for country is quite a different thing’, declared Miss F.J Erskine in her 1897 book *Lady Cycling: What to wear and how to ride*. Mrs Selwyn F. Edge, in an interview for the regular column ‘Lady Cyclists at Home’ in *The Lady Cyclist* confirmed a similar practice when asked:

  “What costume do you wear?”
“A skirt for town riding, but rationals for actual riding”
“Which costume do you prefer?”
“I certainly think a skirt looks best when riding slowly, but for real riding I like the rational. The skirt flops about so terribly when riding quickly.”

The two costumes were also not entirely separate. Writing about Miss Johanna Jorngensen, the ‘lady champion of the world’, the editor of ‘The Ladies Page’, in Bicycling News explained:

Miss Jorngensen was probably the pioneer of rational costume. She used to wear knickerbockers, an ordinary jacket, and long stockings, and have a short skirt reaching just to her knees while riding in Copenhagen. When she got away from the streets and the prejudices of towns, she would roll up the skirt to her waist, and ride on rejoicing without it.

Patricia Campbell Warner provides another motive for this site-specific approach in her book When The Girls Came Out to Play: The birth of American Sportswear. She argues that it important to invest time and effort in maintaining appearances in specific social spaces because cycling was a new means of courting. Sport presented exciting fresh opportunities to meet, spend time and interact with potential partners, ‘for young men and women to meet and interact, usually for the first time without the eagle-eyed chaperone who had been a fixture of the past’. As a result, it ‘demanded the most attractive clothes one owned’. The Lady’s Own Magazine confirmed this: ‘The greatest matchmaker of the age, to my mind is the bicycle’ because ‘young people are brought together by a common interest in wheeling, and this companionship often leads to an alliance for life’. For many engaging in these rituals continued to perpetuate socially accepted ideals of feminine grace and effortlessness, to look both attractive and fashionable, even while mobile.

- Country-specific cycle wear
The site-specific strategy was translated more broadly into what could and could not be work in different countries. Cycle touring was a popular pastime for Victorian women and many published excerpts from their travel diaries. They had experiences of seeing and participating in cycling cultures abroad and returned to Britain freshly attentive to the possibility of other ways of moving in and through public space and shared their experiences widely. The Lady Cyclist, The Rational Dress Gazette and Harper’s Monthly Magazine, all offered condensed narratives of touring in the UK and the continent. What women cyclists wore abroad is relevant to site-specific strategies, as many of them lamented having to wear more conventional, restrictive types of costume and ride feminine styles of bicycles upon returning to Britain. A contributor to The Rational Dress Gazette remarked: ‘The tolerance which prevails in France in respect to feminine rational cycling dress, strikingly contrasts with the intolerance displayed towards it in England’.
Fanny Bullock Workman’s (1896) *Notes of a Tour in Spain* for instance tells a tale of holidaying with her husband, two bicycles and a trunk of clothing. The latter was sent in advance to destinations on route. After catching a train to Tarascon in France, the writer interweaves cycling adventures and cultural insights with woes of administrative customs and visa delays encountered along the way. Dress is not a focus but she mentions briefly how pleasantly surprised she was by attitudes to rational dress in France, in contrast to public opinion at home.

In France, the birthplace of the “rational” dress, I had decided to don mine for the first time, and it was with some trepidation on the morning of our start from Tarascon that I approached my machine, which was surrounded by a crowd of admiring townspeople. But they never gave me a glance, and after two days of riding I should have been ashamed to have been seem in any other costume, for besides the delightful freedom it affords in riding, I saw nothing else worn by women, even in the south of France.42

Some travellers attempted to replicate the freedoms at home that they had enjoyed on holidays. In many cases, however, this was not an easy transition, as their actions were remarked upon. Written in 1894, Lady Violet Greville’s *Ladies in the Field: Sketches of Sport* explains how women often tried to follow the example set by their European compatriots: ‘[A] few Englishwomen have appeared on the public roads in knickerbockers, and have made, as was to be expected, great talk in the cycling press43’. Although it was only ‘talk’ and not sticks or stones, social regulation would invariably have served to keep this kind of adverse behavior in check.

Fig. Fanny Bullock Workman asks for direction in Spain, *The Lady Cyclist*, 1896
Maud: My new rational dress fits me like a glove
Kate: Will you dare wear it?

Bicycling News and Play, 1895

Fig. Love’s vehicle in three centuries, The Lady Cyclist 1896
This strategy, and the focus of the rest of the book, involved the design of radical new forms of cycle wear by cyclists to address some of the above restrictions and challenges. This involved inventively responding to the “dress problem” in and through the dress itself. Although a ready to wear market was emerging, many women continued to make their own costumes or commission someone to do it for them. There are crossovers of course with strategies mentioned above, as many women were probably making and wearing their own rational dress. However, the lack of a single socially agreed cycling costume for women opened up a landscape of possibility and catalyzed many individual responses to the “dress problem”.

Rosika Parker’s influential book The Subversive Stitch examines the history of embroidery and changing ideas about feminine ideals and expectations. Throughout time embroidery has become associated with ‘stereotypes of femininity’, about ‘docility, obedience, love of home, and a life without work – it showed the embroider to be a deserving, worthy wife and mother’.[46] Appropriate feminine behaviour became aligned with ideas around class, immobility and the home. However, it was also something else. Parker argues that women did not passively accept these beliefs but used them to rework and negotiate their place in society. She writes: ‘The art of embroidery has been the means of educating women into the feminine ideal, and of proving that they have attained it, but it has also provided a weapon of resistance to the constraints of femininity’.[47] This framework can be applied more broadly to sewing. Sewing, like embroidery is a critical social and cultural practice many women have been acculturated into at an early age. It is a multi-faced practice for all classes, undertaken for utilitarian and leisure purposes. It has been passed down through generations, undertaken in domestic spaces and enabled women to engage in work from home. Despite its prevalence, it is remarkably understudied. Several scholars have written at length about why this is the case. Mary Carolyn Beadry suggests in Findings: The Material Culture of Needlework and Sewing that it ‘is so universally associated with women’ is partially why it is often ignored. However the fact that ‘artifacts of needlework and sewing often stand as evidence of women and women’s activities’[48] is also a particularly compelling reason to study it. This evidence is critical because women have not held the role of history tellers and as such their voices and activities are often absent from the history of technology.

Early women cyclists used the tools, skills and networks available to them to challenge the boundaries that restricted them. Clothing became a means through which many inventively responded to these challenges to their freedom of movement. They attempted to design and sew a way out of the “dress problem”; to find a way to make their bodies fit with new ideas about being in and move through public space. Patricia Campbell Warner writes about how in ‘November 1895 The Delineator published three pages of “Bicycle Garments” (all illustrated), offering readers some fifty Butterick patterns’[49]. This, however, did not mean sewers had to produce uniform designs. In her book “Make it Yourself” Home sewing,
gender and culture 1890-1930, Sarah Gordon has a chapter on ‘Clothing as Sport: Sewing as a Laboratory for New Standards’. She explains how ‘[t]hese garments offered women the chance to determine the parameters of acceptable appearance and dress’. The lack of a singular accepted cycling garment meant more freedom for designers. It also helped that ‘pattern makers sold patterns designed to be interpreted in different ways, allowing readers to create their own definitions of what was appropriate and feminine’. This created a dynamic atmosphere of creative possibility whereby early cyclists shared ideas and patterns and discussed and debated different designs at events, in personal correspondence and various publications, as Lady Greville explains: ‘I have read in cycling papers many descriptions of other women’s bicycling costumes, but never yet have I discovered one which, for simplicity and appropriateness could complete with mine’.

Advice and suggestions were forthcoming in a range of places. Bicycling News’ Marguerite again was a source of knowledge for new cycle wear makers:

If any of my readers are going in for making a cycling costume at home, let me recommend to their notice “Mrs Leach’s Practical dressmaker” for May, price twopence. They will find several very pretty styles illustrated therein, and, in addition, instructions for making up one style of dress which should prove very useful.

The Lady Cyclist also regularly showcased the skills and patterns of dressmakers. Madame Mode’s Paper Patterns were in popular demand:

During the first year of The Lady Cyclist’s existence there has been a steady demand from its readers for the paper patterns of cycling costumes which are supplied by Madame Mode, the writer of the monthly fashion article, and we are pleased to announce that this feature will still be continued, the price if the complete cut-out and tacked-down patterns being still 1s. 6d. each, post free. All order are executed in strict rotation, and should be addressed: Madame Mode, The Lady Cyclist Office, 108 Fleet Street, London E.C.

Women also found inspiration in broader visual culture of the time. When famous women cyclists grabbed the headlines their costumes often garnered as much attention as the record of their achievements. Not all this attention was negative. Much was underpinned by curiosity in the search for new ideas and inspiration. 16-year-old Tessa Reynolds hit the news in 1893 for a daring endurance cycling feat (she cycled to and from Brighton in a record time of 8h. 38m) and also for her home-made costume that was ‘closely approximating to that of a male person’. It was featured in the ‘Ladies Page’ of Bicycling News under the title ‘The Costume of the Future’. Tessa’s costume was a rational dress inspired coat and pair of bloomers, which she designed herself: ‘I have received many applications for patterns of my suit from ladies. […] I have not a pattern for it as I cut it out and made it entirely from my idea of what was wanted’. It generated so much attention that G. Lacy Hillier, writing in Bicycling News, called her ‘the stormy petrel heralding the storm of revolt against the petticoat’.
In many cases women made use of available materials or re-configured garments at hand. The results were not always to everyone’s taste. A writer from *Heart and Home* was shocked to witness a cyclist riding ‘in knickerbockers of a violently checked pattern, made at home from a pattern provided by the old garments of their brothers’58. Aware that a badly designed costume could ‘damage the cause’, key supporters of rational dress, such as the Provisional Committee of the Rational Dress League firmly directed women to seek one of a shortlist of tailors:

We advise, we entreat, all Leaguers to get only a tailor-made costume. The most expensive stuff, the daintiest idea is spoiled and useful if home-made or even dressmaker-made. The *cut* is everything. The suitable dress for London is a neat, plain and above all *well-cut*, tailor-made coat and knickers. The *cut* is everything. 59.

So passionate was their desire to prevent ‘the wearing of slovenly or clumsy home-made costumes’, the League made arrangements with local tailors, such as R. Marcus of Alfred Place, Bedford Square who had agreed to make a cycling costume that fit all of the above requirements for £3/10/ which could be paid in full or monthly installments. Marguerite further advised her readers to seek help not only from a professional but one who was also a cyclist:

I would advise such ladies to get their riding costumes made by a practical cyclist where this is possible. A little riding experience makes a wonderful difference, and, if you know of a dressmaker who rides, by all means let her make your dress60

Regardless of whether women made their new cycle wear themselves or commissioned someone else, they still had to know what they wanted to wear. Many saw this as an opportunity to explore and experiment. It turns out that Victorians and especially women not only imagined, experimented, made and designed and wore new cycle wear, they also patented them. It is through their remarkable patenting activities that we have a rich detailed resource to understand their motivations and designs.

Fig. Portrait of Tessie Reynolds in her radical cycling outfit, *Bicycling News*, 189361
1 Bicycling News (1893) *Dress Reform For Women*, by Ada Earland, 18 Nov, p.6

2 CTC (1883) Banner image for the CTC Monthly Gazette, No. II, Vol. II, July

3 Images are authors own


5 Bicycling News and Sport and Play (1895) *Lines for Ladies by Marguerite*, 14 May, p. 33

6 The Queen, The Lady’s Newspaper (1895) *The Weight of Ladies’ Bicycles*, 13 July, p.85


8 Manufacturers did make custom sized machines for special order but these cost more

9 Bicycling News and Sport and Play (ibid)

10 The Queen, The Lady’s Newspaper (1896) *Cycling*, 16 May, p.856

11 Lady’s Own Magazine. (1898) *Wayside Jottings*, March, p.83


14 Bicycling News and Sport and Play (1895) *Lines for Ladies by Marguerite*, 4 June, p. 33


17 New York Times (1897) *Woman and the Bicycle: Mrs Hudders’s Dress and Wheel*, 11 October, p.4

18 New York Times (1894) *The Wheelmen of the Day; How Rapidly They Are Multiplying and a Word of Their Dress*, 12 Aug, p.18

19 Lady’s Own Magazine (1898 ibid)

20 Lady’s Own Magazine (1897) *Wayside Jottings*. Oct, p.119

21 Lady’s Own Magazine (ibid).

22 Buckman papers. See also Jungnickel, Kat (2015) “One needs to every brave to stand all that”: Cycling, rational dress and the struggle for citizenship in late nineteenth century Britain, *Geoforum, Special Issue: Geographies of citizenship and everyday (im)mobility*. 64:362-371


24 Ibid

26 Ibid


30 Letter from Lady Harberton to S.S.Buckman, (1898 ibid)

31 (ref needed).

32 Bicycling News and Sport and Play (1985) Lines for Ladies by Marguerite, 16 April, p.18


34 The Rational Dress Gazette, Organ of the Rational Dress League (1898) June, No.1, p.4

35 Daily Telegraph (1896) 28 November 28

36 The Lady Cyclist (1896) Lady Cyclists at Home by Edge, S. F, Part I, Vol II, March, pp. 27


39 The Lady’s Own Magazine. (1898) The Modern Matchmaker, June, p.173


43 Lady Violet Greville’s (1894) Ladies in the Field: Sketches of Sport, p.261

44 Bicycling News and Sport and Play (1895) 18 Jan, p.8

45 The Lady Cyclist (1896) Love’s vehicle in three centuries, 22 Aug, p. 437

47 Parker, Rosika. Ibid p.ix


49 Warner, Patricia Campbell p.123


57 ibid.

58 Hearth and Home (1895) Quoted by in Lines for Ladies by Marguerite, *Bicycling News and Sport and Play*, 28 May, p.34

59 The Rational Dress Gazette, Organ of the Rational Dress League. (1898) June, no.1, p.2

60 Bicycling News and Sport and Play (1985) *Lines for Ladies by Marguerite*, 16 April, p.18

Chapter 4
The 1890s patenting boom and the cycle craze

The craze for bicycling has made a complete revolution in the needs of dress, and there are almost as many inventions for this special amusement as days in the year. Every week at least a patent is either taken out or applied for touching on bicycle clothes. Happily there is a variety of opinion as to the requirements of this particular amusement.

The Queen, The Lady’s Newspaper, 1895

The Victorians are renowned for their engineering spirit and inventive legacy. The late nineteenth century was a prolific period of startling inventions that marked a time of exciting possibility. Changes to the patenting process opened the system to fledging inventors, who previously had little chance of gaining entry into the secret and exclusive world of the patent process. A patent turned ‘an idea into a form of property’. An idea became legal utilities that was recognisable, defensible, consumable, sellable and, of course, valuable. News of patents started to appear everywhere; in many ways it was the equivalent of the dotcom boom a century later. They captured the collective social imagination, seducing potential inventors with notions of previously unobtainable economic transformation and social mobility. On a broader scale, it was fueled in part by England’s forceful determination not only be part of the ‘great race’ to modernity, but to lead it into the future. Along with the relentless colonial project, transforming ideas into great inventions was a compelling way of doing just that. The study of the patenting process and social context provides insights into why individuals sought to patent their designs, why some ideas were considered valuable over others and how and in what ways they were transformed into legal currency. Studying the content of patents provides further fascinating glimpses into the socio-cultural context of the time.

The story of Victorian inventors and patentees is far from a dry and dull account relegated to the dusty corners of the archives. The race to patent ideas at the turn of last century is full of drama and excitement, late nights in the patent reading room, frenzied dashes across busy streets to the patent office, about luck and connections, of travels across oceans to sell ideas, about big public demonstrations and the flashing bulbs of newspaper photographers and of course surviving the inevitable drop when the spotlight leaves for the next big thing. Ruth Schwartz-Cowan has written about some of the infamous American entrepreneurs such as Samuel Morse (telegraph), Thomas Edison (electric light, photography) and Alexander Graham Bell (telephone). Successful inventors like these ‘were celebrated in print and from the pulpit – household names either in their own right or because of the names of the companies they founded.’ They became celebrities, their names indelibly forged in national memory. ‘Newspapers quoted their opinions; popular magazines recounted their exploits; huge crowds turned out to hear them lecture; artists clamored for the right to paint their portraits’.
The mid 1890s witnessed a particular form of patenting fever. Many of the ads in popular periodicals and newspapers proudly featured the ‘Patent’ behind the new design. A patented design was a key selling proposition. It meant brand new and cutting-edge. The number of applications rose by 20% in one year alone. The 1897 Comptroller Annual Patent Report confirms what was well known in the media of the time – the increase was attributed to the cycling craze sweeping the nation. This was not just focused on the velocipede itself but spilled out into the many components and accoutrements that surrounded it. There was something approachable about this technology that tempted all manner of inventors to try their luck. It was not hard to see why. The late nineteenth century had brought forth a changing society with the invention of Toilet Paper (British Perforated Paper Company, 1880), the Automobile (Gottlieb Daimler, 1886), Escalator (Jesse W. Reno, 1891), Diesel Engine (Rudolf Diesel, 1892), Zipper (W.L. Judson, 1893) and the Movie Camera (Lumière Brothers, 1895) to name a few inventions that have indelibly shaped the worlds that many of us live in today. More motivating perhaps to small potential inventors were stories of successful minor inventions. A column in The Church Weekly titled “Inventions Which Have Made People Rich” starts with a sentence: ‘Most of the big fortunes earned through patents have been gained by small things, such as would not have considered important by the casual observer’. These included a profitable toy “Dancing Jim Crow” which yielded £16,000 in its first year. A glass lemon squeeze made £10,000 and there was apparently even £100,000 to be made from a wooden shoe peg. Ideas seemed to be everywhere. They didn’t have to be world changing. They could be small and deceptively mundane. It seemed you only had to look hard to see one, make it your own and claim it.

The opportunity to drastically alter your social circumstances would have been particularly appealing for women. They were much less likely to have had an uninterrupted period of schooling or training. Even those with this privilege still suffered discrimination attached to being ‘weaker sex’, which limited their ability to do much with this education. In the early part of the century, a women’s role was firmly attached to the home, not in the workforce. Many had felt it to be an attack on patriarchal society to challenge the ‘natural’ roles of men and women. Being born into or marrying money remained the primary path to a good life for many women. For lower class women, neither was possible, so the thought of reaching beyond the set parameters of your life would have been thrilling. However, things were changing in the late nineteenth century. Lee Holcombe’s study of Victorian Ladies at Work illustrates some of the political moves made by emancipists to advocate for women’s opportunities to engage in the public sphere. Some took the position that women were not rejecting conventional beliefs outright but seeking to adapt them to the benefits of everyone. ‘Besides creating better daughters, wives and mothers, the feminists argued that improved education and opportunities for women to work outside the home would benefit society at large’. Popular periodicals also began to showcase the broadening range of opportunities for women to broaden their imaginations of modern feminine lives. The Queen was one such publication that featured a regular column ‘Women’s Employment’ listing recent appointments, answering readers queries and publishing personal accounts from
women of what it was like to do different kinds of jobs as well as the type of training they required to gain such positions.

The practical necessity for middle class women to work was also growing. Divorce rates were on the rise, so women of a range of classes were looking to find new forms of support outside their marriage. This led newspapers to declare: ‘Many a woman who would have clung to a worthless husband from dread of starvation did she leave him, now reasons that she can make a better living by freeing herself from a tiresome encumbrance and going to work in a shop or factory’. Working in a shop of factory, however, was not as liberating as it might have first seemed in comparison to domestic life. Conditions were often poor and pay was not much better, especially for women. Wages for women and girls were much lower than men and boys and lads. For instance, in the Textile Trades, the maximum wage for a woman was 12s 8d. in the field of Lacework, and for girls 8s. 3d in Hosiery (girls earned less for Lace, 6s 2d). In comparison, working men could earn more than double, up to 27s 3d, for Lace and 9s 4d for boys/lads.

The thought of becoming an inventor therefore must have held the almost unimaginable promise of an independent life, potentially good income and social mobility. It offered recognition, prestige and the potential for riches. But it was initially complex and costly to patent an idea. For women it was even more difficult, owing to their lack of legal rights and political access. Even for those who managed to lay claim to their inventions, being recognized and remembered was not always possible.

**Patent Reform and the cycling revolution**

There are a number of factors that created changing conditions which opened patenting up to a broader body of inventors, including women. One of these was patent reform that took place in 1880s. In 1881, the ‘Patents for Invention Bill’ was read and debated for the second time in Parliament, and reported in *The Times*. The main argument related to whether the current patenting system was beneficial to the public, or only for inventors. Did the fees and length of patents ‘discourage invention’? Was the process a barrier to new ideas?

Comparisons were made to patenting laws in others places, particularly America which was viewed as ‘infinitely superior’. There the proportion of patents was one a year in 3,000 of the population. In the UK it was one in 12,000. The idea of left being in a global context was powerfully motivating. During the preceding 18 years, UK patent applications had increased, but very slowly. There were 1,211 applications in 1852 and by 1880 this had risen to 6,000. UK annual patent rates (3,300) were compared unfavourably to other countries, including the US, which were drastically higher at 15,000. There, small patents were apparently achieving disproportionate rates of success and helping America forge a reputation of being especially inventive in ‘the great race’.

Mr D Grant observed that the foundation of the great success of the American nation was the use by them of labour-saving apparatus, which was the outcome of a number
of small inventions. If we were to win in the great race we were entering upon we must remove the present tax upon invention.

These kinds of stories from abroad were starting to change the view of the patent process at home. Perhaps Britain should be more open to a diverse range of inventors and inventions.

A few years ago a general feeling appeared to have prevailed against patents, and many of the most influential statesmen in all countries seemed to be opposed to them upon principle. That feeling, however, had undergone a change of late years, and now the view entertained was that patents should be encouraged rather than discouraged. It was, however, generally admitted that our Patent Law was in such an unsatisfactory state that a thorough reform of it had become necessary.

The differences between the UK and US systems were debated at length. Many parliamentary interlocutors stressed the need to support and encourage smaller inventions that could have big impact. This required a simpler, less cumbersome legal process. ‘The American system of patents was infinitely superior to that of this country, inasmuch as it enabled patents to be taken out cheaply for small improvements’. Kara Swanson’s research into The Emergence of the Professional Patent Practitioner explains how America’s initial reluctance to accept the role of patent agents ensured inventors had more direct and easier access to the system. She explains how the ‘U.S patent system was frequently lauded as cheaper, simpler and more effective at issuing valid and valuable patents than the British system; to accept the patent practitioner as a necessary part of the system was to cede some of this claim to superiority’

The American patent process was also much cheaper at £7. In comparison, under the Act of 1852, the UK patenting process involved seven applications and four payments. The first was £25, with an additional £50 required before the third year and £100 before the seventh. This presented a clear barrier to entry for inventors, who were not wealthy or had a patron. There was significant drop off ‘either because the inventor was unable to pay the fees, or because in the interval he had discovered that the patent was of no value’

Women were one group, amongst many, disproportionately disadvantaged by the current system. An article in New Scientist called ‘The Innovative Woman’ asked why so few women have patents to their names. ‘Invention usually requires money, materials and the opportunity to share ideas’ and ‘historically, few women have been financially independent, and most have been excluded from sources of education and intellectual stimulation’. It was not only the cost and a supportive community that inhibited their ability to patent ideas, they were also
greatly inhibited by their legal status. The Married Women’s Property Act came force in 1870, but it wasn’t until 1882 that it included women’s right to legally own property in their own names. Prior to this, they were considered dependent on their fathers, brothers and husbands.

Shortly after the Parliamentary debate, the Patent, Designs and Trademarks Act was passed in 1883 with the aim of “simplifying the methods of obtaining, amending, extending and revoking patents”\(^{14}\). This move opened up the process to many new inventors. The cost of submitting an application dropped from £25 to £4 and involved only two applications; a provisional protection (£1) and a complete specification (£3). There were further fees of £50 before the end of 4 years and more again, £100, after 7 years\(^{15}\). It meant that an inventor could claim an idea for four years for only £4. This new initial low entry fee proved popular. The 1st day of 1884 saw the largest volume of patent applications in any day, at 266, and a total of 2,499 were submitted in January, when the usual monthly average was 500.

Applications for the year reached 17,110, a whopping increase of 6,100 on the previous year. The Comptroller General writing in the 1884 Patent Report clearly thought this answered the question posed in the Parliamentary debate, though he presented it in an entirely understated manner: ‘The new Act may be said to have worked well in the interests of inventors’ as evidenced by an 180% increase in patent applications\(^ {16}\).

Patent applications continued to grow steadily through the decade following. 18,051 were lodged in 1887, 21,307 in 1890 and 25,120 in 1893. Women had been patenting throughout this time, but they suddenly became visible to the establishment. Their patents started to become statistically relevant from 1894 and this was remarked upon in the 1894 Annual Patent Report. ‘Of the 25,386 applications received in the year 1894, 501 or two per cent., were made by women, about 100 being inventions connected with articles of dress’\(^{17}\). Women’s patenting activities increased again in 1895, and again it was noted: ‘Five hundred and ninety-one, or 2.3 percent., of the total number of applications, were made by women during the year; about 184 being for inventions connected with articles of dress’\(^{18}\). By far, however, the most impressive jumps in patenting overall, and also in terms of women’s involvement, were still to come.

Aside from the Patent Reform Act, and for women, the Married Women’s Property Act, another catalyzing factor underpinning the growth in patents was the frenzy generated around the craze of cycling, which was far-reaching through all levels of society. 1896 saw applications rise 20.5% to 30,194. To put it in context, this was a similar leap to the impact of the Patent Reform Act in 1883. Again, this leap was recorded in the Annual Patent Report. ‘The principal cause of the rise in patent applications is to be found no doubt in the development of the cycle industry, to which more than 5000 of the inventions reference’\(^ {19}\). The rate of women’s patenting continued to be noted, growing in line with the popularity of patenting. ‘Six hundred and ninety-one, or 2.3 per cent., total number of applications were made by women during the year; about 153 being for inventions connected with articles of dress’\(^{20}\).
However, what the report fails to mention is that these ‘articles of dress’ were also predominantly cycling related. Patents for cycle wear were not categorised under this rapidly expanding *Velocipedes*, but rather under *Wearing Apparel*. This is an important point, because it partially accounts for why women’s inventions were less recognized and championed as being part of this massive industrial revolution and continue to remain virtually unknown today.

1897 was another critical year in patenting history. It saw applications rise another 2.5% to 30,958, with another 5000 new cycling related inventions. The Fifteenth Annual Comptroller Report states that while the increase was smaller in 1897, the quality was higher as there were more patents with complete specifications. This report starts to note women’s patents not only for dress but also for cycling. ‘Women inventors contributed 702, or nearly 2.3 per cent. of the total number of applications, about 148 being for inventions connected with articles of dress, and 106 for inventions related to cycling.’ Fears that the parliamentary committee held about the increase in ‘frivolous patents’ did not come true. As noted in report: ‘When the Patents Act of 1883 first came into force, and the initial fees were reduced from £25 to £4, it was thought probable that the average value of the Patents granted would be diminished in corresponding degree, as trivial inventions, upon which it had not been worth while to pay high fees, would in future be made the subject of Patents’. Yet, this was not the case. Numbers for patents continuing for their full term were ‘considerably larger than before’.

The next year, 1898, saw overall patents drop 10.7% to 27,659. Although 6000 of these were cycle related, the decline in the popularity of cycling was to blame. ‘The rapid growth in the number of Specifications which took place in 1896 and 1897 was ascribed to the activity of the cycling industry, and there is little doubt that the industry has been principally responsible for the present decline in numbers.’ Despite this drop, women continued to submit patents at the nearly the same rate. ‘Women inventors contributed 683 or more than 2.4 per cent of the total number of applications, about 148 being for inventions connected with articles of dress, and 79 for inventions related to cycling.’

1898 also saw more patents were being lodged in the UK from abroad, for the first time, with increases noted in applications from Australia, Denmark, Germany, Italy and Norway amongst others. A patent agent, who although disappointed by their home country was nonetheless pleased to be living in this age of ideas, reported the drop. Messrs. Staley, Popplewell and Co. Chartered Patent Agents from 61 Chancery write: ‘It may then be concluded that, notwithstanding the decrease in the number of English applications, the world of invention is as active as ever’. The patent agent also notes with surprise women’s continued engagement with the patent process and the diversity of their inventive capacity.

Women inventors contribute some hundreds of patent applications yearly, the proportion continuing with strange regularity at 2.3 per cent. of the whole. The subjects include dress, cycles, and even mechanical and engineering devices.
Women inventors fight to be recognized

By the late 1890s, the idea of women becoming inventors began to slowly capture the Victorian imagination. Although women were still lacking political and economic rights there was significant representation of female ingenuity in patents. Newspapers and periodicals reported on women’s inventions in the context of news of happenings in the larger patent world. Informal channels of communication also circulated news of ideas. The first issue of *The Rational Dress Gazette: Organ of the Rational Dress League*, published in June 1898, highlighted the importance of inventors as one its key objectives. ‘To encourage inventors, makers and manufacturers of improvements in dress and dress materials, and to provide by exhibitions and other means a channel for communication between said makers and Rational Dress wearers’. It lived up to these aims in that it regularly encouraged sharing of ideas and patterns, names of new patent holders and reviews of their garments.

Advice also flowed between women across continents. *The Dawn: a Journal for Australian Women* was a feminist periodical published in Sydney from 1888 to 1905, set up by Louisa Lawson, a writer, poet and renown feminist (and mother of Henry Lawson). In an ‘Answers to Correspondents’ section published on 1st Nov 1896, an L/A from Bega in South East NSW, offered advice to a previous letter writer who had asked about the American patenting process: ‘It costs twenty pounds to obtain a patent for any article for the United States of America if done through a patent agent’.

Women’s inventions and inventiveness became a popular subject of lectures and opinion pieces in periodicals and newspapers. A column in *The Church Weekly* titled ‘What Women Have Done’ On 6 October 1899, reported on a recent lecture “Women as Inventors” by an American writer, Mrs Bowles who drew on 12 years of research into women’s textile work and patenting history. In a review of the lecture they recount Mrs Bowles stories about inventive women of the past. Women’s patenting started slow at the turn of the 19th century. In 1808 Mary Kees was the first with her patent for weaving straw with silk or thread. There were only 15 patentees over the next 25 years. ‘Among these inventions were a globe for teaching geography, a baby jumper, a fountain pen, a deep-sea telescope and the first cooking stove’. The major barrier was viewed as lack of education, but ‘when more privileges were accorded women’ the volume of patents increased dramatically. From 1859 to 1884, women applied for 1503 patents and this jumped to 3905 between 1884 and 1895.

The *Church Weekly* article illustrates how some women were multiple patent holders and diversity of their inventions crossing a spectrum of domains. Mrs Harriet Strong for instance invented an improved corset as well as patents relating to reservoirs and irrigation to address water storage and flood issues. The article explains how these ideas emerged from personal experience and practicality; the former from her constant back pain and the later as the result of her husband’s death. ‘Catapulted into the economic area by her husband’s suicide in 1883, she moved with her four daughters to a debt-ridden ranch near Whittier, C.A, and set out to make it pay’. The article concludes with an anecdote by Mrs Bowles:
She was out driving with an old farmer and he said to her testily:
“You women may talk of your rights, but why don't you invent something?” to which Mrs Bowles quietly replied: “Your horse’s feed bag and the shade over his head were both of them invented by a woman.”
“You don't say so!” was the amazed rejoinder.

These stories illustrate how women were inventing, despite the legal and social challenges they faced. Patents provide a clear and irrefutable record of this. As Ruth Schwartz-Cowan has argued: ‘If there were no such thing as a patent, we would not know very much about inventors’\(^\text{33}\). Patents are also a particularly good record of women’s inventions, as Zorina Khan writes: ‘Patent records present a valuable perspective on female inventive activity and market participation in an era when marriage meant the virtual “invisibility” of married women in terms of objective data’\(^\text{34}\). Moreover, the chronological nature of patents provides ‘a continuous source of information about market-related activities of women’\(^\text{35}\). This means we can map women’s patenting activity against other social and political happenings, such as the patent Reform Act and the Married Women property Act, to consider the impact different rulings had on opening up and closing down women’s inventiveness. They give voice to women’s creativity and critical design faculties, and in that way help us hear directly from the women at a time when they rarely had a formal platform for expertise and knowledge sharing. They provide a good record of women’s inventions even if the inventions themselves were not made then or are not available now.

Yet, despite the evidence, women’s inventions and inventors struggled for legitimacy. As the editors of *The Queen* argued, at the height of patenting fever in 1896, recognition seemed ever elusive. ‘It is one of those numerous generalisations about feminine capacity which are accepted without much consideration – that women are not inventors. Imitators, both clever and ingenious, they are freely allowed to be, creators never’\(^\text{36}\). Women were seen as ‘imitators’ or followers but never as creators of ideas in their own rights. A similar maxim was discussed and disputed in *The Dawn*, four years earlier. Again, it was accompanied by clear evidence to the contrary. Women were inventors.

The patent mattrass invented by Nurse Fox-Harding was by no means the least interesting of the exhibits. We have often been told that women possess no inventive faculties, so we were glad to note an invention by a woman, the usefulness of which falls within her special sphere, inasmuch as it tends to increase materially the comfort of the helpless and suffering invalid, as the doctors who have used it are ready to testify. It consists of an ingenious compound of an ordinary hair-mattrass with a large air cushion, which can be emptied or inflated without disturbing the patient\(^\text{37}\).

There is evidence that patent agents and solicitors who assisted inventors with processing their applications through the legal system were supportive of women entering this domain. In a column titled ‘Female Inventive Talent’ in the *Scientific American* in 1870, a writer argues the case for inventive women.
We have frequently been called upon to prepare applications for female inventors, and
to correspond with them in relation to various inventions; and we can say to those
who are unbelievers in regard to the power of women to achieve, as a class, anything
higher than a pound-cake or a piece of embroidery, that the inventions made by
women, and for which they solicit patents through our agency, are generally found to
be in their practical character, and in their adaptation and selection of means to effect
a definite purpose, fully equal to the same number of inventions selected at random
from among those made by men.\textsuperscript{38}

So, why were they not recognized then and why does this perception still exist today? One
answer to this lies in what constituted a real, legitimate invention. This was far from fixed or
stable, even if the inventor had successfully patented their idea. Further instability for women
lay in the categorization of their inventions as in or out of their recognized feminine domain.
The question - was it a proper invention? Zorina Khan notes how the organisers of the 1893
Women’s Pavilion for the World’s Columbian Exposition asked ‘to make no note of the
inventions of women unless it [was] something quite distinguished and brilliant. We must not
call attention to anything that would cause us to lose ground’\textsuperscript{39}. Fearing the easy dismissal of
‘women’s’ or domestic arts, people, including women, sometimes regulated what ‘counted’
as invention. By this, they meant nothing to do with traditional women’s arts, crafts or indeed
conventional interests. This had the effect of creating yet another barrier to entry for women,
many of whom were coming up with a plethora of inventive solutions for the problems they
identified in the spaces that they inhabited. Inventions often emerge from an individual’s
personal experience with a task or activity. Given women were predominantly limited in
terms of their access and engagement with public space in the nineteenth century, it was often
the case that their inventions coalesced around the home, clothing and family life. These
inventions were not highlight as valuable within either society at large or it seems by
women’s rights activists.

Women inventors were discouraged from patenting outside the domestic sphere and yet
conversely their inventions were often dismissed because they were shaped by ‘women’s
special sphere’. As Zorina Khan writes, ‘By denigrating household work and the inventions
of household articles, the women’s movement likely contributed to the notion that women
were not technologically adept’\textsuperscript{40}. The editor in \textit{The Queen} recognizes these limitations on
women inventors when she writes with sarcasm: ‘Women have sometimes shown a shocking
tendency to allow their inventive faculty to wander quite out of the feminine sphere’. It goes
on to list patents by women ‘for caulking ships, boats, and other vessels’ and ‘improved
hauling-out slipway’. The gendering of women’s inventiveness is called into question by
arguing that men had been laying claim to inventions in the feminine sphere without it
causing social upset. ‘Yet, from the time when printed records were first kept (1617) up to
1852, not a single woman acquired a patent for “sewing, embroidery, and tambouring”,
neither for spinning – numerous patents of which have been taken out by men – nor for
ornamenting of anytime’\textsuperscript{41}.
This uncertainty as to what constituted a valid invention undermined women’s inventiveness. It provides one reason as to why their work was not universally recognized. A brief glance at the histories of technology development would have readers believe that all spirited historic inventors were male. Yet, this was clearly not the case. Feminist technoscientists like Judy Wajcman have written prolifically on the lack of women in the telling of technological histories. ‘[T]heir absence is as telling as the presence of some other actors, and even a condition of that presence’42. Women’s ability to manage the home and family life, or perform critical supporting roles, enabled men in many instances to forge technological futures, yet they rarely gain a mention in the annuls of history. Ruth Schwartz Cowan has also written compellingly about how ‘the absence of a female perspective in the available histories of technology was a function of the historians who write them and not of the historical reality’43. She highlights how we know more about the bike then the baby carriage, more about harvesting technology than the playpen and more about power looms than the baby bottle.

The indices to the standard histories of technology ... do not contain a single reference, for example, to such a significant cultural artifact as the baby bottle. Here is a simple implement ... which has transformed a fundamental human experience for vast numbers of infants and mothers, and has been one of the more controversial exports of Western technology to underdeveloped countries – yet it finds no place in our histories of technology44.

Although there are indications that patent agents recognised women as a new patenting market, the process of patenting may have been potentially daunting to some women. Looking through UK Annual Patent reports, the budget review indicates who worked in the patenting office. Apart from one role and which was the lowest paid, a charwoman, or cleaner, men held all of the positions. The experience of processing a patent through an all male office cannot be dismissed. Zorina Khan notes how this was addressed in America. ‘In the 1870s, the Patent Office hired its first female patent examiner, possibly encouraging women to submit inventions that they might have feared would be viewed with less sympathy by other examiners’45.

For those that were registered, the method of categorization is illuminating for why women’s cycling inventions remain less well known today. Women’s patenting during the boom years of 1896 and 1897 was predominantly around wearing apparel for cycling. The 1898 Patent Report made special mention of the specific associated categories it viewed as having impact – ‘wheels (including pneumatic tyres), bearings, chains and air and gases, compressing (tyre inflators)46’. It does not mention clothing. The patent category of Wearing-Apparel also shows a marked increased in the period 1895-96, comparable to the categories listed above. But clothing inventions, even though predominantly around cycle-wear, were not associated with Velocipedes. In the abridgements, an annual report of patent abstracts for easy overview of the year’s inventions, the category of Cyclists’ Wearing-Apparel category is even less clear. Here it is fragmented into ‘Capes; Cloaks &c.; Corsets &c.; Dresses &c.; Dress-improvers; Gloves; Leggings &c.; Trousers &c.; Under-vests &c.; Waterproof garments’47. Readers have to piece together fragmented data to find cycle wear within these disparate categories.
Why does this matter? This classification system shaped how patent news was distributed and circulated. Excerpts from the Annual Comptroller Patent Reports along with lists of recent patents often appeared in broadsheets and popular weekly periodicals. Sometimes, they were paid for by local agents promoting themselves: ‘This list is specially compiled for “Bicycling News” by Messrs. Rayner and Co., registered Patent Agents, 37 Chancery Lane, London, WC’.

Information like this featured patents for improvements in brakes, pneumatic tyres, gearing, cycle frames, toe clips, saddles and cyclometers. They did not include patents for cycle wear.

How we name and organise things matters. Geof Bowker and Susan Leigh Star have done much to articulate the critical importance of classification systems in everyday life often under valued. ‘Remarkably for such a central part of our lives, we stand for the most part in formal ignorance of the social and moral order created by these invisible, potent entities’. Classification is both a mundane daily activity and dominant information infrastructure that shapes privilege and power. You only have to consider the power of maps, graphs and diagrams for their potential to simultaneously convey and conceal knowledge. They are political objects, drawn by, in many cases, by the victor, with an explicit purpose in mind. Information, and how it is communicated, is power. Yet it is easy to underexplore systems of nomenclature, partly because they tend to look official and definite. Perhaps we need to relook at these materials and reconsider what they might mean in reconfigured contexts and configurations.

Archives are particularly productive and problematic places for rethinking about categorized knowledge from the past. The archive is a key site where knowledge can appear fixed and firm. Yet, research into and about archives unsettles this. Ann Stoler’s work on colonial archives questions not only the classification systems but also the larger epistemological systems at play. She calls for a ‘move from the archive-as-source to the archive-as-subject’.

Archives are not neutral spaces of data collection – already politicized through the choices made to keep certain things, categories them and maintain these structures and systems. A recent ‘archival turn’ in the social sciences has ‘made it commonplace to understand the archive as something that is by no means bound by its traditional definition as a repository for documents’. Kate Eichhorn’s feminist research into and about the archive discusses how different views of the same materials can render different entry points and insights. ‘Rather than a destination for knowledges already produced or a place to recover histories and ideas placed under erasure, the making of archives is frequently where knowledge production begins’.

This work invites us to look differently at materials from the past, and particularly in archives, not just for what is in them but also what is not. In the case of Victorian cycle wear patents, records are hidden and categorized in and across different places. The voices we hear the loudest are not the only ones that demand our attention. If we consider the archive as a starting point, rather than as a source of all data then we can ask: Why are stories told in these ways? Who is telling the stories? What and whom else might be missing? And how else might we piece the pieces together? How might be possible to summon a different account of
women’s inventive histories from the past? Digging through the archives for other inventions and telling these stories is one way of trying to recount and re-capture inventions. My work on the lesser-known histories of cycling attempts to forge new connections between women’s clothing inventions and more heroic bicycle advances. Studying patents goes beyond, what John Law has criticised many histories of technology for, focusing only on ‘heroes, big men, important organisations or major projects’."}

1 The Queen, The Lady’s Newspaper (1895) Dress Echoes of the Week, 16 Nov, p. 923
5 Church Weekly (1897) 5 Feb, p11
6 Holcombe, Lee. (1973) Victorian Ladies at Work: Middle-class working women in England and Wales 1850-1914, Archon Books, p.8
7 (ref needed).
8 The American Settler (1891) 11 July, p.2
9 The Manufacturer and Inventor, London (1891) Fri 20 Feb, p.64
10 The Times (1881) Parliamentary Intelligence, House of Commons – Patents for Invention Bill, Wednesday 15 June, p.6
12 The Times (ibid)
15 The first Report of The Comptroller General of Patents, Designs, and Trade Marks, with Appendices for the Year 1884 – January 1st to April 30th, Presented to both Houses of Parliament by Command Her Majesty, London, p.15

The report stated: ‘The accuracy of this presumption can now to some extent be tested, for the last renewal fees have been paid upon the Patents of the year 1884. It will be seen that out of the 9,983 sealed Patents of that years, 451, or 4.5 per cent have been maintained for their full term of 14 years. Now out of the 3,898 sealed Patents of the year 1883 (the last of the old Act) 238, or 6.2 per cent., were maintained for their full term, and speaking generally the percentage of Patents under the old Act that ran their full course was about 6. It thus appears that the percentage of sealed Patents that run for 1 years has fallen from 6 to 4.5 per cent.; but on the other hand, though the ratio is smaller, the actual number of Patents continued for their full term is considerable larger than before’.


The Times (1899) Messrs. Staley, Popplewell and Co. Chartered Patent Agents from 61 Chancery Lane, 6 Jan, p.15


The Dawn: a Journal for Australian Women (1896) Answers to Correspondents, 1 Nov

The Church Weekly (1899) What Women Have Done, 6 October, p.20

Schwartz-Cowan, Ruth (1997:120)


The Queen: Lady’s Newspaper, (1896) June 18, p.104

Scientific American (1870) Female Inventive Talent, 17 Sept, p.184 (cited in Helvenston Gray and Peteu, p.37)


Ibid.

The Queen (ibid)


44 Schwartz-Cowan, Ruth. (1983:52)

45 Khan (1996:368)


48 Bicycling News and Sport and Play (1895) Patents. 19 Nov, p.48


52 Eichhorn, Kate (2013:3)

53 (Law 1991:12)
Chapter 5
Radical Cycle Wear Patents

In the old days of tricycles, and when they were not at all the fashion, cycling dress was not the fine art it is now. Our only idea was to look neat, and be clad in weather-proof garments. Sailor hats in summer, and felt hats in autumn and winter, were the sum of elegance required, and fashions – Paris, rational and otherwise – did not require to be studied. We have changed all that now.

Miss F.J Erskine

Lady Cycling: What to Wear and How to Ride, 1897

What new kinds of cycle wear was being invented? Who was patenting it? Where was it being worn? We know much more about the history of the Rational Dress movement than we do about the broader range of cycle wear that was being imagined, designed and worn on bicycles by women in the 1890s. Yet, as discussed in the last chapter this was a time of mass experimentation and excitement. Victorians, and particularly women, were engaged in experimenting with a range of new kinds of clothing to enable women to embrace more active lives that were not always identifiable as Rational Dress or as Ordinary costume. Instead, many new clothing designs occupied a dynamic space in-between; it was both and neither. In fact, some of these radical new costumes were deliberately designed to operate as cycle wear and yet to evade a definitive label. These kinds of designs open up discussions around women’s cycling dress beyond that of the conventional binaries, of those who wore Rational Dress and those who resisted, and of course dimensions of success and failure.

Patents are a rich qualitative source of data for this enquiry. Through their visual and textural descriptions, inventors tell us what they interested in and thinking about, at a time when gaining such first hand insights are rare. They reveal the technical and social, what ‘worried’ them enough to creatively respond in the way they did. We learn their names, where they lived, their self-identified vocation and, for women, married status. Each identify a problem and then describe how they have responded to it, as well as ways in many cases for whom it is targeted, what materials to use and how it could be put to use. This means patents do not have to be conventionally successful to be valuable repositories of knowledge. They record the work of big as well as small inventors. Through their ideas, patentees introduced new, potentially interruptive ideas into society. They reconcile the past and envision the future, giving insights into not only social and material realities of the time but also technological imaginaries – how they hope to enact a different future. Using the patent as device, inventors imaged, designed and sent out into the world a spectrum of costumes that attempted to ‘fit’ female bodies to the bicycle and do different kinds of cycling in sometimes alienating social contexts. A close analysis of cycle wear patents offers the possibility of seeing afresh where as a society we have been, why we are where we are now and where we might be headed.
Themes in patents

Seventy-four British Patents for new or improvements to women’s skirts for the purposes of cycling were registered between 1890 and 1900. Most inventors come from the UK, but some are from Germany, Canada, Chicago, Minnesota, New York and as far away as Melbourne in Australia and ‘the Colony of New Zealand’. Thirty-two, or 43% of the total, were by women. This is a remarkable number given ‘fewer than 1 percent of the inventors throughout the entire nineteenth century were women’. The men all self-identify as having a vocation; such as Tailor, Milliner, Cutter, Clothier and Costumier as well as Engineer, Solicitor and Commission Agent. The women are mostly unidentified, or named as Spinsters, Gentlewomen, or the wives of men who have jobs. But there are three female Dressmakers, a Pianist, a Governess and a Lecturer on Hygiene and Physiology to National Heath Society.

Looking across these cycle wear patents it is clear that the patentees shared similar concerns and motivations for their inventions. It was not a minor challenge. A central aim was to create a garment that responded to the “dress problem”. Designs attempted to do two things – operate as safe and comfortable cycle wear while still providing the ‘appearance of an ordinary skirt’.

This invention relates to a new or improved cycling skirt for ladies’ wear which though divided and possessing all the advantages of the divided skirt has the appearance of an ordinary walking skirt.

My invention relates to the improvements in ladies’ skirts which will render them equally adapted for cyclists, tourists and ordinary wear; and has for its object to provide a skirt that will have all the comfort and convenience of a divided skirt with a smooth seat for the saddle, and yet in walking, will be indistinguishable from an ordinary skirt.

This Invention relates to improvements in cycling skirts and has for its object to construct these in such a manner as to allow the rider the full use of her limbs without any of the leg exposed and at the same time to have the appearance of an ordinary walking skirt when the rider is not on her machine.

This invention relates to improvements in connection with ladies’ skirts and has for its object to provide an arrangement which can be easily altered from an ordinary skirt into a divided skirt and vice versa.

This invention relates to skirts worn by ladies when riding upon bicycles and similar vehicles, and the object of the invention is to provide a skirt which may have an ordinary appearance when the wearing is walking and when required for riding may be easily and rapidly adjusted to provide room for the vertical movement of the legs without dragging the knees or unduly exposing the legs of the rider.
Inventors responded to this dual design problem in relation to cycling in broadly five different ways. It is possible to map many of these patents directly on the strategies of the previous chapter. In addition to showing examples of patents in each theme I reference garments that seem similar and commercialised under different names. One of the challenges of doing patent studies is losing the trail after the design is patented. It was common practice to replace the inventors name with the new brand, and as a result it is difficult to keep track of whose ideas were transformed into which marketed garment. Nevertheless, what emerges below are larger themes that shaped inventors creative endeavours.

- **Device to attach, stiffen or secure skirt**

This design solution directly addressed the movement of the skirt while cycling. It aimed to prevent the skirt from flapping around in the wind and gathering up over the knees with the pedaling movements of the legs. It featured straps, buckles and metal belts that weighed a dress down or fixed it to the rider’s body. The ‘Fixit Dress Holder’ is an example of a patented commercial garment that was promoted as an alternative to rational dress. An advertisement in *The Lady Cyclist* declares: ‘By using this Dress Holder Ladies may cycle in comfort in ordinary walking dress and their skirts will be held down in the strongest wind’. It also featured glowing testimonials from other popular magazines *The Gentlewoman* and *The Ladies Gazette*. It comprised a silk or cotton elastic loop fixed the ankle to the skirt which apparently kept the material from blowing up. Designs like this stem from the more mundane practice of adding weights to the hem of skirts to do a similar job. In *The Lady Cyclist’s Letters of a Lady Cyclist*, Lilian writes a review of the Fixit:

> A few weeks ago I sent for a pair of “Fixit” dressholders. They are a most delightful invention, and have proved to me finally that rational dress is quite unnecessary. You must certainly have a pair, and your dress won’t blow up in the least.

The Fixit could well have come from Lily Sidebotham’s 1897 patent. Lily was the wife of George Henry Sidebotham, a Draper of Newport in the County of Salop. She patented ‘An improved Appliance for Keeping Dress Skirts in Position While Cycling’ and declared the benefits of her design were to prevent the skirt from ‘rising or otherwise becoming displaced in an uncomfortable or unsightly way’. Other similar designs included the use of leather, chains or elastic devices to attach the dress to the cyclist. Some were surprisingly complex and heavy. Alexander McKinlay’s patent for ‘Improvements in Ladies’ Cycling Dress Protectors’ accepted on 12th Jun 1897 provides an illustrative example. He proposes a system of four girdles with steel supports that open with hinge mechanism to for them to the dress. They are then closed and the weight and stiffness keep the dress in place, unaffected of the movement of the knees or environmental conditions. Others were lighter and simpler to install, such as Adelaide Dunbar Baldwin’s ‘Improved Attachment for the Holding-down Loops of Ladies’ Riding and Cycling Skirts’ in 1899. This involved a loop of elastic webbing, an L-shaped piece of brass and a tab of leather.
Fig. 1 - Lily Sidebotham’s patent
Fig. Alexander McKinlay’s patent

Fig. Adelaide Dunbar Baldwin’s patent
Tailor skirt to fit bike

While the above patents added elements to the skirt, this design solution sought to remove excess weight and material. Inventors in this category focused on reducing the dangers of a flyaway skirt by tailoring it to fit the bicycle. This included lessening the bulk of the skirt, cutting it to fit over the back wheel or featuring special hidden gussets to enable the movement of the legs without causing the raising of the skirt over the knees. When away from the bike, these revisions remained undetectable.

Peter Nilsson, a Ladies’ Tailor, of 33 Conduit Street, London patented ‘A new or Improved Cycling Habit for Ladies Wear’ in 1896. He explains his design: ‘The cut of the skirt allows for sufficient amount of fullness below the hips to allow of requisite freedom in pedaling, but it is not to be so full as to leave a surplusage that in gusty weather can be blown about’. He offers his design as a direct alternative to the controversy surrounding rational dress. ‘This invention relates to a new or improved cycling costume or habit which whilst affording that freedom to the wearer which is necessary, will not present the objections which are found to the use of the so-called rational dress’.

In the same year, John Gooch, an Outfitter, of 67 Brompton Road, London patented ‘Improvements in Ladies’ Skirts for Dresses for Cycling’. His invention acknowledges the ‘discomfort’ and ‘considerable danger’ of ordinary dress that ‘arises from the fact that the ordinary skirts are too full and loose’. So, he set about to invent ‘a skirt made in such a manner as to provide the same comfort to the rider as would be experiences if knickerbockers were worn and at the same time secures freedom from accidents which might arise from the skirt catching or being entangled in the pedals or the chain gearing’.

Susan Emily Francis’s 1898 patent for an ‘An Improved Cycling Skirt’ presents a somewhat different take on this theme. Self-identifying as Spinster from the Colony of New Zealand, her invention, much like the others, looks like an ordinary skirt from the outside, but differs in that it features a special sewn in gussets to allow more movement of the cyclists pedaling legs. ‘It is well known to lady cyclists that the ordinary skirt is uncomfortable when used for riding and by the movement of the legs is unavoidably raised to an undesirable degree’.

Cycling periodicals featured other examples of tailored cycling skirts. The ‘Thomas’ Skirt for example presents a divided skirt designed to conceal the active intentions of the wearer, whether that be cycling or horse riding. ‘At the back the division is hidden in the folds, and in front falls into a slight pleats’. The prevalence of this design in popular media tells us that it must have worked for those cyclists keen to cycle and aware of the dangers of ordinary dress but not interested in looking too much like a cyclist either on or off the bicycle. However, it was not without its critics. A male doctor writing in the column ‘Should women cycle? A medical view of the question’, was not a supporter of the design. He was reluctant to enter into ‘a discussion on the relative merits of the “Rational” or the “Irrational” dress’ but nevertheless put a case forward for the knickerbocker over the skirt, even a tailored version. ‘No matter how narrow the skirt may be, there is always the danger of its being caught between the crank and the bracket’. He challenged a ‘prominent cycling journal’ that had
stated that ‘such a contretemps was impossible’ with a story of two women who had ‘brand-new, up-to-date cycling skirts’ commissioned by quality dressmakers and suffered terrible crashes. ‘In one case’, he writes, ‘the skirt alone suffered; in the other the rider was heavily thrown, and, her head striking the ground, was severely shaken, and was unconscious for some time. Certainly, then, there is an element of risk in wearing a skirt for cycling.’

Fig. Peter Nilsson’s patent

Fig. Susan Emily Francis’ patent
Fig. John Gooch’s patent

Fig. The Thomas Skirt
Bifurcation

This third popular design solution consisted of a two-in-one design; a skirt combined with a bifurcated garment, such as bloomers or knickerbockers. These inventors had in mind cyclists who were convinced of the practical benefits of bloomers for cycling but not on their aesthetics, or perhaps just simply less keen to place themselves in precarious public positions. Wearing this garment might have been an initial step on-route to building up courage to cycle without a skirt.

This design appears in a short humorous story *Women and Wheels* written in 1897 in which the protagonist seems to have lost his wife to cycling. They had only been married for eighteen months before she discovered the wheel. He shares his sorry tale with a friend, and it transpires that it is not only his wife that is missing but also four pairs of trousers. “They wear them underneath their skirts,” he explained; “but that is only for practice. You mark my words, there will come a day when they will wear them openly. I tell you this thing is interfering with religion.”

One of these built-in bifurcated designs was patented by Margaret Albinia Grace Jenkins, a Gentlewoman of 13 St. George’s Place, Hyde Park in the County of London in 1895. Her simple drawings present a long ordinary A-line skirt on a waistband with a bifurcated garment with buttoned cuffs underneath. The inventive feature lies in the nature of the combination - the skirt and bifurcated garment are sewn together, at the waistband and joined at the sides. Margaret explains that her design ‘has for its object to so connect the bottom of an ordinary skirt to a pair of knickerbocker breeches worn beneath, as to prevent the skirt rising beyond a certain limit’.

Charles Josiah Ross, an Outfitter trading as J & G. Ross, of 227 High Street Exeter, in the County of Devon patented a similar design in 1897. His invention for ‘Improvements in Ladies’ Cycling Skirts’ similarly incorporates a bifurcated garment inside a long ordinary skirt. However the joining mechanism is different. While Margaret’s skirt and knickerbocker shared waist and side seams, Charles’ garments are secured at the waist, fork and seat. He explains: ‘The wearer will then have on a pair of knickerbockers, the legs of which are secured to and enclosed within a skirt the inside of which is made with a seat for the garment; the parts being so arranged that by the act of sitting down the fullness of the skirt will be drawn forward out of the way of the saddle and the seat of the garment will be in its proper position there being no risk of the skirt hanging on the saddle’.

A slightly different version of this design is provided by Samuel Muntus Clapham, a Tailor’s Cutter, of 13 Queens Road Bayswater, London. He patented ‘A new or Improved Combined Safety Cycling Skirt and Knickerbockers for Ladies’ Wear’ in 1896. Here, the knickerbockers is a separate garment and joined to the skirt by a series of hooks on the waistband. The skirt has one side seam sewn shut and the other left open, which can be fastened with hooks so to look like an ordinary garment when walking or away from the bike. It is then unfixed and folded across the front to form a double apron when cycling. This way the excess material is kept away from the wheels while in motion.
Fig. Margaret Albinia Grace Jenkin’s patent

Fig. Samuel Muntus Clapham’s patent

Fig. Charles Josiah Ross’s patent
Bloomers, breeches and knickerbockers

Inventors also focused directly on the bifurcated garment for cycling purposes. Some were designed to be worn alone and others to be worn under skirts. They all attempt to rework the nature of this bifurcated garment in various ways. This diversity points to the versatility of the garment and also to its unsettled place in Victorian society.

Marie Clementine Michelle Baudéan, a Composing Pianist, of 38 Rue du Chateau d’Eau, Paris, France focused on a lesser discussed yet critical challenge for mobile women – how to conveniently get in and out of these garments for the purposes of ‘natural needs’. This design points directly to the practical challenges of increasingly mobile women who were leaving the comforts of home for longer periods of time. Marie explains how knickerbockers can be complicated to unfasten under other garments and her design responds to this with an inventive moveable part in the seat. ‘This invention relates to a new knickerbockers or like seat for female cyclists, horsewomen, huntswomen etc. which will enable the requirements of nature to be satisfied without taking down the knickerbockers or the like or even unbuttoning the waist-strap’.22

James Cornes, Professional Tailor and Cutter, of 37 Melbourne Street, in Leicester, patented a pair of breeches which he thought were ‘particularly applicable for ladies’ use for cycling, riding and similar pursuits’. His patent raises similar issues to Marie in terms of the inconveniences posed by layers of garments ‘to comply with certain natural needs’. He attempts to respond to this with an invention ‘designed to obviate the necessity for so lowering the garment’.23 His design features extra material that passes between the legs and attaches at the front of the garment, ‘which can be opened to turned back to give access to the body for the relief of the person as required’.

Some inventors did away with the skirt altogether. Benjamin Altman, a Merchant, of 25 Madison Avenue, New York, patented a garment that aimed ‘to provide bloomers which, when worn, will closely resemble a skirt’.24 The sheer fullness of the cut allowed the material to hang in pleats from the waistband as if from a skirt. This type of full bloomer, also known as the Jupe-Culotte, was popular in France ‘for the use of those ladies who wish to appear as if they were wearing an ordinary costume’.25 The voluminous nature of the design made the divided legs difficult to discern off the bike. It also directly addressed problems women had in mounting velocipedes.

Mrs Paul Hardy appears to be wearing these full bloomers in a photo accompanying an interview with her in The Lady Cyclist’s regular column ‘Lady Cyclists at Home’ in 1893. Mrs Hardy had made this costume herself ‘of a light fawn material, made in the French zouave style, finished off with larger pearl buttons, and displaying in the front a soft cream flannel shirt’. The ‘zouave style’ refers to the distinctive loose trouser military uniform worn by an elite unit in the French Army in the nineteenth century. Mrs Hardy declared that she wore this costume to ride a diamond frame tricycle, which she found ‘far safer, swifter and more comfortable than lady’s machine’.26
The Rational Dress League made sewing patterns available for a range of patterns for enthusiastic new cyclists. Pattern #1 in April 1899 was for ‘Full French Knickerbockers’, which they recommended to members because they ‘are very full and attract little attention’.

Fig. Marie Clementine Michelle Baudéan’s patent with removable seat

Fig. James Cornes’ patent
Fig. Benjamin Altman’s patent

Fig. Mrs Paul Hardy, *The Lady Cyclist* 1896
Fig. Illustration of a cyclist mounting her velocipede in the jupe-culotte, *The Lady Cyclist* 1896

Fig. Knickerbocker sewing pattern in *The Rational Dress Gazette* 1899
- Convertible cycle wear

This final design solution, and which takes the focus of the following chapters, presents the most direct and dynamic response to the “dress problem”. These inventions offered the wearer convertible options. Garments had a dual identity; socially acceptable ‘ordinary’ walking and street wear and cycle specific costume. Wearers were able to convert their costume when needed and back again depending on the social situation and mobility requirements. To do this inventors built converting systems into the seams, hems and waistbands of skirts. These designs enabled women to look like they were wearing respectable and reputable garments, but then change into something more fitting to moving at speed on a velocipede.

Convertible costumes were the most popular form of patented cyclewear of the cycle boom. More inventors patented these costumes than any other type between 1890-1900. They make up over a third of all women’s cycle wear patents, and women designed over half. In fact, convertible cycle wear was the most popular style of patenting by women for women at this time. Given this, it is extraordinary that we know so little about these costumes and the women who made them.

Inventions in this category are broad ranging. Designs encompass a range of extraordinary deliberately concealed technologies engineered into clothing – such as weights and pulleys, waxed cords, stitched channels, hooks and buttons and inventive buttoning systems. Skirts become capes, bloomers pop out of skirt hems and skirts are raised out of the way of the wheels. Critically, for the patents in this category, being ‘ordinary’ was a central technique of concealment. Ordinary at this time for upper class women meant high quality material, fashionable colours and designs that showcased her position in society. These convertible inventions deploy fashionability as concealment more than any of the patents above.

Convertible cycle wear designs were primarily based on an ‘ordinary skirt’. While seemingly mundane, this is a significant point as it differentiates it from more ‘rational’ cycle wear at this time. One of the main aims of these patents was to avoid looking like a cyclist when away from the bicycle. Cycle wear material was initially distinctly different from women’s upper class fashion, not only in terms of design but also material. Cycle wear was often constructed in dark colours designed to mask dust and mud and made of hardwearing materials like serge and tweed so to maximize longevity. Designs were often described as ‘serviceable’ and ‘judicious’. Exogenous frills and fancy decorations were limited so to avoid things ripping or getting caught in moving parts.

The rational costume in all-wool serge in navy or black comes at 25s., the coat, skirt and knickers (of serge, or black Italian cloth) at 35s. 6d. A pretty cycling dress for the country can be made out of brown Holland, either in blouse or coat fashion and with judiciously cut skirt. This sort of thing wears wonderfully well, washes, and does not show the dust, and will keep down properly if there are little pockets in the skirt hem.
There is no reason why any cyclist should be dowdy. Bright and conspicuous colours should of course be eschewed, but pretty and tasteful costumes can just as well be constructed from dull-toned coloured material. One can wear serviceable clothes without making a dowdy and frumpish appearance… A badly dressed untidy looking person creates just as much attention, if not more, as a gaudily-attired one. In this case standing out was paramount to remaining hidden. Convertible cycle wear meant that while the skirt could be cycled in, it did not look like a cycling skirt. It did not identity the woman as a cyclist until she was ready to cycle, and even then many of them were not overtly obvious in this intent. Yet, each has built into its hem or seams or waistband, some kind of engineered system by which the costume changes into a device of mobility. The secret nature of these costumes is a deliberate tactic of disguise. Yet, on the surface they appeared like any other fashionable visiting suit. To understand just how different these outfits would have looked to cycle wear, it is useful these descriptions to contemporary upper class fashions. *The Queen* provided many fashion plates of what women were wearing, or wanted to wear. The ‘French visiting dress’ for instance had:

High round bodice and godet skirt in chiné silk, striped with red velours chenille in a darker shade than the plain ruby velvet used for the elbow sleeves, the neck, collar, and hem bands, as well as for the folded fichu. Appliques of guipure set off the cross foot band and the edge of the kerchief. 

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Fig. French Visiting Dress, *The Queen*, 1896
The 1890s brought with it remarkable changes to clothing designed for the purposes of cycling. As Miss F. J Erskine exclaimed at the beginning of this chapter, where once clothing more generally fitted within categories of ‘Paris, rational and otherwise’, there were now a huge spectrum of garments that addressed a plethora of cycling needs and wants. The enthusiasm for cycling motivated Victorians to customize costumes to fit a new landscape of possibilities and necessities. The fact they were patented usefully allows us, over a century later, to see what inventors saw as problems and how they sought to fix them. All, in their own way, these designs set out to enable women to embrace new mobile identities. In this way, patenting can be seen a political act in not only shaping a place for women’s cycling bodies in public space but also in laying claim to new technical imaginaries.

Convertible cycle wear was the most radical inventive approach of this period in that designers attempted to equip women with choice and control over how they moved in and through public space. Sally Helvenston Gray and Micheala Peteu, who have studied women’s cycle wear patents, agree. ‘Where inventors tried to be most innovative was in dividing the skirt, yet concealing this fact’. It was also the most popular form of cycle wear patents, and yet conversely it is the least known. The rest of the book focuses in detail on how inventors imagined, conceptualized and materialized convertible cycle wear.


2 Helvenston Gray, Sally and Peteu, Michaela, C (2005) ‘Invention, the Angel of the Nineteenth Century’: Patents for women’s cycling attire in the 1890s. *Dress 32:* 27-42 (p.27)


4 Pat. 780 (GB189700780A). Sebastian James Sellick, Tailor and Otftiter, 23 High Street, Weston-super-Mare. ‘Improvements in Ladies’ Skirts for Cycling and Ordinary Wear’ (27th Feb 1897)

5 Pat. 9251 (GB189709251A). John Sibald, Buyer, 7 Great George Street, Hillhead, in the County of the City of Glasgow. ‘Improvements in Cycling Skirts’. (24th July 1897).

6 Pat. 11,941 (GB189711941A). Martha Kate Rose White, 20 Wellesley Road, Croydon. ‘Improvements in Ladies’ Skirts, especially intended for Cyclists’. (19th June 1897).


Pat. No. 14,058 (GB189614058A). Lily Sidebotham, wife of George Henry Sidebotham, Draper, of Newport in the County of Salop. ‘An Improved Appliance for Keeping Dress Skirts in Position while Cycling’ (16th Jan 1897)

Pat. No. 11,422 (GB189711422A). Alexander McKinlay, 1 Lancashire Buildings, Water Street, Manchester in the County of Lancashire. ‘Improvements in Ladies’ Cycling Dress Protectors’ (12th Jun 1897)


Pat. No. 9753 (GB189509753A) John Gooch, 67 Brompton Road, London, Outfitter. ‘Improvements in Ladies’ Skirts or Dresses for Cycling’ (18 April 1896)

Pat. No. 51 (GB189800051A) Susan Emily Francis, Spinster, 54 Lambton Quay in the Colony of New Zealand ‘An Improved Cycling Skirt’. (29th Oct)

The Lady Cyclist (1896) Part I, Vol II, March p.56

The Hub (1896) *Should Women Cycle*: medical View of the Question, 19 Sept, p.269


Pat. 9452 (GB189509452A). Margaret Albinia Grace Jenkins, Gentlewoman, of 13 St. George’s Place, Hyde Park, in the County of London. ‘New or Improved Cycling Dress for Ladies’ (5th Oct 1895)


22 Pat. 17,115 (GB189717115A) Marie Clementine Michelle Baudéan, of 38 Rue du Chateau d’Eau, Paris, France, Composing Pianist. ‘Improved Knickerbockers Seat with a Movable Side for Female Cyclists, Horsewomen, Huntswomen and the like’, (21 Aug 1897)


26 The Lady Cyclist (1896) *Lady Cyclists At Home – Mrs Paul Hardy*, 22 Aug, pp. 433-434

27 The Rational Dress Gazette, (1899) No. 7, April, p. 26

28 The Lady Cyclist (1896) *Cycling Fashions by Madame Mode*, June 27, p167

29 The Lady Cyclist (1896) *Cycling Fashions by Madame Mode*, Aug 22, p 426

30 The Lady Cyclist (1896) Sept 26, p 581

31 The Queen (1896) Jan 4, p.25

32 Helvenston Gray, Sally and Peteu, Michaela, C. (ibid:33)
PART II
Researching, Making and Wearing Convertible Cycle Wear

The rest of the book focuses on and describes in detail five convertible cycle wear patents designed by women for women. The following chapters are based on a patent registered at the height of the British cycling boom, between 1895 and 1897. Each is patent led, biographically shaped and materially framed. Together they take us on a journey not only on velocipedes, but also through time and across Britain. These women and their stories come from Chelsea and Brixton in London, Maidenhead, York and Bristol.

Chapter 6
Pat. No.17145. Alice Louisa Bygrave, Dressmaker, from Brixton - ‘Improvements in Ladies’ Cycling Skirts’

Chapter 7
Pat. No. 6794. Madame Julia Gill, Court Dressmaker, from St Pancras - ‘A Cycling Costume for Ladies’

Chapter 8
Pat. No. 8766 Frances Henrietta Müller, Gentlewoman, from Maidenhead - ‘Improvements in Ladies’ Garments for Cycling and other Purposes’

Chapter 9
Pat. No. 13832. Mary Elizabeth Pease & Sarah Ann Pease, Gentlewomen, from Yorkshire. - ‘Improved Skirt, available also as a Cape for Lady Cyclists’

Chapter 10
Pat. No. 9605. Mary Ann Ward, 92 Thomas Street, from Bristol - ‘Improvements in Ladies’ Skirts for Cycling’

Each chapter takes two parts. I start by telling the stories of the women, as much as is possible; where they grew up, family life, education, skills and training. I look for social, cultural and political influences that gave shape to their ideas. Ultimately I seek to flesh out their inventions, to bring to life the names written on the patents in the archives. To stitch these stories together I have drawn on a range of materials that warrant a quick introduction.

Much like the women who made the costumes, my research weaves together information from an array of sources. (Incidentally, it is interesting how much sewing language permeates modern parlance). This is not balanced work. As is the nature of archival labour, I have discovered more about some inventors than others. Some women are easier to trace, such as Alice Bygrave and Henrietta Frances Müller. Others are much more difficult. It turns out there are many Mary Ann Ward’s in Bristol in the late nineteenth century.

Nevertheless, I start with the patents and then look around them for clues and links. This involved creative and time-consuming work with a range of materials – from century old bomb damaged periodicals to reels of microfiche film – all of which is remarkably physically exhausting for largely static labour. The reward of stumbling across something exciting is
heightened in this largely immobile activity. Historians know the feeling of celebrating a breakthrough very quietly in amongst the silent stacks. At other times you learn just how tired your eyeballs can feel and how blank your social calendar becomes. Carolyn Steedman has written a groundbreaking book *Dust* on doing archival work. I found this useful in reflecting on the physical and material labour of dealing with the anxiety of having too much data and not enough data. Drawing on Derrida, Steedman talks about ‘archive fever’ which ‘keeps you awake’ because ‘these people have left me the lot; each washboard and doormat purchased; saucepans, soup tureens, mirrors, newspapers, ounces of cinnamon and dozens of lemons […]’. Like Steedman I moved through many feelings about my positionality in finding, making and piecing together snippets of lives lived so long ago. ‘You think: I could get to hate these people, and then: I can never do these people justice: and finally: I shall never get it done’¹. You are also never alone. Many a time I have left the archive wearing some of the nineteenth century lives I was studying, in dust from books on my clothes and skin. Like Steedman is particularly articulate on material traces: ‘You think, in the delirium: it was their dust that I breathed in’².

Apart from approaching archival study as a visceral endurance sport, this project has presented even more obstacles. Like most historical studies, I draw on a range of resources, from the Census, Electoral Register, Land Register, Baptism Records, Marriage, Birth and Death Records, periodicals and newspapers, advertisements and brochures and other commercial materials, personal correspondence, genealogical records and where possible contact with family members. However, undertaking patent studies is particularly challenging when tracing the history of women inventors. Even if someone else did not register their ideas, namely their husbands or fathers, their names change through marriage making them harder to track down at different points. Many conventional research documents of this period are blind to their presence. Women were not allowed to vote prior to 1918³, so the Electoral role prior to 1900 is of minimal use. Women have always been listed on the Census, yet their vocations are often overlooked. Employment such as domestic management and homeworking for family or local businesses is rarely recognized. Much of women’s work was not immediately visible, because it took place in the home and was rarely full time. Similarly, patents rarely provide the kind of rich details of women’s vocations, as they do for men. Women may have not considered this an important self-identifier, as men did of the time, or data collectors may have been less interested or did not know how to ask for this information. A further common barrier to both genders for patent research is commercialization. While this is a marker of success for an inventor, for the researcher it can mean a dead end. When a patent is a picked up by a company it is often renamed, thus making it hard to keep track of the trajectory of specific designs.

It is important to note that the following chapters are not written as conventional heroic stories. They are ordinary women who in many ways did extraordinary things, considering the barriers they faced at every turn. Women did not have easy access to education, business, careers, money or social mobility. Until the changes to Married Women’s Property Act, they did not have access to their property and were more likely considered property themselves. Yet, their stories are differently heroic. John Price has done extensive research in *Everyday*
**Heroism: Victorian Constructions of the Heroic Civilian**. He notes how nineteenth century heroism is conventionally shaped by military and adventure and in places far away from the home. Heroism, as a result tends to be predominantly male. Yet, there were many other forms of heroism not captured in these categories, including those of heroines. Price is interested in everyday male and female civilian acts of life-risking bravery with a focus on *The Watts Memorial to Heroic Self-Sacrifice* in Postman’s Park, London. It is a remarkable repository about people who gave their lives helping others, often strangers. He argues that these stories were as celebrated as much as military tales at the time, but have been lost since then. His study broadens out the landscape to include everyday heroism again. Patent studies often do something similar in their focus on conventionally successful inventors, who also tend to be male with ‘proper’ highly technical and engineered inventions that were ‘economically’ celebrated. Inspired by Price’s work, this book intervenes in classic nineteenth century technology histories and patent narratives by reclaiming women’s patenting contributions.

The other part of each chapter attends to the making of these garments. Why make them? As I quickly discovered they do not exist. They are not available to look at or touch. So, the first obvious reason for making the costumes emerges directly from their absence. I found a plethora of Victorian women’s sporting dress in UK museums and galleries in the form of yachting, horse riding, gymnastics, swimming, golfing outfits. There were a few late nineteenth century cycle outfits but no convertible garments. There are many reasons for this. As any cyclist keenly knows, cycle wear gets worn out. Clothing was a precious commodity and it was common practice to reuse material for other purposes at this time. These inventions were deliberately hidden in plain sight. Related to this is how these garments were designed not to be seen and as I discovered they often do not make sense off the body. If you did not know what you were looking out, it is likely that the uniqueness of these artefacts would pass unnoticed. Finally, women’s invention has not in the past been considered of particular importance. Moreover, even if examples of these century old artefacts were available, I (understandably) would not be allowed to try them on, move around and feel how they enabled or inhibited movement or go for a bike ride. They would also invariably be too fragile and small for my modern un-corseted frame.

These women provided highly detailed instructions in words and images for others to replicate their design. The documents are effectively historical hackables or instructables. Although the designers controlled copyright for 20years, after this period their inventions became available for public use. Patents are ‘a licence conferring a right or title for a set period, especially the sole right to exclude others from making, using, or selling an invention’. The nature of a patent is such that the language and drawings must provide ‘full, clear and exact description of inventions, such as will enable others skilled in the art of which it pertains to make use of it’. Therefore, in the case of a clothing patent enable anyone knowledgeable in the art of sewing should be able to reproduce these garments. This makes them really practical capsules of invention because at core is the desire to make connection with future users and enable the replication of the idea. Making these garments creates a relationship and dialogue between the inventors and users, the past and present. Inventors had a responsibility to future users. We are such users.
Although I am adept at sewing, making things on this scale for research purpose required some consideration. I am an ethnographer by training, which is where you use your body as a research instrument to gain a deeper understanding of a particular social group or practice. You spend time with people, participating, observing and talking and attempt to see the world through their eyes. Doing ethnography is of course is not possible when your research subjects lived over a hundred years ago. So, I chose to spend time with the traces of their lives. I observed, participated and examined the women’s lives through their patents and the process of making the garments. Sewing, it turns out, fits well with this methodological framework. It directly involves the body, and is a process of constant interpretation and negotiation. It is a multi-dimensional engagement involving the body and brain. The patents, archive and studio were my fieldsites. Sewing became a form of interviewing the women through their inventions. And I found that costumes are just as revealing and recalcitrant as human interviewees; remarkably candid about some things and surprisingly closed about others. Much like interviewing humans, good answers come from asking good questions, a genuine rapport and lots of emotional and physical labour. Going deeply into patents in this multi-dimensional way provoked a visceral way of thinking with and through the designs.

Making and wearing patents is a method that takes the archive and patent (back) out ‘in the wild’. It transforms clothing patents into three-dimensional arguments by following inventor’s step-by-step instructions in technical descriptions and visual diagrams. This material method affords a different kind of sense making and mobile material encounter, rather than relying solely on written accounts. It goes some way to ‘reveal dimensions of political and social transformations that cannot be discerned in observed social behaviour or verbal and written articulations’. By making our own versions we had a chance to experience these unique garments in rich, hands-on, bodily practice. We get to touch, feel and wear them, walking and on riding bikes and generally feeling how they both enabled and inhibited women’s freedom of movement.

Undertaking this kind of practice research archival work involves creativity, imagination and energy. It goes beyond a distinction of research and body, them and us and then and now. One of the aims of the project was to explore what might emerge in the making that was not evident if we had just read and textually analysed the patents. In many cases, what we felt was a deep appreciation of the complexity of these seemingly simple garments. They looked simple from the outside, which was their intention. But in many cases the complexity of the design lay inside the garments, which truly only emerged when we started to make them. Each had to be made up to four times; small scale, toile, full size mockup and final garment. In (re)making these pieces, the intricacy in even the simplest details revealed themselves. Buttonholes, for example, were not always enrolled for the purposes of buttoning. They could be, in the case of Alice Bygrave’s patent, a critical component in a pulley-system concealed in the seams of a convertible skirt. While the making section forms only a small part in each chapter, it was formative to the articulation of ideas and the piecing together of stories.

Throughout the project, we made mess, mistakes, took tangents and had to make many decisions about materials and sewing techniques. Attentiveness to materiality was important
for the project. We set out to interpret ideas, draw on the influences and use related technologies to make our own versions. Axiomatic to convertible cycle wear is a desire to remain un-detected, so the garment should look like ordinary fashion until the wearer chose to convert it to cycle wear. So, we used vibrant fashionable colours and materials. In contrast, cycle wear was identifiable by its hard-wearing, dark coloured material chosen to resist dirt and wear. To do this, we worked with cutting-edge materials from a London based manufacturer, Dashing Tweeds, using a high-visibility tweed from their Lumatwill range. This is tweed with a twist. It weaves traditional British wool with a high-visibility technical reflective yarn that dramatically reflects light at night. This was a deliberately choice to reflect the contrast between urban street wear and cycle wear. Inventors of the time were embracing a plethora of new technologies with enthusiasm.

Cyclists have long been early adopters of a wide spectrum of cutting-edge technologies and fabrics. The popularity of the sport was such as many businesses eagerly plied their wares to this new consuming public. Manufacturers at this time were adopting and promoting leading fabric and techniques, such as wind, dirt and waterproof materials that were circulated amongst cyclists before a general public. Cyclists were great test subjects. They had already demonstrated a disposable income, predilection for new technologies and their bodies were out in the elements. And it seems that they have always talked at length about what worked and what didn't work on the bike. Take this journalist in The Wheelwoman and Society Cycling News, 1896:

I allude to the “Cravanette’ rain resisting fabrics. Clad in garments, the material of which has been subjected to this process, one may cycle in wet weather with impunity, and at the same time escape the injurious effects of ordinary mackintosh coverings. It has the advantage of being suitable to making up in one’s own particular style, coat and skirt, capes, rationals, in fact in any form the wearer adopts for cycling.

Of course, cycling’s attention to detail is not always appreciated. A few years earlier, Bicycling News featured a front page article about how ‘cycling mania’ tends to ‘exclude all else from some riders’ thoughts’ and which makes them ‘lop-sided in their constitution’. However, in this research, cycling’s monopolizing focus is highly valued. Just as I argue throughout the book that there was no single solution to the problems faced by women, similarly, we were not trying to make the one perfect replica from each patent. This is not a historical re-enactment project. Instead, I am interested in what is commonly called practice research. This is more familiar in disciplines like art, theatre and design than in sociology. Yet, throughout my time at Goldsmiths I have been given support and encouragement to explore my practice in, with and through my research to the point where I talk about ‘making things to make sense of things’. Throughout this research I asked: what might we learn from making the garments that cannot be discerned from reading the patents. What can and can’t be transmitted through text? What might making and wearing research
bring to sociological knowledge? How might these garments make us think differently through materials, patterns, sizing, choices, mistakes, sewing, unpicking, etc?

Finally, this project is about collaboration on multiple scales. I talk about ‘we’ as the work is a product of many hours of conversations, skills and contributions from a collection of people. Documenting the process, the mistakes, mess, unexpected insights, tangents and happenings form part of each story. Just as in the past these kinds of objects would not be made by one person: each requires a range of skills to translate two-dimensional patents and patterns into three-dimensional material garments. I worked with an interdisciplinary team it is not possible to make these garments alone;

Research Assistant - Rachel Pimm, artist and researcher, with wide experience in producing events and exhibitions as well as sewing and performing in the costumes provided a wide range of assistance across the project.

Pattern Cutter - Nadia Constantino helped translate the patents into patterns. We provided Nadia with a brief, like a character storyboard, for the garment. This comprised a copy of the original 1890s patent, samples of the fabric we are planning to use, various visual references to skirts and bloomers of the period and measurements. She drew all of these references together into a block pattern, a toile and instructions for piecing them together.

Artist - Alice Angus worked with the research team the office, listening, asking questions, drawing and painting in response to our findings. Her illustrations were digitally printed onto silk and sewn into the garments as linings, which were revealed when the garments was converted from street wear into cycle wear. The linings added another dimension to these storytelling objects.

This is in many ways a classic feminist reclamation project. I am attempting to re-place women inventors back into their designs, their patents into the chronicles of history and our bodies into their costumes. Rendering their stories visible (and material) through the stitching together of fragmented archival materials and patented garments is a means of bringing them into multiple forms of being that cannot be easily overlooked; it is a deliberate and strategic countermove given these designs were deliberately designed not to be seen, made by a marginalized group, who were economic and legally overlooked and are missing from most official records. The aim is to turn up new and different ways of thinking about the past. In design, a popular approach is what is called ‘speculative design’\textsuperscript{11}. Anthony Dunne and Fiona Raby explain how ‘design is a means of speculating about how things could be—to imagine possible futures’. This book offers what might be termed speculative histories. Although, perhaps a better way to think of it is with Maria Tamboukou’s idea that a ‘story never ‘is’, but always ‘becomes’\textsuperscript{12}. She explains: ‘It is not that we have, listen to or think of a story and then we tell is or write it; the story becomes in the process of being narrated; it further ‘becomes’ as we perceive it, although we narrate or feel can never be the same story’. The following are stories that invite us to think differently and in new ways about where we have come from in order to better understand where we are now.
Fig. Talking and making

Fig. The research team works in the studio

2 Steedman, Carolyn (2002:19)

3 This was also not for *all* women. Voting rights at this time were granted to those over 30 years of age and with property to their name. For younger women this was even later, at 1928.


8 The Wheelwoman and Society Cycling News (1896) 5 Dec, p.12

10 Jungnickel (2016 ibid)


Chapter 6

Patent No. 17145
Alice Louisa Bygrave
‘Improvements to Ladies’ Cycling Skirts’

Alice Louisa Bygrave submitted a complete specification for a Great Britain and Ireland Patent for ‘Improvements in Ladies’ Cycling Skirts’ on 1st November 1895 (it was accepted on 6th December 1895). The patent tells us that she was a dressmaker and was living at the time at No. 13 Canterbury Road, Brixton, in the County of Surrey.

Like many inventors of this period, Alice set out to find a way to cycle safely and comfortably, yet also appear less like a cyclist when away from the bicycle. ‘My invention’, she declared, ‘relates to improvements in ladies’ cycling skirts and the object is to provide a skirt as proper for wear when the wearer is on her cycle as when she has dismounted’ The use of the word ‘proper’ is revealing of the pressure on women and their clothing to be practical and feminine, even when these demands seemed at odds in differently socio-mobile and technological contexts. How does she do this? Alice improves an ‘ordinary skirt’ with a series of devices built into the infrastructure of the skirt. She applies deliberately concealed technologies, built-in engineering and creativity to the ‘dress problem’. Her design features a carefully concealed system of buttonholes, weighted hems, guided channels and waxed cords that together comprise a clever pulley system stitched into the front and rear central seams of the skirt. Working with materials at hand, she sets out to expand and reconfigure what they do – this is a classic hacking approach. It produces a unique system, which allows wearers to adapt their costume when needed. She explains: ‘As the wearer prepares to mount her machine, she pulls both cords in from the top, thereby raising the skirt before and behind to a sufficient length’. The pulleys gather the material upwards, much like a curtain, and leave it draped over the hips in a fashionable ruché style. The wearer was therefore able to adjust the height of her skirt, effectively and efficiently gathering it up and out of the way of the wheels and her moving legs. Moreover, the weighted hem permits the reverse action, enabling the wearer to quickly conceal her legs and cycling intentions as required.

A rich theme throughout Alice’s story is the collaborative nature of her design and ideas. Although she is listed as the sole named patentee, which remains the usual convention, there is ample evidence of a plethora of influences. Her unique and inventive response can be seen to be related to her skills as a dressmaker, cycling interests and exposure to her family’s watch and clock making business as well as the diverse range of crafts people who moved through her life. Before looking closely at the design it is useful to understand more about the inventor and her influences and explore not only how it helped women move in new ways but how it too ended up travelling great distances.
Improvements in Ladies' Cycling Skirts.

I, ALICE LOUISA BYGRAVE of No. 13 Canterbury Road, Brixton in the County of Surrey, Dressmaker, do hereby declare the nature of this invention to be as follows:—

My invention relates to improvements in ladies' cycling skirts and the object of it is to provide a skirt proper for wear when either on or off the machine.

In carrying the invention into effect, I make use of an ordinary skirt and the ordinary knickerbockers, the former being worn over the latter. I fasten a tape or cord to the bottom edge of the skirt in front and carry this cord up through suitable guides to the top of the skirt where it is made fast in any convenient way. The back of the skirt is fitted with a cord in the same way as the front.

As the wearer prepares to mount her machine, she pulls both cords in from the top, thereby raising the skirt before and behind to a sufficient height, after which she makes the cords fast in any convenient way, as for instance to the same fastening to which the top ends of them are held. This raising of the skirt before and behind leaves the sides of it fastened, as it were, over the knickers. Before dismounting, the above mentioned cords are loosened and the skirt pulled down, back and front, by suitable weights made fast to the bottom edge of it.

Dated this 13th day of September 1895.

PHILLIPS & LEIGH,
Agents for the Applicant.
The inventor and her life

Alice must have known that she was onto something exciting and potentially profitable with her improved cycling skirt because this was not the only patent she registered. Ambitiously she applied for three international patents for the same design, two within a few days of each other and the other a month later. Patent No. 11,425 was registered with the Swiss Federal Institute of Intellectual Property on 13th December 1895 and Patent No. 51,929 was registered at the Canadian Intellectual Property Office on 18th December 1895. Although formatted differently, they ostensibly outline the same invention. The Canadian document is particularly interesting as it features corrections to the typed description in hand writing and bears Alice’s signature. Alice lodged a further version of this patent in the United States Patent Office two months later, in February 1896. With these four patents she effectively laid claim to her invention across three major continents.

Why did she do this? As discussed in the previous chapter, the inventing fervor of the period must have been infectious for everyone, and increasing new forms of encouragement for women made a refreshing change given barriers to entry into this business sphere had long been high. Alice could have been reading one of many publications like The Queen, The Dawn or The Women’s Penny Paper amongst many others that presented different ways that women could get involved in the world of business. She could also have been wary of having her ideas copied and stolen, as stories of lost wealth through corruption were just as rife in the newspapers as those of commercial triumph. Another catalyst undoubtedly came from her home life.

Alice identifies herself as a dressmaker, probably having learned from her mother. Emma (nee Reed) was born 1834 in Covent Garden and worked as a dressmaker. She married Alice’s father, Charles William Rudolph Duerre, in 1854 at The Strand in London. Charles was not a Londoner. He was born in 1830 in Memel Prussia and worked as a watch and clockmaker. Alice was born on 28th July 1859, and she had two older siblings (Emma and Rudolph) and three younger ones (Arthur, Ada and Earnest). Living in a family of seven would have made for a hive of activity, but there was even more bustle in the Duerre household. According to the 1871 Census, when Alice was 11 years old, the Duerre’s were living at No.15 Kings Road, in the Civil Parish of Chelsea. The fading hand written document tell us that on the night of April 2 1871, the house was inhabited not only the immediate family, but also another seven people. The Duerre residence may have been a boarding house or they resided in a shared house with fellow craftspeople. The former seems more likely as the Census records these people as ‘lodgers’ in the column ‘Relation to the Head of Family’. The age and occupations of the lodgers adds further layers to Alice story. They included Henry Sayers, 28 (Artist Brushmaker) and his wife Amelia Sayers, 27 (Artist Brushmakers wife) from Marylebone and the Coopers - Thomas E Cooper, 22 (Dyer and Cleaner), Louisa C Cooper, 26 (Dyers Shopkeeper), Emily C Cooper, 25 (Dress Maker), Ebenezer, S, Cooper, 21 (Watchmaker) and Henry C Cooper, 29 (Dyers Finisher), all of whom came from Islington². Alice grew up surrounded by an eclectic range of ideas from young people primarily engaged in creative occupations.
Fig. Alice Bygrave’s signature on her Canadian Patent CA51929D (18 Dec 1895)
The larger context of Alice’s early life was no less materially animated. Her parents owned and ran a Watch and Clock Making shop at 466 Kings Road. (It is possible they also had one at 190 Kings Road at some stage). A picture of the outside of the shop reveals a window teeming with meticulously arranged goods. Rows of small round clocks faces offset large carved wood framed timepieces. Overlapping display cases held pocket watches of all kinds and pendants swung on long chains. The window was framed with ornate stained glass, which no doubt further enticed passers by to pause. Given it was a watch and clock making shop inside was most likely partly given over to a workshop for restoration and repair. Entering the shop might have felt like stepping into the intricate anatomy of a timepiece, into the very mechanics of its secret innards. Charles’s expertise and knowledge would have been materially displayed. Electric lighting was still in its infancy at the turn of the twentieth century, so it is likely the interior was lit with gas. Workbench with lamps might have punctuated the dim interior with glimmering light. Walls might have been covered in goods for sale, tools and materials of every description. We can imagine springs and cogs, pin levers, ornate winding keys, carved hands and painted dials, wheels and gear systems of all scales and materials. The sounds too would have been very different inside from those of the streetscape; the noise of the street giving way to a cacophony of clicking, ticking, chimes and bells.

Much like today, Chelsea was a hub of industry, buzzing with ideas, goods and people. Kings Road was so named because it was King Charles II’s private road to Kew until 1830. The nineteenth century saw it expand to become synonymous with art, textiles and design and was home to, amongst others, Turner, Virginia Woolf, Oscar Wilde and the Chelsea School of Art. The 1895 Post Office London Directory provides us with a sense of the surrounding shops and cafes at the time that Alice’s family lived and worked in the area. There were Linendrapers, Bootmakers, Hosiers, Dressmakers, Upholsterers, Tailors, Hatters, Hairdressers, Butchers, Greengrocers and Fruiterers Wine merchants, Confectioners, Fishmongers, Cheesemongers, Leather sellers, Chemists, Surgeons, Stationers and even a Cyclemaker.

In 1881, at the age of 21, Alice married Charles Edward Bygrave, a Commercial Clerk for International Shipping Car Company and together they moved to No.13 (also referenced as 13-15) Canterbury Road, Brixton. They had two children, Lena Alice in 1883 and Herbert Charles in 1886. The ambiguity of the house number is relevant as the 1891 Census reveals that addition to the family, on the 5th April, there were five other adults in residence. Much like how she was brought up, Alice continued to live in a Boarding House. However, interestingly, things were changing from her parents’ generation. Not everyone in the house was local. The Census accounts for a ‘visitor’, an Alice Maud Lucy Foskett, 22, from Kentish Town and a ‘General servant’ Florence Elizabeth Chandler, 18, originally from Stevenage. The three ‘boarders’ were not English, indicating the general move at the time of workers from abroad. Herbert Hippolytos Edmond Fleischer, 26, Alexandre Debisschop, 20 and Fernand Pequewand, 22, were all listed as Wool Buyers from different parts of France. Alice’s designs might in part have been inspired by her exposure to people from different parts of the world directly engaged in hands-on craft, engineering and textile vocations.
Bicycle culture and the location of her childhood are also central to the telling of her story. Kings Road would have been a thoroughfare of cycling activity on a daily basis and especially so when it was the site of cycling parades. Tessie Reynolds’ record for cycling London to Brighton and back, for instance, was the catalyst for one such event in October 1893. The streets were bustling, with equal excitement about her endurance feat and costume. It generated considerable interest and as per this writer’s account in Bicycling News:

By her ride, and the extraordinary correspondence it has provoked, together with the reproduction of her photograph throughout the country, Miss Reynolds has accomplished more in three weeks in stirring up opinion about ladies’ rational dress than could otherwise have been achieved in as many years. In Brighton drawing rooms and at dinner tables allusions to the subject are frequently heard. Last Sunday, accompanied by an escort, Miss Reynolds rode along the King’s Road, when the sidewalks were crowded with promenaders, including our informant, who states that every comment he overheard was favourable and friendly, both as regards the rider and her dress.

Given the attention and crowds, it is unlikely that Alice could have missed the spectacle passing along in front of her parents shop and may well have been on the street, in amongst the admiring mob. Even if she had not been there, she would have heard about it from family members and taken inspiration from the positivity of mass reaction to Tessie’s costume on the street and in the media. There was of course a flip side of the mass attention. Although still positive, this writer in ‘The Ladies’ Page’ of Bicycling News, explains her misgivings. ‘I hear that Miss Reynolds, who wears a French costume at Brighton, attracts an immensity of attention, and that her photographs, which are for sale in the shop windows at Brighton, are in great demand. She is very young – only about fifteen – and probably does not mind the attention she attracts as much as she would do if she were older.’ Alice might have also felt overwhelmed by the attention Tessie generated. Alice was only 33 years old at this time, but with life expectancy around 40 to 50 years old, she was in this ‘older’ bracket. Therefore, it’s probable that both reactions, excitement and wariness, were formative in shaping her material response.

Further inspiration for Alice’s design may have come from her parents. Her father was a keen everyday cyclist, using his bicycle to collect and deliver finished work around London. Apart from practical use he indulged a keen interest in bicycle design, particularly in saddle construction. Like his daughter, Charles Duerre was also a patent holder. In total, he laid claim to five patented inventions relating to the bicycle. In each, he self-identifies as being a Watch and Clock Maker living on Kings Road, Chelsea. The timing is interesting. Charles submitted his first patent in 1894, a year before Alice’s UK patent. Perhaps, she became familiar with the process of patenting an idea through his experience, maybe she spent time with him in the shop talking about ideas and making models. Charles continued to develop his ideas over the next decade. He submitted an improved version of this in 1899 and shortly afterwards did the same as his daughter, by lodging the design in the Austrian Patent Office.
in 1900. Maybe here, the tables were turned and father learned from daughter. Charles continued to develop the suspension of saddles with a UK patent in 1901 and again in 1904.

Looking closely at Charles’ inventions is revealing for understanding Alice’s approach to cycle wear. Knowing that he was a trained watch and clock maker goes some way to explain his interests in getting inside the saddle, under the leather surface and into the structural framework of springs, coils and links, to set about to rework the principle of suspension and reconfigure the tensile forces at play. Charles approached the saddle like the inside of a time-keeping device; dismantling the many different parts that work in complex interconnectivity under the surface; seeing it as a sum of parts rather than a seamless coherent whole. This goes some way to explain why Alice came to engineer complex pulleys, technical systems and devices into the infrastructure of her clothing and how her invention was purposely hidden in plain sight, behind the scenes – much like the people in the boarding house or the cogs in a watch.

Both Alice and her father used the same agents for their British patents. Phillips & Leigh Patent Office was officially founded in 1882, but it has records that date back to 1876. They were clearly supportive of not only small independent traders, but also of an even more marginalised subset, women inventors. They continue to operate today, over a hundred and thirty years later, out of a London office near Chancery Lane and the Inns of Court (and only a small distance from their original site at No. 22 Southampton Buildings). This area was located in a technology cluster of patent agents and supporting trades. Up until July 1898, the Patent Office Library was located in Southampton Buildings. (In 1898 it moved to a temporary premises in Bishops Court, Chancery Lane while awaiting the completion of new offices). Reader numbers were high, with a total of 35,328 people in 1897 who were accessing the materials between 4-10pm.

Another significant influence in Alice’s life came from her younger brother, Arthur and his wife Rosina who were both professional racing cyclists. Although her married name was Duerre, Rosina kept her racing name – Rosina Lane. As discussed earlier, cycle racing was immensely popular in the 1890s, predominantly for men. The thrill and excitement of this new sport both produced and reinforced its masculine appeal. This trickled down into everyday cycling and reinforced cycling ‘fit’ with many masculine ways of being in public space, including producing in some instances anti-social behaviour in the form of ‘Yelling Yahoos’, “Cads on Castors’ and ‘Scorchers’. Yet women were expected to maintain ‘grace’ and ‘modesty’ while cycling. This discourse did not translate well into women’s racing.
Fig. Duerre Watch and Clock Making Shop on Kings Road, Chelsea (Photo credit: Bygrave relatives)

Fig. Illustration from Charles Duerre 1904 patent
Yet, race women did. It continued to be a site of contest and controversy, because women’s presence at sporting events was largely constructed (and controlled) as ‘novelty’ athletes, carnival performers or spectators at special ‘Lady’s Days’ and routinely overlooked in contrast to ‘proper’ (male) athletes and record breakers. It is only recently that scholars have looked closely at the more active role women played in the history of cycling. Fiona Kinsey, for instance, deliberately sets out to ‘re-insert female Australian competitive cyclists into the historical record’ in her research into Australian cycle racing women in the 1890s.

Similarly, the history of British women’s racing is the focus of Clare Simpson’s work. She argues that while it has been documented that women started racing in the 1860s, it was largely ‘sporadic and haphazard’ and it wasn’t until the later part of the century when their involvement became more regular. However, she writes how even when records were being set by women around the world, ‘[i]t is difficult to determine the extent to which women’s racing was taken seriously as a sport or viewed merely as entertainment. Women’s races were routinely staged between acts at the theatre and music hall, or on the programmes of freak shows, commercial advertising shows, acrobatics exhibitions and so forth’. Nevertheless, part of the public demand was the excitement of seeing women doing fast, risky cycling in a confined space. As Clare reminds, ‘on the public streets, women were strongly sanctioned from ‘fast and furious riding’, and so it was a rare thing to witness such a phenomenon and for any duration’. However even at dedicated racing sites such as velodromes like the Royal Aquarium, in West London, the media begrudgingly covered the events. ‘It must be conceded that woman – lovely or otherwise’ writes a journalist in 1896, ‘does not appear to great advantage in a bicycle race. Still one must take things as one finds them: there is evidently a public demand for cycle races by women, and the Royal Aquarium, with its customary enterprise, has supplied them on several occasions.'
Despite these barriers, Rosina Lane was able to race enough to earn £100 per annum for five years as a professional cyclist at Olympia and the Royal Aquarium. This was a significant sum, around £9,000 in today’s money and because she regularly placed in events, her name and image often appeared in newspapers. The primary reason that Rosina Lane’s racing life is relevant to Alice’s story is because she was photographed wearing the costume. In fact, she is pictured wearing the costume before it was patented. On 27th November 1895, she appeared in The Sketch standing next to a diamond frame bicycle. She looks comfortable and confident and wears the garment so well it looks tailor made for her – which it probably was. In others she is standing in the centre of a group of racing cyclists. Her garment stands out not only because she is the tallest cyclist and centrally positioned but also due to the bright, light colour of the fabric. It’s not implausible that this was planned. As we discover later, Alice was not only an inventor but also an astute businesswoman. Rosina’s physical presence and prowess would have made her a perfect role model to promote Alice’s invention.

Sadly, her story does not end well. Rosina was involved in a terrible crash that put an end to her cycle racing career. On August 21, 1897 she was knocked from her bike in Richmond Park by a horse and carriage. Her body and bike were pinned between the bridge and the carriage. The bridge gave way and all tumbled into the dip below. It was serious. The court report notes that, ‘The bicycle was smashed and the “rational costume” in which she was riding was torn to pieces’. The driver and carriage witnesses claimed that she hit the horse as ‘her steering was somewhat erratic’ and she was ‘riding fast and bending right over her handle-bars’. The opposing lawyer brought up the fact that she was a well-known racer and had been fined 10s for riding fast in Kingston. The judge disagreed, noting that evidence showed that the horse and carriage were on the wrong side of the road when the crash happened. Rosina won the case but was awarded a paltry £55 in damages for her suffering. She remained in pain after the event. She could no longer race or even cycle, and was not able to manage the family’s Kings Road shop with her husband.

Fig. Rosina Lane dressed in Alice’s patented cycling skirt, (Credit: Bygrave family)
Fig. Racing women at a cycling Velodrome (Credit: Sheila Hanlon)

Fig. Rosina Lane (left) and other racers on a triplet, *The Sketch*, 1896
Fig. Miss Rosina Lane, *Punch* (Credit: Bygrave family)

Fig. Rosina Lane (second top right), *The Queen*, 1895
Commercialisation and Distribution

Patents are valuable repositories of information regardless of whether they reach the heights of commercial success. As discussed in previous chapters, these records provide valuable glimpses of life in previous times. We gain insights into how inventors were imagining intersections of bodies, social norms and technological advances. To trace ideas from detailed description and drawings through the process of production to material artefacts, and promoted in media across different countries into the hands of eager consumers is the researchers dream for it is all too rare. The reality is more frequently a dead end. Patent research hits an abruptly cut short in many ways, particular for women, whose contributions are less accurately captured, reflected and celebrated in conventional records.

This is not the case with Alice’s patent. In fact, it presents the opposite. 1896 proved to be a very big year for Alice, now 35 years old and mother of two small children, as a result of her patenting activities. This is when her invention was produced, commercialised and distributed by Dr Jaeger Sanitary Woollen System Company Ltd. The Jaegar Company was a substantial backer for a new patentee. Established in the UK in the early 1880s by Lewis Tomalin, and inspired by the charismatic German scientist Dr Gustav Jaegar, the company promoted the sanitary benefits of high-quality natural fibres worn close to the skin. It was seen as appropriate for active wear and highly regarded by many, including The Rational Dress Society who wrote positively of the company’s goods in the first edition of The Rational Dress Gazette in 1899: ‘The Jaegar Company, Regent St., are now making all wool knickerbockers, suitable for outdoor wear, at a moderate price. They are a very good pattern’.

Jaeger held the sole licensee of what they called the ‘Bygrave ‘Convertible’ Skirt’. They produced the skirt in a range of Jaeger fabrics and sold variations at different prices. As was the practice for selling bicycles, Jaeger opened up their 95 Milton Street, London store to demonstrate new inventions and encouraged women to see the new costumes in action. Jaeger also promoted the new design in popular women’s press and cycling periodicals. A full page advertisement for the ‘Bygrave “Convertible” Skirt’ appeared in The Lady Cyclist in March 1896. It promotes the skirt as being ‘patented’, which was a common and highly valuable selling point, and designed for ‘Cycling and Walking’. The speed of the conversion is stressed with the claim: ‘Instantaneously raised or dropped’. The copy is accompanied by two illustrations of these benefits in action. One depicts a woman on a bike pedaling with the skirt raised out of the wheels. The other shows her walking next to her bike with the skirt complete down and giving no indication that it is anything apart from an ‘ordinary’ skirt.

Many journalists recognized how the skirt operated as a dynamic medium between fashionable and rational clothing and discussed how it occupied this liminal space. The Queen: The Lady’s Newspaper reviewed the ‘Bygrave “Quick Change” Cycling Skirt and is heralded as a ‘happy solution to the vexed question of ladies’ wheeling dress’, because it ‘hits the golden mean between the ordinary and the rational, giving to the rider all the comfort of the latter, and the additional ease of knowing that in a moment it can be resolved into a
perfectly ordinary skirt\textsuperscript{21}. The writer made further positive comment about the reduced volume (only two and half yards) of material, which meant ‘there is no unnecessary fullness over the hips’. Buyers could choose from a range of ‘durable, unweighty and pliant’ materials from the Jaeger natural fibre collection. Skirts could also be made with and without lining. All of these choices meant the tailored garment could be customised to fit taste and budget.

Alice’s invention was shown at popular events such as the \textit{Stanley Cycle Show} at the Agricultural Hall in Islington. This was a popular annual exhibition of bicycles, accessories, machinery and horseless carriages (new motor cars). It appears from media coverage that it was showcased at least twice, in 1895 and again in 1896, in a promotional stall run by Dr. Jaeger Sanitary Woollen System Company Ltd. The Cycle Shows ran from 1878 to 1911, but the 1896 show was considered to be at the height of cycling’s popularity. The \textit{Lady Cyclist}, in March 1896, reports on the 1895 event and makes favourable comments about Jaeger’s overall contributions to the cyclist and draws particular attention to the convertible skirt. ‘The “Bygrave” costume’, the writer notes, ‘which was exhibited at the Stanley Show, is designed for either cycling or mountaineering\textsuperscript{22}.

\begin{center}
\textbf{DR. JAEGER’S Sanitary Woollen System Company, 95, Milton Street, E.C., at Stand 255 Gallery, were demonstrating the very obvious advantages of their new cycling skirt, and showing, amongst many other specialities:}
\begin{itemize}
  \item \textit{Corsets}—Pure wool, allow free action of the skin.
  \item \textit{Elastic}, and yielding to every movement of the body.
  \item \textit{Jackets} of undyed camel-hair ‘fleece’ material.
  \item \textit{Saddle Covers} prevent saddle soreness.
  \item \textit{Shoes}—Cycling, wool-lined, ventilated.
  \item \textit{Skirt, “Bygrave,”} convertible, cannot blow out or ride up.
  \item \textit{Stockings} are now made with thin feet in a large variety of designs.
  \item \textit{Suits} for Gentlemen cyclists are made of pure wool throughout at the Jaeger Tailoring Depot, 42, Conduit Street, New Bond Street, W.
  \item \textit{Waistcoats}—Knitted, pure wool, very porous, allow free action of the skin.
\end{itemize}
\end{center}

Fig. The new “Bygrave” convertible skirt was promoted at the Jaeger stand during the 1896 Stanley Cycle Show, \textit{The Wheelwoman and Society Cycling News}, 1896\textsuperscript{23}
Bygrave ‘Convertible’ Skirt
For Cycling & Walking.
Instantaneously raised or dropped.
Price, Complete, from 21/-
Permanent Protection from Chill.

JAEGER

Fitted moderate prices.
JAEGER DEPOTS——
3 & 4, Princes Street, Cavendish Square
(near Regent Circus).
126, Regent Street (near the Quadrant).
30, Shane Street (adjoining McPherson’s
Gymnasium).
456, Strand (near Trafalgar Square).
85 & 86, Chesapeake (near King Street).
TAILORING (only)——
42, Conduit Street, New Bond Street, W.
The “Jaeger” goods are sold in many Towns.
Address sent from Jaeger Co’s Head Office,
95, Milton Street, E.C.

NEVERMORE SADDLE SORE!!
Jaeger Saddle Cover — 2/-
“Cush” Saddle Cover 3 3

DR. JAEGER’S SANITARY WOOLEN SYSTEM CO., LTD.

Fig. Jaeger Advertisement for the Bygrave ‘Convertible’ Patented Cycle skirt, *The Lady Cyclist* 1896
What clearly piqued people’s interest was the flexibility it offered women cyclists. A critical point for *The Wheel Woman and Society Cycling News* was how the garment transformed, meaning the wearer was not fixed to one identity, but rather was free to choose between walking and cycling.

At Dr Jaeger’s Stall I was much taken with the “Bygrave” safety cycling skirt, which I was informed “Does not blow out, catch in pedals, or ride up, and can be instantly converted into ‘Rational Costume’. All of this I can endorse, having seen it. When down for walking, it has the appearance of a neat and nicely-cut skirt, and is raised for riding by simply drawing two cords; on releasing the cords the skirt reverts to the usual shape. The skirt, complete, can be purchased from one guinea, which brings it within the reach of all; knickerbockers to match from 7s. 6d. –

The combination of inventiveness, flexibility and quality material appealed to people. Cost was also a considerable selling point. At this time, a pound was made up of twenty shillings or 240 pennies. So, priced at one guinea meant the skirt was sold for one pound and one shilling. According to this journalist, it was considered ‘in reach of all’. Was it? To provide context we can examine average Victorian wages. Women earned less than men, but a Head Nurse might take 25 pounds home every year, a lady’s maid’s wage might be up to 30 pounds and a Housekeeper could earn around 50 pounds. Clearly middle and upper class women had even more disposable income, so it seems likely that the garment was indeed priced for a broad consumer market.

Alice’s costume seemed to address an identified gap in the market. There was a distinct lack of good quality, affordable and fashionable cycle wear for women. The skirt certainly found favour with the *The Westminster Budget* who spent column inches lamenting the lack of appropriate garments until they discovered the Bygrave skirt:

But at last it seems that a skirt has been brought out which is, in every way, the right thing to wear at the wheel; and I am glad to see that the Jaeger Company are bringing out this skirt, for we have all learnt, in the course of a good many years, to put implicit faith, if not in all the theories of Dr. Jaeger’s Sanitary Woollen System Company, at all events in every article of clothing they supply. The Jaeger materials for daintiness, simple elegance, and durability are second to no other stuffs, and they are sanitary besides… The skirt in question is pure wool, as all cycling skirts ought to be; it looks most fashionable and neat when its wearer is off the wheel. The, by drawing two magic and invisible cords, Mrs Bygrave, the inventor, causes the skirt to be raised to any height required while riding, and you ride as comfortably and look as nice about your skirts as the most fastidious could desire. And the Bygrave skirt has wisely been put into the market at the reasonable price of a guinea.

In addition to selling from of their own flagship depots in Central London and attending popular cycling events, the Jaeger Company plied the Bygrave skirt to its many agents and
distributors around the UK. Local companies, such as Cooper Hunter and Rodger, silk merchants and general drapers in Glasgow. As this ad illustrates, they exploited the growing popularity of the “New Bygrave Convertible Skirt” to promote their range to customers.

Fig. Illustrations of the Bygrave Skirt in action, The Westminster Budget, 1896

Fig. Bygrave cycle suit for sale in Glasgow
The invention traveled even further. (Perhaps Alice’s husband, Charles, in his job as a Commercial Clerk in International Shipping was involved in some way). Unlike the Swiss and Canadian patents, we know much more about the drama surrounding Alice’s latter patent in the United States Patent Office on 25 February 1896. An American Sunday Morning broadsheet the *St Louis Post Dispatched* thrilled its readers on 8 March with a story about a new ‘rapid and exciting business transaction’ by a ‘young and pretty British Matron’ that ‘made $5000 quickly’! Alice had apparently travelled to New York at the end of January from Britain to promote ‘a bicycle skirt of her own invention’. The journalist reports that within two hours of arriving on American soil, ‘while still nervous and dizzy’ from the journey, she ‘not only donned her new original skirt, but was displaying its various merits to the buyer of one of the largest sporting goods establishments in the country’. However, Alice did not accept this first offer and instead went to a competitor where she did an even better deal. Alice’s business acumen clearly impressed witnesses:

Not satisfied with the offer he made her, this self-confident, energetic young woman went forth in search of greater financial inducements to part with her cycling skirt. The first New York establishment she visited offered her a royalty on all sales made. But Mrs. Bygrave had other ambitions and walked away in her patent skirt to a well known firm on twenty-third street. The wisdom of her choice was shown when she promptly received an offer of $5,000 from the Twenty-third street dealers.

US$5,000 was a vast sum of money. In today’s terms it translates to nearly US$150,000. There was even more to come. The journalist continues to build the drama. Apparently the deal was negotiated on the basis that Alice could get a US Patent, which at that stage she did not have. So, she immediate set off to Washington and spent two hours in the Patent Office to get this in motion. She then returned to New York to confirm that this was possible and on the Wednesday, four days after she had arrived, she sailed home.

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Fig. Mrs. Bygrave’s Bicycle Skirt is illustrated in action, *St Louis Post Dispatched*, 1896
The paper was clearly an enthusiastic supporter of her ambition and design. In fact, they describe the invention in more detail than any others until now. Perhaps Alice had been developing her sales pitch and demonstration, as the skirt seemed to have even more convertible options. The journalist explains:

Her cycling skirt is the most novel invention in the matter of wheeling skirts that has yet come before the wheeling public. By a system of cords worked through openings near the waistline it can be made to fill three different varieties of long-felt wants of the bicycle woman.

The first of these three variations was the straight walking skirt. The second involved the gather or ‘shirring’ of the front pulley system to just above the knees. This, according to the journalist adapted the skirt for drop frame cycling. The third version involved the use of cords at the front and back of the skirt for use on a diamond frame, which interestingly is how Rosina Lane is shown wearing the costume.

The third possibility of this unique garment is developed by working the cords that run up the back seam and find an outlet under a tailor-made flap just over the hip. The pulling of these two side cords converts the skirt into a pair of neat and graceful bloomers that will permit the fair rider, in case of emergency, to mount a diamond frame bicycle with all the grace and utility of a masculine wheelman.

The costume continued to generate enthusiastic coverage in the US media. It was covered again in in the Sunday edition of *The Saint Paul Daily Globe* in March with the headline ‘$5000 in Four Days: Mrs Bygrave received it last week for a bicycle skirt’\(^{26}\). The next month *The San Francisco Chronicle* featured it in a section called ‘For The Girl Who Would A-Wheeling Go’, where it covered current fashions, styles and materials for keen cyclists. Next to an illustration of the converted Bygrave costume it discussed the issue of how many women cyclists would often cycle in bloomers but usually with skirts and a petticoat over the top. This was cumbersome, so some removed these outer layers, wrapped them up and attached them to handlebars when no one was looking. (This is the premise for the patent in Chap 9). The writer saw the Bygrave skirt as a more advanced convertible option:

A more convenient arrangement than this is the new Bygrave skirt, named after its inventor, who is an English woman. The skirt is the product of her own experience and is very simple, yet very effective. The idea was to arrange the skirt in such as manner as not to interfere with the free management of the pedals, and to prevent its catching on the wheels. The skirt is practically converted into a pair of bloomers by drawstrings running up and down the middle of the front and back of the skirt. These strings many be pulled as tight as is desired, raising or lowering the skirt at will, and they are provided wit catches to hold them in place. The skirt may thus become a pair of knee bloomers, or be allowed to hang loose like a divided skirt: and when worn amid “the busy haunts of men” it appears as a plain, ordinary skirt, with never a suspicion of masculinity about it\(^{27}\).
This might be a case of journalists’ waxing lyrical, but there are clues in these articles that help to explain why Alice’s invention remained in her name. After all, Jaeger could have just as easily called it the ‘The Jaeger Convertible Skirt’. First, Alice is described as a ‘young and pretty matron’. Given she was able to demonstrate the garment, negotiate business deals and travel vast distances without the need for much rest, she was healthy and strong yet clearly feminine enough to pass Victorian muster. Second, the fact that journalists were aware that the design came from ‘her own experience’ tells us that she was probably a cyclist herself. Using Alice to demonstrate and tell personal stories would have been significantly more compelling to the media and persuasive to pensive women cyclists than if it had been a standard Jaeger product.

In fact, Alice created such excitement in the media that the story of her business success started to appear in Australian media28. ‘It is stated that Mrs. Bygrave, who exhibited a cycling skirt at the recent Stanley Show, held in London, went to America with her patent, and sold it for 5000 dol.’ What is striking about this short report is its location, in the ‘Sporting’ column of a Brisbane Newspaper The Worker (originally called The Australian Workman), a political newspaper affiliated with the Australian Labor Party. News of Alice’s invention featured amongst boxing, rugby and cycling racing results. This goes some way to explain why the journalists’ unique description. ‘The costume is of the window blind order, that is to say, it is pulled up and down with a cord’. This story, although very brief, provides rich evidence of the impact of Alice’s design on the world beyond London fashion scene.

Fig. Illustration of Alice demonstrating the ‘New Bygrave Skirt’, San Francisco Chronicle 1896
Later that year the ‘Bygrave Convertible Cycle Skirt’ travelled even further, to Australia. It features in an advertisement in the Sydney Morning Herald on 26th September 1896. The large broadsheet promotion is for David Jones, a large reputable retail store in Australia who at this time called themselves ‘Specialty Garment Makers for Lady Cyclists’. Here, the Bygrave costume was available in ‘Sanitary Tweeds’ and cost 29s 6d. The popularity of the garment in the UK was promoted: ‘These have only just arrived in the colony, but his patent has been in use in England for some time past, and found much favour’. Unfortunately, although the advertisement clearly uses Alice name, the advertisement credits her patent to Dr Jaeger.

Fig. Ad for the Bygrave convertible cycle skirt, Sydney Morning Herald 1896.29.
Alice’s skirt clearly appealed to Australian cyclists, as it did to British and American ones. *The Sydney Mail* and *New South Wales Advertiser* described it as an ‘ingenious’ compromise. ‘Life’ lamented the journalist, ‘is made up of compromises, but few compromises are so thoroughly satisfactory as this one between the rational costume and the ordinary ladies’ attire, which is accomplished by the Bygrave Convertible Skirt. This ingenious garment is converted from an ordinary walking skirt by merely pulling a cord into a divided skirt, which allows free play to the most energetic of lady cyclists’. Interestingly, this review highlights how the garment can be adapted actually on the bike itself. ‘[A]nd by another single movement, without dismounting it is released and returns to its former condition’. This review also reiterates what has been present in all the media coverage, that a textual and illustrative review did not do the garment justice. To fully appreciate its inventiveness, consumers needed to go and see it in action. Advertisements, regularly appearing in this newspaper, reinforced the ‘indispensable’ nature of the garment and encouraged consumers to ‘inspect’ and have ‘explained’ the details of its ‘ingenious construction’.

The new invention may be inspected at the office of the wholesaler’s agents, Dr. Jaegers Company, at the corner of York and Erskine Streets, where its working is demonstrated on a model. It is worth seeing.

Fig. Ads for The Bygrave Convertible Cycling Skirt, *The Sydney Mail and New South Wales Advertiser* 1896
Later that same year, editorial in *The Australasian* was taken by the convertibility of the design. ‘Whether riding or dismounted the rider has all the appearance of wearing a tailor-made skirt.’ They make a point about how it fits site-specific types of cycling. ‘On country roads, the skirt can be modified by means of a few cords so as to give the cyclist the freedom of “rational dress”’\(^\text{32}\) The Australasian continued to advertised it in 1897 as ‘The Latest Novelty. The Convertible “Bygrave” Skirt. It was distributed by Jaeger under the banner of ‘Indispensable to Cyclists’ in their warehouses in Sydney (41 York Street) and Melbourne (314 Flinders Lane).\(^\text{33}\)

Was Alice’s patent successful? It was clearly popular when measured in press, distribution and commercial terms. According to media accounts it made a significant volume of revenue. But did it work? Was it wearable? From a sociological perspective we can think about what ‘works’ on many levels\(^\text{34}\). Being endorsed by a substantial textile brand like Jaeger was a remarkable achievement for first-time inventor like Alice. We also see that it was beneficial for the company. Already renown for their Sanitary Woolen undergarments and accessories, Jaeger appeared to be using the Bygrave Convertible Skirt to forge a new path into fashionable women’s outer wear. By 1897, more than a year after its launch, the success of the Bygrave Skirt was leading reviews of other Jaeger Company productions. Appraising a new saddle cover, a journalist in *The Wheelwoman* writes: ‘What with the “Bygrave” skirt, special cycling boots, corsets, etc., this Company is securing quite a large share of the cyclists’ custom’\(^\text{35}\).

Did it work on the bike? The many advertisements and editorial encouraged consumers to inspect and see it demonstrated in person. So it must have been convincing in material form. The fact that Rosina Lane is pictured wearing it is also a good indication that it did. She was a professional racing cyclist and her livelihood depended on her ability to win races and reputation for attracting audiences. It seems unlikely that she would have been seen wearing something that she did not support. Her involvement demonstrates not only the functionality of the design but also points to the involvement of Alice’s extended family in her work. Although we already have a good sense of this, Alice was clearly not doing this alone.

The 1901 Census also provides further evidence that it might have been successful\(^\text{36}\). Records of the night of March 31st document another full Bygrave household. But, unlike the years prior when the boarders were dyers and brushmakers, this time skillsets are predominantly dressmaking. Alice’s family of four is still living at 13 Canterbury Road. Charles is 42, Alice 41, Lina 18 and Herbert 15. Alice is (still) not listed as having a job while Charles is reported to be a Colonial Traveller. There are two servants in the house, Ada E Fry, 21 (Guildford) and Anna Batram, 22 (Suffolk), and there are two dressmakers Margaret Paston, 29 (Kent) and Annie Lincoln, 27 (Essex). Was Alice exploring new ideas? Was she making new garments beyond her Jaeger contract? Was she capitalizing on her media presence by running sewing classes?
Ten years later, in 1911, Alice’s daughter, Lina, has moved out and her son, Herbert has become an electrician. Both Alice and Charles are listed as Boarding House Keepers. There are two new servants, Edith Anton, 24 (Peterborough) and Winnie Sims, 21 (Yeovil) and a boarder, Leslie Harris, 41 (Liverpool). Interestingly the boarder’s occupation is listed as ‘Entertainer - Music Hall Artist’. Victorian society was changing and becoming more open to different forms of livelihoods, whereas prior to 1900 this type of guest would have been scandalous to a reputable household. Perhaps also Alice’s and Charles’ horizons had broadened with their travel and exposure to the world.

What happened to the money? How much did Alice actually get? Perhaps it was not much. Alice’s father, Charles Duerre, died in 1907 at the age of 77, and he left the total of his will to her alone. This amounted to £366, 18shilling and thruppence. Although it is a sizable sum, it is nowhere near the money she negotiated for her cycling skirt in America. It is also unusual that out of six children, all of it goes to one daughter. This suggests either she might have been in more financial stress than her siblings or she needed support to continue her inventive practice.

Another possible explanation for lack of funds is the prevalence of copies. The 1890s was a highly inventive period in Victorian society and it is possible that similar ideas were emerging and designs were replicated. Owning a patent did not mean that an idea was safe. In many cases it was the opposite. Writing about American women cycle wear patent holders, Sally Helveston Gray and Michaela Peteu note similarities between the Hulbert Cycling Suit and the Bygrave Convertible Skirt. The former also featured a series of invisible cords that adjusted the length of the skirt to suit either walking or cycling. It was advertised the highly popular American publication Godey’s Magazine a year after Alice’s patent. And there were others.

Alice’s patent for an improved cycling skirt reveals a remarkable story of engineering, textile design, business acumen and inventiveness. She imagined, made and patented a device for newly mobile women in the form of a cycling skirt that occupied a ‘happy medium’. It clearly captured people’s imaginations. The patent provided a means by which women could move between perambulate and cycling identities, and was not just reserved for the aristocracy but as a result of Jaeger’s patronage was available for broader middle class market. It appears that the design directly emerged from her close connections with family members involved in watch and clock making, patenting, dressmaking and professional
racing. Her exposure to a wide range of people living in shared accommodation and the happenings on busy art and design hub of Chelsea also possibly inspired her ideas. The media surrounding her designs, with accompanying illustrations, editorial, ads and opinion pieces, along with regular presence at influential cycling shows carved out new ways for women to place themselves in public space, not only as cyclists but as successful business women.

**Interviewing the Bygrave ‘Convertible’ Skirt**

![Diagram of skirt pattern](image)

Fig. Alice’s patent inspired a 9 piece pattern:

- Skirt front
- Skirt back
- Front cord casing
- Centre back cord facing
- Front hem facing
- Back hem facing
- Waistband
- Front placket
- Front waist facing and Back waist facing.
On the surface the Bygrave skirt appears to be a simple A-line floor length skirt on a waistband with buttoned side placket for access. The complexity of the garment lies in its engineered infrastructure. What more can we learn about this invention by making it? A great deal, it turns out. The patent provides step-by-step instructions for the reader to replicate the costume. Yet to construct it goes beyond a deep reading of these guidelines to a hands-on, embodied and trial and error engagement with the idea.

Detail is axiomatic to the nature of a patent, but this invention goes beyond the norm due to the design’s complexity. The historical language further compounds the complexity of designs. Phrases such as ‘leaves the sides of it festooned’ take on new meaning when you are trying to make it. What kinds of materials and mechanisms produce this effect? The drawings provide indispensable assistance, and moves the readers gaze from word to image and back again. To understand the nature of this invention we made scaled models and mock-ups. Did Alice make models to develop the idea? She may well have spent long evenings drawing, talking and making models with her dressmaking mother and watchmaking father. Given how well the garment fit her sister-in-law, Rosina was most likely involved as well. This would have been a familiar making approach for all of them. Dressmaking involves translation of ideas in multiple dimensions – from ideas that have no dimensions, to two-dimensional drawings and block patterns and then a three-dimensional toile (a full scale mock up in a cheaper material), which lays foundations for the final version. Barbara Burman argues that sewing is an intensely laborious process that has historically been overlooked for reasons pertaining to both the gender of the sewers and where they have conventionally undertaken the work. ‘The ordinariness and domesticity of home dressmaking would seem to have contributed to its invisibility and the lack of analytical purpose on the part of historians in related fields’ (1999:3).

A patent is what is commonly known in Science and Technology Studies as an ‘immutable mobile’. It is easily and infinitely reproducible, it can travel, recruit people and enact power. Patents are deliberately designed to make complex knowledge appear ordered, fixed and often flattened. As a result they are compellingly persuasive. Yet, what emerges through making is that this device is not as easily stablised, but is better considered to be a complex assembly of unstable actors operating in a heterogeneous network. While Alice’s patent provides three pages of detailed instructions, the challenge lies in trying to work out how a successful dress pulley system might operate. In addition to making the actual skirt, we identified three main parts: stitched channels, weighted hem and system of threaded cords.

Following Alice’s instructions, two channels were stitched inside the centre front and back of the skirt through which the cords would run. We initially made these channels from silk lining as per our initial successful mock-up. However, we found that wide bias tape worked (and looked) much better. Bygrave suggests ‘tape’ or the use of ‘suitable guides’:

Both guide and cord are preferably inside the skirt for the sake of appearance; but whether they are inside or outside the skirt does not matter as far as the action of the
the invention is concerned. It is however, of importance that the cord should run and work centrally up and down the front.

The convertible nature of the skirt is achieved with the use of weights in the hem. Alice is more specific about their purpose and location than about the type or actual weight. She writes how they should be of ‘suitable weight… near each junction of the bottom end of a cord to the skirt’. We chose four curtain weights with central holes through which each cord could be affixed for extra strength. They needed to be heavy enough to pull the dress back down to the ground but not too cumbersome as to bang against ankles and make walking problematic. They also needed to be sufficiently sewn into the hem so not to fail upon frequent application.

Four cords were then fed through six holes concealed under the placket, at the front, side and inside the skirt. We translated these as buttonholes, although no buttons were involved. She makes particular reference to the location of the rear cords and buttonholes. They are not located at the back, but rather at the side for easy access. She explains: ‘The presentation of the free ends… of the cords… at the side of the wearer, is to make the use of them more easy and graceful than if they both presented behind’. This is particularly clever and appreciated when worn.

Alice’s suggestions of alternative materials appears at first to indicate that she is less fixed on the nature of the elements used, and can be read as design flexibility. Here are some of her suggestions for the channel guide and clip:

The guide may be of any suitable type. I have illustrated it as consisting of a hem sewn to the skirt. A row of loops or rings… Both the guide and cord are, preferably, inside the skirt, for the sake of appearance; but whether they are inside or outside the skirt does not matter as far as the action of the invention is concerned.

Any type of clip is capable of so holding the said cord, may be made use of.

Upon making the garment, what becomes less critical is what the actual individual elements are, and more about what they do and the order of mechanization. This is where Alice’s instructions become firm. She was clear about what she wanted this convertible dress to do – to give women choice. They could be a cyclist or conceal these intentions. The skirt was ‘proper to wear when either on or off the machine’. She works with existing and familiar entities – an ordinary skirt and knickerbockers. Her patent focuses entirely with what lay on the inside.

Alice’s invention was the most complicated garment of the collection due to the interconnected heterogeneous network of elements. Each part needed to work with the next or the entire piece failed. The cords needed to be strong enough to gather two metres of wool material but not be too thick as to bulk out the waistband. The guides needed to be constructed in clear central lines to enable the ruching of material. The material needed to be
the right weight to gather and well matched to the weighted hem. It would hardly be a ‘quick change’ skirt if it got stuck half way. The various buttonholes to channel the cords needed to be strong enough not to fray but small enough to remain hidden until required.

Yet, all of this remains concealed from the outside. What emerges in the making is how much the skirt operates like a timepiece. The seamlessness of the surface belies its complex interconnected and cleverly hidden interior.

Fig. Stitched the channels through which cords extend from waistband to weighted hem

Fig. Testing the internal pulley-system mechanism
Material
- 3m Dashing Tweed – Crimson stripe
- 3m woven cord
- 3m silk lining
- Bias tape
- 4 curtain weights
- 4 buttons

Extra garments
- Waistcoat
- Blouse
- Bloomers
- Boots, scarf, tights, hat
Fig. Alice’s patented convertible skirt in action (Credit: Charlotte Barnes)

2 Office for National Statistics; National Records of Scotland; Northern Ireland Statistics and Research Agency (1871): Census aggregate data. UK Data Service


4 Office for National Statistics; National Records of Scotland; Northern Ireland Statistics and Research Agency (1891): Census aggregate data. UK Data Service

5 Bicycling News (1893) Our Contemporaries, 7 Oct, p.228

6 Bicycling News (1893) Ladies Page, 23 Sept, p198

7 Pat. No. 18,937 (GB189418937A) Rudolph Charles William Duerre, of 466 Kings Road Chelsea, County of Middlesex, watch and Clock Maker, ‘Improvements in the Method of Steering Velocipedes and in apparatus therefore’ (29 Dec 1894).

8 Pat. No. 11,911 (GB189811911A) Rudolph Charles William Duerre, of 466 Kings Road Chelsea, County of Middlesex, watch and Clock Maker, ‘Improvements in Cycle Saddle and Seat Springs’ (15 Apr 1899)


9Pat. No. 21,285 (GB190021285A) Rudolph Charles William Duerre, of 466 Kings Road Chelsea, County of Middlesex, Watch and Clock Maker, ‘Improvements in Cycle and the like Saddles’, (14 Sept 1901)

Pat. No. 22,065 (GB190322065A), Pat. No. 11,911 (GB189811911A) Rudolph Charles William Duerre, of 466 Kings Road Chelsea, County of Middlesex, Watch and Clock Maker ‘An Improvement in Saddles for Bicycles and Other Velocipedes’, (18 Aug 1904).


12 The Brooklyn Daily Eagle (1896) Bicycle Don’t’s, 12 April


15 ibid p.52

16 Sydney Morning Herald (1896) 2 Dec,

17 The Times, (1899) 9 Mar, p.14

18 The Sketch (1896) Misses Lane, Murray and Blackburn on a “Swift” Triplet, From a Photograph by Symmons and Thiele, Chancery Lane, 22 Jan, p.686

19 The Queen, The Lady’s Newspaper (1895) *Group of Lady Cyclists Taken at the Aquarium*, 7 Dec, p.1095

20 The Rational Dress Gazette, Organ of the Rational Dress League (1898) June, no.1, p.2

21 The Queen, The Lady’s Newspaper (1896) *The Bygrave “Quick Change” Cycling Skirt*, 4 April, p.595

22 The Lady Cyclist (1896) *All Wool*, Part 1, Vol 2, p. 49

23 The Wheelwoman and Society Cycling News, (1896) 28 Nov, p.34


26 The Saint Paul Daily Globe (1896) *$5000 in Four Days: Mrs Bygrave received it last week for a bicycle skirt*, 15 March, p.19

27 San Francisco Chronicle (1896) *For the Girl Who Would Go-A-Wheeling*, 12 April, p.8

29 Sydney Morning Herald. (1896) 26 September, p.5


35 The Wheelwoman (1897) A New Saddle Cover, 23 Jan, p.6

36 Office for National Statistics; National Records of Scotland; Northern Ireland Statistics and Research Agency (1901): Census aggregate data. UK Data Service

37 Office for National Statistics; National Records of Scotland; Northern Ireland Statistics and Research Agency (1911): Census aggregate data. UK Data Service

38 Helveston Gray, Sally and Peteu, Michaela. (2005) Invention, “the Angel of the Nineteenth Century”: Patents for Women’s Cycling Attire in the 1890s, Dress, Vol 32, p.27-42


Madame Julia Gill submitted a complete specification for ‘A Cycling Costume for Ladies’ on 5th January 1895 and it was accepted a little over a month later on 16th February 1895. She lists her occupation as ‘Court Dressmaker’ and goes by the title of Madame. The patent tells us that she was living at No. 56 Haverstock Hill, in the Parish of St. Pancras N.W. in the County of Middlesex.

Julia’s ‘entirely novel garment’ aimed to ‘provide a suitable combination costume for lady cyclists, so that they have a safe riding garment combined with an ordinary walking costume for use when dismounted’. Her design consists of a convertible skirt and a bifurcated undergarment in the form of ‘fluted trowsers’. Her patent like the others operates as a straight A-line skirt on a waistband. It’s secret mechanism for convertibility is concealed under a second layer or flounce at the bottom of the skirt. Julia suggests the maker can use a series of eyelets or rings that remain undetected when not in use under the flounce, through which a cord is threaded and loosely tied to keep it out of the way. When required, the corded flounce is brought up, gathered and tied at the waist. The result is a bubble-like semi skirt that sits above the knees. The leggings are ‘tight fitting’ and highlighted with ‘vertical or horizontal flutings or frills’. It seems unlikely that such a design would disguise the wearer’s intentions to cycle, conceal her independently moving legs or protect her from unwanted social attention.

‘Although patents’, as Michaela Peteu and Sally Helevenston Gray have argued in their studies, are valuable devices that ‘reveal thinking that goes on as a part of the inventive process, they do not necessarily reflect reality’1. Sometimes, designs like Julia’s, seem at odds with what is known about social convention and concealment tactics at the time. However, this does not mean that these kinds of patents are not still useful primary evidence. Instead, as I discuss in this chapter, this kind of garment might have been deliberately designed to do the opposite of concealment – to stand out. Cycling in the 1890s was increasingly accepted in middle and upper class women’s sets of social accomplishments. This costume might have been part of a young woman’s wardrobe commissioned for the ‘Season’ and worn to showcase her talents, cultural cache and marriage potential in private or niche social contexts. Alternatively, and more likely, given its risqué nature, it might have been a showpiece for the court dressmaker, tactically timed and patented to generate attention and draw new custom.

The theme of this patent points to the role of ideas and experimentation in the making of new cycle wear. The 1890s cycling craze catalysed the need for cycle specific garments. There was no one socially agreed or accepted costume. New cyclists in need of a new costume had
a number of options in the 1890s. They could have made it themselves by adapting existing garments, or engaged the services of a dressmaker or tailor. Madame Julia Gill would have been one of many entrepreneurial business owners in the late nineteenth century offering a plethora of ideas and designs for women to choose from. Ideas were not in short supply in the late nineteenth century. Businesses, dress reformers and the media provided a wealth of inspiration and often contesting advice. Women drew on mass circulation of advice and ideas through a range of formal and informal channels – such as popular magazine editorials, illustrations and photos, an increase in advertising at the time and in new ‘pop-up’ cycling stores. There was also a boom in new technologies of patterns and sewing machines, periodicals, new news from other places such as the latest fashions from Paris, and access to cheaper wool and waterproof materials. Many cyclists took the opportunity to re-negotiate what women could wear to move in and through public space. As Sarah Gordon writes, ‘the unfamiliar realm of sports and sports clothing allowed, even required, a significant degree of improvisation’². What Julia’s convertible cycling costume reveals is how this time of change enabled women (including dressmakers) an opportunity to explore and experiment with the parameters of what was acceptable to wear for a newly mobile woman. Through the making and wearing of radical new forms of clothing, women were re-inventing forms of mobility from the inside out using their networks, skills, bodies and technologies.

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NO 6794 A.D. 1894

Date of Application, 5th Apr., 1894
Complete Specification Left, 5th Jan., 1895—Accepted, 16th Feb., 1895

PROVISIONAL SPECIFICATION.

A Cycling Costume for Ladies.

Madame JULIA GILL 56 Haverstock Hill N.W. do hereby declare the nature of this invention to be as follows:—

For improvements in lady’s cycling costumes.

The skirt is made with an underlayer of the same material or other kind, which

5 when turned up is drawn in at waist with a cord run through, rings, tapes, or
eylet holes &c. which then forms a semi-skirt, the under piece forming a frill &
giving the appearance of a jacket bodice. When the wearer gets off cycle the
skirt drops into place as an ordinary walking skirt. The same skirt can be fixed
up to the waist band or other parts of costume by hooks & eyes or other
10 attachment, or as a combination of skirt, bodice & pants.

The pants are tight fitting in the foundation, with vertical or horizontal flutings
or frills, with or without gaiters to finish, thus effectually disguising the form of
the limbs.

Dated this 3rd day of April 1894.

JULIA GILL.
Fig. Patent illustrations showing the convertible semi-skirt flounce and fluted leggings
The inventor and her life

The initial challenge in studying this patent lies with the patentee. Unlike Alice, Julia proves harder to trace through genealogical records. Unless they were extra-ordinary, of ill-repute or particularly well married in ways that ensured notoriety, there is little written about everyday women’s lives. Women were rarely storytellers. As such, Julia’s modest life course is much more in keeping with the reality of Victorian life for ordinary women. Alice is the exception. Julia’s case is far more common. This patent therefore presents us with the problem raised in earlier chapters about the difficulty of keeping track of inventions. Unlike the ‘Bygrave Convertible Skirt’, no evidence of the ‘Madame Gill’s Cycling Costume’ has surfaced (as yet). It may have dwindled in the patent archives or been picked up by a producer and renamed. It is also difficult to trace this inventor’s life course. There are so many Julia Gill’s living in London in the late nineteenth century that I cannot be completely certain of her biography. Doing historical studies can reveal multiple threads to follow and weave together or overlapping partial pieces and gaps. This is a case of the latter, and as such operates as a useful reminder that there is no stable truth or perfect story to stumble across – only fragments. And the challenge is not to write these fragments into a smooth or straightforward story, but rather to resist the notion of tidying up. Cases like this renders visible the fact that we can never fully know the past. But, we can try and there are various scenarios. One tells us that Julia Gill was born in 1848 in Wiltshire. In 1881, she is 32, married to 25 year-old William, a cabman, and living with their three sons and a stepson, in Chelsea. The Census does not list her occupation. Ten years later this Julia is a laundress, her cabman husband and Albert, her youngest, now an errand boy at 14, are all living in Paddington. In 1901, she would have been 53 and the Census tells us that on Sunday 31st March she was a widower living alone in Kensington and making a living doing ironing and washing.

Another Julia Gill was born in 1855 in Clapham Park, London. According to the 1891 census, on Sunday 5th April she was 36 years old, married to Thomas Gill, a solicitor. He was considerably older, at 63. Together they had five children (one of which died). On the night of the Census, in their Kensington house was a combination of children and step-children; Messis (32), Thomas (30) also a solicitor, Ada (28), Jessie (26), Beatrice (15), Gertrude (15), Victor (8) and Charles (0). It must have been a significant sized house that required the assistance of a number of employees – a nurse (39) and three servants (47, 19, 16). In 1911, this Julia is 56 years old, widowed, head of the household and living by private means. She resides with two daughters and a son; Beatrice (37), Gertrude (35) and Charles (21). They continue to run a big household with four servants ranging in age from 19 to 30 years old.

Neither of these versions of Julia Gill mentions her court dressmaking, nor do their lives fit easily with this role. The former is of a lower class and the latter may well have been too busy with such a large family and household to run to be able to operate another separate business. Julia could have been undertaking this role in her spare time, or perhaps it was something she aspired or maybe the Census taker failed to list it on the form. The second Julia does however provide more links to our patentee. She fits better with the class of a court dressmaker who could have been working with and for an upper class clientele. Also, unlike

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the majority of patentees, Julia did not use the services of a patent agent to help process an idea through legal systems. Perhaps the presence of two solicitors in her family provided some assistance in this matter. She was also clearly quite rich, which implies that she could have been running her own business on the side.

Nevertheless, even without a firm grasp on her life course, Julia’s patent and profession provides ample material to examine. Julia self identifies as a Court Dressmaker, which locates her in the middle to upper class. Unlike a dressmaker, a court dressmaker made the kinds of high-society clothing worn for special occasions, such as for Court events, where young debutants were presented in their finery to the upper echelons of society. Pascoe, in *London of Today* was somewhat cynical about this rite of passage:

> What is the real purpose of going to Court? Is it, in truth, in order that you may pay your respects to Royalty? Nonsense: in nine cases out of ten, it is in order to see and be seen, to have your name noted by *The Times or Morning Post*, to appear more magnificently attired than someone else, to have your dress very fully described in the ladies’ journals, to be photographed in that dress at midnight on Bond Street, and generally for the sake of having it known that you have been at Court.

Whatever the motivation, a middle and upper class woman needed to be prepared. Many sought court dressmakers to commission new wardrobes, often every year in readiness for the ‘Season’. The Season was an annual period spanning Easter through to August where people left their country estates and flocked to major cities, such as London and Bath, to do political, social and cultural business. It was a chance to enter or affirm your place in Society and clothing played a primary role.

The less well-to-do usually had their clothing made over, or hired the services of a local dressmaker when in the country (and a lady’s maid had to be handy with the needle and up on the latest modes), but those with a significant income could lavish attention, detail, and money on their dress. The smartest and wealthiest women nipped off to Paris, or visited the London branch of a Parisian salon, to replenish their wardrobe, but most ladies used the services of court dressmakers. Located in the heart of the West End (Piccadilly, Regent Street, Bond Street, and Oxford Street), these fashion houses specialized in supplying presentation gowns, coronation robes, court dress, gowns, corsets, and sportswear.

The Season was a time to ‘see and be seen’. Deals were made, contracts signed, debutantes ‘came out’, ‘good’ marriages arranges, social connections made and pleasures sought. On 1st June 1895, *The London Illustrated* declared that ‘the height of the London season’ was approaching and ‘town is filled with the usual fashionable throng, for whom dances, garden-parties, and receptions are being held in a rapid succession which is dazzling’. As Peter Atkins (1990) writes, London, and particularly the West End at this time was a “container of frighteningly concentrated power”. In *The Party that lasted 100 days*, Hillary and Mary Evans argue that the Season acquired cult status ‘because leisure society needed this kind of
ritual defence against the emptiness of unlimited leisure’. It reached ‘its zenith in the
1890s’.

Preparing for the Season was expensive. Power and status was performed and displayed
through clothing, so very year required a new wardrobe and each planned event necessitated
a new garment. There was a significant imbalance in gendered investment; while men’s wear
could be had for £10, women’s dresses could cost up to £50. (In this context, the Bygrave
Convertible skirt at just over £1 seems very affordable). Jane Ashelford writes about how the
nineteenth century saw men ‘universally garbed in discreet, sober clothes in dark muted
colours’, while women ‘had become decorative accessories, proclaiming the family’s wealth
and status by their display of fashionable dress’. The prevalence of events sometimes also
required several changes of clothes in the same day. Some argued that high society women
needed to invest at minumum £1000 to meet the exacting standards of the Season. The
Season also would have made a court dressmaker very busy. Hillary and Mary Evans write:
‘Many of the tradespeople of Mayfair and the West End streets must have been largely if not
wholly dependent on the trade they did during the three months of the Season’. If this was
Julia’s situation, it would account for the timing of her patent during her winter low period.

Although sport had long been a primary social mediator, via events such as horse racing and
golf, at the turn of the century women’s engagement started to move from spectator to
participant. Season events for women broadened out beyond balls, parties and dinners to
include physical activities. Hyde Park was a prime public site Season activities. Cycling was
the ‘new cult’ in the mid 1890s and increasingly adopted by the aristocracy, which gave it a
social legitimacy and culture cache. As many members of high society swapped carriage
rides along Rotten Row for velocipedes, cycle wear became assimilated into the Season
trousseau.

[T]he young lady’s days during the London Season were sure to be full. She would
usually begin her day with a ride in Hyde Park, along the sandy tracks called “Rotten
Row”, or along another path, “Ladies’ Mile”. Riding occurred year round in Hyde
Park whenever the weather was pleasant, but during The Season, between the hours of
ten and two o’clock, there appeared a class of riders who did not emerge at any other
time of the year - namely, young ladies of the “leisured classes”, elegantly dressed in
their smartest tailored riding habits, along with their fathers, who acted as suitable
chaperones, and a spattering of young men.

As the Season now included cycling, and cycling demanded a specific type of costume,
women needed to be prepared and outfitted for such invitations. This marked a significant
change. As a writer in the The Queen explains in 1895: ‘For years cycling has been relegated
to the sterner sex and the lower middle class. Now that fashionable women are adopting it,
the question of the most suitable dress becomes an important one’. A year later, The Lady
Cyclist announced that, ‘Almost all the royalties at home and abroad have now become
bicyclists, and there is hardly a Princess of the blood Royal to be found in England or on the
Continent, who has not become a devotee of the wheel within the last two years’. Many
popular periodicals filled columns with the social happenings and costumes of the upper
echelon of society. The Lady Cyclist regularly regaled their readers with sartorial stories of
cycling ladies and princesses:

Of Lady Warwick’s cycles and the costumes that match them, there will soon be no
end. All last summer the cycle press chronicled her appearance on her white bicycle,
in white attire from head to foot; and, in point of fact, she could have been seen any
day in the leafy Warwick lanes so costumed. All this autumn she has been riding in a
moss-green suit, with a moss-green bicycle to match, and now another bicycle has just
been sent down to Warwick, to her order – chocolate brown, this time, with narrow
gold lining16.

The Lady Cyclist encouraged women in March to start to think about where to get the
ir new season costumes made:

Many of you will be getting new cycling costumes soon, and I hope none of you will
imagine that it is economy to go to an inferior tailor for the. A good tailor’s work
looks nice to the last, and cut, fit and finish are three essentials for the smart cyclist17.

How did women do this? Who did they turn to? Many women with the resources for
velocipedes, leisure time and new clothes drew reference from a plethora of new media and
ideas flowing into the city - cycling periodicals, printed colour fashion plates from Paris and
tales from exotic foreign travel. They would also have been exposed to new technologies in
the form of sewing machines, water-resistant fabrics and paper patterns. Early cyclists could
have made or adapted costumes themselves by adapting existing garments, or engaged the
services of a sympathetic dressmaker or tailor, who was politically aligned to the idea of a
velocipedienne. Sometimes women had no choice but to bravely undertake the former, when
faced with a lack of the latter. The Rational Dress Gazette noticed that a ‘considerable
majority of the rational costumes worn hitherto have been made by the wearers themselves’.
While this was sometimes necessary, the writer was unconvinced that an individual’s
enthusiasm could counter lack of skill. ‘These wearers in many cases have not even been in
the habit of making any of their usual dresses, and possess only a very elementary knowledge
of dressmaking’18.

Madame Julia Gill’s court dressmaking services were probably one of many small businesses
offering dressmaking services to new cyclists, amongst other dress needs. Through her
patented design, we can assume her politics was similar to that of dress reformers, in terms of
supporting and enabling women to move more freely in public space. Julia may have been
commissioned to make something similar for a client and identified the potential of patenting
it. Alternatively she may have taken the opportunity to pre-empt the pre-season rush with her
own design as a means of attracting clientele. She timed it well, at the start of 1895, which
heralded the cycling boom. This was a tactic of other London based court dressmakers.
Madame Evelina Susannah Furber (1858-1945) was also a court dressmaker in the 1890s.
She had a shop at 118B Cromwell Road, West Kensington and like Julia she designed a

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convertible cycling garment for women. She was particularly entrepreneurial in that she not only designed and patented a cycling skirt in 1895 but also promoted it herself with ads and editorial in popular cycling and women’s magazines. The skirt was sold individually for 2 and half guineas or could be purchased complete with a coat or jacket to match for four and half guineas. This was more expensive than the ‘Bygrave Convertible skirt’, which Jaeger sold for one guinea, for the purpose or targeting a broader market. The price difference is understandable considering the economies of scale that the larger corporation would have been operating within and also because Madame Furber was offering a tailor made costume.

The ‘Furber Bicycle Skirt’ was promoted in *The Lady Cyclist* as a ‘charming’ and ‘novel’ skirt with concealed fastenings that created ‘a perfect divided skirt if required’¹⁹. *The Queen* called it ‘a most practical invention’ because it ‘cannot blow up’ and assured potential buyers that they would ‘have a handsome walking gown as well as a graceful and becoming bicycle dress’.²⁰ Essentially it is a divided skirt, featuring a split at the front and back which when unbuttoned and re-buttoned to an under layer forms two legs. ‘Each edge of the back opening can also be connected to the same side of the front opening so transforming the skirt into a pair of loose trousers’. A strap, released from the back waistband, passed through the fork to attach at the front. Evelina explains the overall intent of her patent:

> According to this invention the skirt is made to open down the front and to partially open down the back, the openings being provided with buttons or other attachments which when fastened render the skirt exactly like an ordinary one so that it can be used for walking. ²¹

The illustrations provided in *The Queen* of the garment in action on a bicycle reveal the subtlety of the transformation. The divided skirt effectively falls over the sides of the wheel, rather than bunching at the front and back. How the wearer might have prevented the flapping skirt from entering the moving wheel is less clear. However, what it is interesting to note is how despite sharing similar interests and concerns about alleviating the risks of mobile clothed women’s bodies, Madame Furber’s garment is vastly different to that patented by Julia. It displays an understated yet clear desire to maintain and maximize concealment. Julia’s in ‘ordinary’ form might conceal the wearer’s intention to cycle, but once converted, it was far more theatrical. Contrasting designs like these showcased to women a spectrum of ways they could be in and move through public space. These and many other kinds of costumes must have been remarkably refreshing, exciting and also shocking to women (and others) more familiar with Victorian regulated clothing and behaviours of the past. In this way court dressmakers like Evelina and Julia provided critical creative services for women in the 1890s. As Sarah Gordon writes: ‘Advertisers, retailers, magazine writers and pattern makers played a significant role in this ongoing discussion by offering opinions, playing to women’s desires and insecurities, and providing multiple options’²².
THE "FURBER" BICYCLE SKIRT.

This charming Skirt can be worn with equal comfort divided or undivided, and can be made with Coat or Norfolk Jacket to match in Cheviot, Melton, and Frieze.

From 4½ Guineas, complete.

Skirt only, from 2½ Guineas.

MADAME FURBER,
COURT DRESSMAKER,
118, Cromwell Road,
South Kensington.

Fig. Madame Furber's Patented 'Furber' Bicycling Skirt
Fig. A series of fashion plates in *The Queen* showcasing a range of cycling costumes, including Madame Furber’s convertible skirt — second from top left.\(^{23}\)
Ideas and experimentation

Independent business owners were important in making up the commerce and retail landscape in Victorian society and in helping women negotiate their new mobile identities. Yet, their contributions tend to be overlooked in comparison to the new shopping experiences of the early 1900s, which brought about an increase in ready-made clothing and department stores, such as Selfridges in 1909. Writing about the history of business of beauty, Kathy Peiss argues for a reclaiming of the ‘web’ of messy and fragmented seemingly small and inconsequential accounts. Why? ‘Their stories’, she writes, ‘have been especially important to recover, for they complicate our historical understanding of the beauty and fashion sector of the economy’. She calls for attention not only to what people were doing but also which kinds of people were doing it. Perhaps not surprising, women played a significant role and it is their stories that are least known, even though ‘seamstresses, hairdressers, beauticians, department store buyers, and cosmetic saleswomen all made beauty and fashion integral to the lives of women’.

Court dressmakers like Julia and Evelina would fit within this list of businesses. They were ambitious independent women who recognized the value of their skills not only to imagine and make these radical new convertible garments that performed more than one role, but also to embark on patenting them and in doing so, lay claims to ideas in larger commercial spheres. Diana Crane writes about how fashionable clothing ‘appeared to offer possibilities for a person to enhance his or her social position’. We can imagine this to also be the case for dressmakers. Even if they could not wear high-status objects, they could make and associate with them on behalf of clients. Court dressmakers played critical mediating roles. They produced garments that enabled women to move into different social spheres and they represented a shift from home sewing to a public facing business, carving out new and different ways for women to occupy and move through public space. Many theorists have written about the intersections of shopping, place and the construction of identity through consumption. Cultural theorist Meaghan Morris has argued, ‘it isn’t necessarily or always the objects consumed that count in the act of consumption, but rather the unique sense of place’. While shoppers were experiencing and consuming new retail spaces, they were also consuming artefacts that enabled them to engage with new forms of space, such as mobile space. Dressmakers and cycle wear patentees helped women articulate and translate multiple ideas into costumes that helped to mediate new relationships with technology and society. New costumes fitted women’s bodies to the bicycle, as well as to changing social and cultural landscapes.

Regardless of how women chose to source a new costume, they needed to have some idea of an ideal design that would suit their body, social class, type of cycling and location. There as no shortage of inspiration flowing into the city via the media and travellers full of fresh ideas from abroad. Popular periodicals and cycling magazines teemed with suggestions and advice for new cyclists. The Queen featured colour plates of ‘The Latest Paris Fashions’ an illustration of ‘The Ideal Lady Cyclist - From the point of view of our various Artists’ was regular page in The Lady Cyclist. Others provided patterns and also competitions for women.
to compete for prizes and recognition of having the loveliest costume\textsuperscript{28}. *The Wheeler* featured named lady cyclists with particular claims to fame, such as Miss Partington was apparently ‘the first lady cyclist in Lancashire to adopt the Rational Dress’ and that ‘the costume was constructed from sketches in the Wheeler’\textsuperscript{29}.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{ideal_lady_cyclist.png}
\caption{The Ideal Lady Cyclist – From the point of view of our various Artists, *The Lady Cyclist* 1896\textsuperscript{30}}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{miss_partington.png}
\caption{Miss Partington of Farnworth, *The Wheeler*, 1894}
\end{figure}
Fig. The Latest Paris Fashions, *The Queen* 1896
Dressmakers and tailors were promoted widely by popular women’s and cycling periodicals at the time. Small businesses showcased not only new and exciting developments in designs to whet the appetites of potential customers but they also competed with each other to entice consumers to their innovative shopping experiences.

Two examples are particularly illustrative Mr F.J Vant’s new The “En Avant” cycle costume was heavily promoted in The lady Cyclist in 1896. He was a ‘Court Tailor and High-Class Ladies’ and Gent’s Cycling Costumier’ located at 67 Chancery Lane, W.C. London. The columnist was not only taken with the new skirted costume with Norfolk jacket in fawn coloured cloth, but also with his newly fitted store. ‘A large ladies’ show room is being prepared in the basement, with machines on home-trainers for fitting purposes and private dressing rooms’32. The Queen similarly enthused about Mr Marcus’s new shopping experience for cyclists.

Mr Marcus, of Conduit-Street, has just opening one of his rooms as a track, where ladies may not only try on their costumes on a machine, but may make a preliminary trial of their cycles. […] The floor is admirable, being laid with wood upon concrete, and well varnished. As the room is a large size, it is possible for ladies to get a thoroughly good practice on it33

These new in-store experiences may have begun with a practical and utilitarian function in mind but were clearly also a lot of fun. To cycle around a store in new forms of clothing and on new bicycles would have been exciting way to shop (and probably challenging as well). It would have offered a chance to meet with friends, to try out and test costumes and velocipedes, and to see things in action. These stories are illustrative of a shift in the shopping experience – whereby clothes were beginning to be assessed not only in relation to how they looked, but also in how they felt.

We have no evidence that Madame Julia Gill’s patented cycling skirt was commercialised or ever left the patent office. It is possible that Julia could have made and showcased it as an exemplar of her skill and imagination. It might have appeared in the window of her shop. It might have been commissioned for fancy dress purpose or private bicycling parties that did not involve cycling at all but rather epitomised fashionable consumption in high society. There was also the possibility of women buying cycling costumes that were never worn in public, for home use, to have their bike portrait taken (more about this in Chap 9), to cycle in private gardens, or at private cycling schools. Nevertheless, even without firm evidence of use, patented designs like this are important element of symbolic inventiveness. They reveal what people like court dressmakers were thinking and worrying about a century ago, and how they sought to materially claim a place for women’s mobile bodies in public space.
Fig. Mr Marcus’ New Cycling Room, *The Queen*
Fig. Julia’s patented skirt consists of six pattern pieces; main skirt body, two-part hem and collar facing. We added a small rolled waistband and a buttoned side placket to allow for entry.

This is simple design enacts a large convertible change. Although Julia talks about three pieces in her patent - the jacket, skirt and ‘fluted trowsers’ - the patent attends only to the convertible skirt. Yet, all three pieces operate together. The fact that she has though about and provides direction about the skirt’s relationship with the jacket becomes evident when all three are constructed and worn as an ensemble.

The skirt is an A line form. It has a short opening on the side, with buttons to close, a narrow hem and waistband. The skirt it cut to the waist, there are no darts. The main detail lies in the 8inch flounce overlapping the skirt’s lower edge. Julia explains how ‘with a portion of the flounce raised’ the wearer can ‘run a cord through rings eyelet-holes, tapes or tuck with the bottom flounce’. The overall effect is produced by ‘turning up the skirt and attaching it at the waist by cords, or rings, or other attachment’.
Julia provides ample instruction, yet even with the detailed drawing, her explanation only made sense to the research team when we made and attempted to convert the garment. We chose to use her first suggestion of cord and rings. The convertible device – a 2 metre cord and 15 curtain rings – are hidden between these two layers at the skirt edge, and remains undetected until activated. To convert the skirt into cycle wear, the wearer lifts the lower edge to the waist, tucking in the flounce inside the folded area and gathers the cord to create a semi-skirt. (It helped that the author remembered 1980’s bubble skirts).

Julia’s dressmaking sensibilities are surfaced in the attention she gives to choice of materials which are simultaneously revealed and concealed in the process of conversion. ‘The skirt is made with an underlayer of the same material’ and ‘the under piece forming a frill and giving the appearance of a jacket bodice’. She repeats this a little differently later: ‘Fig. 3 represents a side view of the skirt A the bottom flounce B forming a basque to the bodice, thus making a very graceful semi-skirt for riding’. In theory, this was not so clear. But in practice, this is very clever. By specifying that the hidden layer is the same pattern as the wearer’s jacket, when gathered at the waist, the main skirt material disappears and the flounce becomes a matching frill or second peplum to the jacket.

Julia also specifies details of the bifurcated undergarment. She describes them as ‘tight fitting in the foundation, with vertical or horizontal fluting or frills’. We were less convinced. We studied the illustration closely, as there were no other immediately obvious references to such a garment in popular periodicals of the time. Our combination of conventional tights and a twisted ribbon detail gets somewhat close to Julia’s description. Julia suggests that this design operate by ‘effectively disguising the form of the limbs’. Making and wearing this garment suggests otherwise. The skirt dramatically changes in line from an ordinary floor length A-line skirt into an above knee voluminous bubble-shaped skirt. (The patent illustration does not quite render the height of the fold correctly - it is much higher). While the former is unobtrusive, the latter could not be more different. The bubble shape draws attention to the waist and also to the legs. Given the length of the skirt, the legs are greatly exposed. At a time when the mere suggestion of a woman having ‘two independently moving legs’ was a radical notion, this would have been risky and very experimental. Like Alice’s skirt, Julia’s invention has a quick release to enable the wearer to assume her ‘ordinary’ walking appearance ‘by simply unfastening the cord c and dropping the turned up portion of the skirt A’. Thinking like a dressmaker, Julia’s design also deliberately minimizes the potential for telltale creases. ‘The arrangement of tuck D and flounce A presenting any creases appearing in the skirt when let down for walking’. (It is worth noting that no other inventor discusses the problem of creasing).

More than any other in this collection, this skirt really did not work off the body. In fact, we were underwhelmed when we first looked at the completed toile. It was only when we took turns to try it on and convert it from walking to cycle wear that the radical transformative potential of the skirt became evident. This is the only skirt that completely inverts. The inside becomes the outside; a process that has an unexpected advantage. Practically, the lining of the garment would catch dust and mud splatters from the road. When the cyclist returned and
transformed the garment back to street wear, all of these marks would be effectively hidden inside the skirt. This insight emerged during one of the ‘Show and Tell and Try on’ events. After telling stories about these inventive women I invite people to get inside the project by trying on the garments. On one such occasion, a woman tried on Julia’s skirt, transformed it a few times and realized this advantage in regard to the mud and grease on her own trouser leg. Julia calls this a ‘perfectly, safe, easy and graceful riding garment’. We agree in that the height of the folded skirt greatly reduces the chance of material catching in the moving rear wheel. The hem is gathered up and folded at the waist: it cannot blow up or out. The flounce effectively hides the gathered cord threaded through the concealed series of rings when in the lower position and also when tied at the waist. It also transforms into a double peplum with the jacket. The effect is visually pleasing. And while it takes some practice to convert it quickly into a cycling semi-skirt, it converts back to the walking skirt very quickly. However it is also, in comparison to the other patents, is uncompromising in its experimental nature. On paper this garment looks possible, but in material, it reveals itself as very risky!

Fig. Converting the garment
Fig. The converted semi-skirt and double peplum, with lower flounce which matches the jacket

Fig. Detail of the gathering device (cord and rings) hidden under the peplum
Fig. The Julia patented convertible skirt (Credit: Charlotte Barnes)

<table>
<thead>
<tr>
<th>Material</th>
<th>Extra garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5m Dashing Tweed - Sea Green Raver Wave</td>
<td>Jacket – Dashing Tweeds, Shetland Jig</td>
</tr>
<tr>
<td>1m Dashing Tweed - Shetland Jig for flounce</td>
<td>Blouse</td>
</tr>
<tr>
<td>2m green ribbon or cord</td>
<td>Fluted trowers</td>
</tr>
<tr>
<td>15 curtain rings</td>
<td>Boots, scarf, hat</td>
</tr>
<tr>
<td>Green silk silk lining</td>
<td></td>
</tr>
<tr>
<td>3 buttons for side opening</td>
<td></td>
</tr>
</tbody>
</table>


3 Pascoe, London of Today 903, Cited in Evans, Hilary and Evans, Mary. (1976) *The Party that Lasted 100 Days: The Late Victorian Season: A Social Study*, London; Macdonald and Jane’s p.131


5 The London Illustrated. (1895) London Season, 1 June, p. 15


7 Evans, Hilary and Evans, Mary (1976:3

8 Evans and Evans (ibid p. 6)

9 Evans and Evans (ibid p. 26)


11 Evans and Evans note an article written in October 1901 in the *Harmsworth London Magazine* called ‘The Impossibility of Dressing on £1000 a year’ (1976:27).


14 The Queen, The Lady’s Newspaper (1895) *Dress echoes of the week*, 30 march, p.560


The Rational Dress Gazette, Organ of the Rational Dress League (1899) *Tailor made*, No.13, October, .52


The Queen, The Lady’s Newspaper (1895) Nov 16, p.923

Pat. No. 19,191 (GB18951919A) Evelina Susannah Furber, 118B Cromwell Road, in the County of Middlesex. 'Improvements in Bicycle Skirts'. (23 Nov 1895)

Gordon, Sarah. 2001: 47

The Queen, The Lady’s Newspaper, (1896) Latest Paris Fashions, Colour supplement, 2 May


The Wheeler, (1894) Miss Partington of Farnworth, 2 May, pp.52

The Lady Cyclist (1896) *The Ideal Lady Cyclist*, Part I, Vol II, March, p.21
31 The Queen, The Lady’s Newspaper, (1896) 11 July, p.83


33 The Queen, The Lady’s Newspaper (1896) Mr Marcus’ New cycling Room, 4 April, p.598

34 (ibid)
Frances Henrietta Müller (who went by Henrietta) submitted a complete specification for ‘Improvements in Ladies’ Garments for Cycling and Other Purposes’ on 25th April 1896 and it was accepted on 30th May 1896. She self identifies as a Gentlewoman, which was broadly defined as a woman of high social position, and was living at the time in Meads, Maidenhead, in the County of Berkshire.

What makes this patent unique in this collection is its attention to the entire costume. Henrietta considers not only the skirt but also how it interacts with outer and under garments and unlike Julia, she patents all three garments – a tailored knee-length coat, a convertible skirt with a hem that loops and buttons at the waistband and combined vest and knickerbocker suit. She explains: ‘The whole suit forms a knickerbocker costume with all its convenience, yet which may be wholly or partially disguised at the will of the wearer, and admits of freedom in riding a diamond frame machine if desired, with facility for a return to more ordinary costume if wished at resting places, by releasing the looped skirt’. The three pieces work together to enable a woman to look ‘ordinary’ and respectable in polite society and yet convert when needed into a safe and comfortable costume to enable the wearer to adeptly engage in cycling or whatever physical activity she desired. It is one of the more conservative looking assemblies, which all the more cleverly conceals it transformative potential.

The theme that emerges from archival research into Henrietta’ life relates to women’s fight for emancipation and freedom of movement and how this shaped their understandings of clothing. As will become clear, Henrietta dedicated her life to women’s suffrage. She promoted women’s freedom of movement in many aspects of social and political life. She was physically active and enjoyed dancing and riding when she was younger and mountain climbing, rowing and cycling as an adult. Given a woman on a bicycle in public swiftly became shorthand for the “New Woman’ who agitated for change, it is easy to see why Henrietta applied her political beliefs to cycle wear. Although she is the most known woman in this collection, as a result of her suffrage activities in the UK and USA, her history of patenting convertible cycle wear has not, until now, been linked to her other considerable achievements.
Fig. Description and illustrations from Henrietta's patent
The inventor and her life

Exploring Henrietta’s life course provides valuable framework upon which to locate the patent and gain a sense as to how and why she chose to design such a seemingly complex three-part cycling suit. Henrietta was born in Valparaiso, Chile, in 1848 and had a rich, diverse and multi-cultural upbringing that exposed her to ideas and people from around the world. In addition to the patent and media accounts of her many activities, this chapter benefits from writings by Henrietta herself. We therefore get to hear in her own voice some of things that she felt important or frustrating, and usually both, and how she responded. Much of this first person account comes from ‘The Women’s Penny Paper’ 1888-1893, which she founded and edited. Henrietta’s mother was Maria Henrietta (nee Burdon) who was also born in South America but from English descent, and she had a German father from Gotha William Müller. Both were incredibly influential in her life course. Her mother was committed to the suffrage movement, as a member of several high profile associations such as Society for Promoting Employment for Women and the Central National Society for Women’s Suffrage. Henrietta thought highly of her. In an interview in The Women’s Herald in 1891 she said she ‘was always a great champion’ of her mother because she ‘sympathises with me very greatly in my efforts and has always done what she could to encourage a spirit of freedom and independence in her daughters; she is a woman of remarkable originality of character’.

Henrietta’s father was a successful businessman in Chile and continued to do well in the UK. An 1871 business register records William Müller, Esq of Hillside, Herts as a Magistrate for Middlesex, the Liberty of St. Albans and a commissioner of Income Tax. As was the Victorian convention, it lists him as having ‘an only son, William’2. While this is true, the record omits his daughters. He had three. Henrietta had an older sister, Wilhelmina and two younger siblings, Eveline, in addition to William.

Henrietta’s early travels laid a foundation for a peripatetic life. ‘Both my father and mother’, she recounts, ‘were very fond of travelling and I cannot count the number of times I have been on the continent’3. The Müller family left Chile when Henrietta was 9 years old, and travelled to Boston, and then onto London, where they lived for two years. They moved back to Chile briefly before returning to London where they then stayed. The 1861 Census records the family living at All children are ‘scholars’, even Eveline who was 8 at the time. Henrietta enjoyed her schooling: ‘I was rather quick at my lessons, and therefore my teachers liked me and were extremely kind to me’. They also had a Governess living with them, Fanny E Burton, 47. Their education must have been thorough and wide-ranging, as Henrietta spoke six languages, French, Spanish, German, Italian as well as some Latin and Greek. Her training provided a solid grounding for her ongoing studies and academic life. She gained entry to Girton College, Oxford, in 1873, aged 27, to study Moral Sciences, which include Political Economy, Philosophy, Psychology. She stayed there for three years.

In 1869 Girton College in Cambridge became the first establishment to offer education to women to degree level. Newnham College was opened shortly afterwards. Girton was the
first to allow women to write the Tripos Examination that normally enabled a (male) student to qualify for an undergraduate degree. Henrietta was one of the first women students to undertake and pass this exam. Yet women were not able to gain equal degrees until well into the next century, even though they were clearly exceptionally well balanced in competition, equaling and in some cases even beating male peers. In 1890 Philippa Fawcett, daughter of leading campaigner for women’s rights, Millicent Fawcett, was classed above the top male student in the mathematics tripos at Newnham College. In response to ‘to the question as to whether she thought there was anything in the cry that we were educating the mind at the expense of the body, Mrs Fawcett said, “No, I think it's all rubbish’.

The fears that blocked women’s equal access to education were similar to those about cycling, in that it could potentially distract or even worse impair a girl’s ability to perform her primary moral duty, that of securing a husband and raising a family. Fears of an education damaging a woman’s health were debated at length. Many doctors and psychiatrists believed that women’s desire for independence would lead to sickness, loss of fertility and even death.

Henry Maudsley, a much-referenced Darwinian psychiatrist of the time, was particular vocal about the immense injury women could suffer if they challenged the ‘natural order’. In his 1874 essay Sex in Mind and Education he argued that sex was in the brain and linked to reproductive organs, and this inhibited women from achieving equal lives to men. He was adamant that ‘[i]t would seem plain that women are marked out by Nature for very different offices in life from those of men, and that the healthy performance of her special functions renders it improbable she will succeed, and unwise for her to persevere, in running over the same course at the same pace with him’.

Elaine Showalter’s vivid account of Women, madness and English culture from 1830, as discussed earlier, explores in detail the threats to social order catalyzed by women’s desire to break free form the repressive patriarchal society. She explains some of the horrific consequences many believed would unfold if women went enacted their desires for change: ‘Mental breakdown, then, would come when women defied their “nature”, attempted to compete with men instead of serving them, or sought alternatives or even additions to their maternal functions.’ These social fears, as voiced by experts like Maudsley, were hard to shake off. Many believed that ‘once it appeared, mental disorder might be passed on to the next female generation, endangering future mothers.’

Women’s education institutions were at the forefront of these debates. They were providing the very thing that many felt would doom society. To protect themselves from unwarranted
social attacks, these establishments had to ensure there was no cause for more attention than necessary. This meant that women student’s lives were much more strictly monitored and controlled than those of their male peers. In a study about *Women at Cambridge*, Rita McWiliams Tullberg writes about this impacted on female students, at a time when they should have been reveling in the freedoms of this new opportunity: ‘The lives of the women students were ordered by innumerable small rules of behavior, and it is only possible to understand how the students bore with these contrast by considering the narrow lives they would have had to live had they stayed at home’.

Even Henrietta, who came from a family seemingly more open to travel, ideas and women’s freedoms, had to fight to gain further education. ‘After a great deal of difficulty and opposition from my family’, she writes, ‘I managed to go to Girton where I spent three most happy years’. However, she found life on campus limiting, such that ‘the tone of the place is narrow and there is a great want of outside social life to act as a relief from the intense hard work of the students’.

Nevertheless Henrietta’s Girton years were deeply formative in developing her interests in women’s suffrage. She was a passionate and prominent women’s rights activist and devoted her life to the advancement of women’s freedom of movement in all spheres. The hanging of the bloomer clad cycling female effigy by male students in protest to women gaining full degrees at Cambridge University took place a decade after Henrietta finished her schooling. We can imagine that the continued hostile reaction to women’s desire for an education would have only served to fuel Henrietta’s motivation and political actions.

I really cannot say how I came to feel as I do on the subject of the emancipation of women. I think it must have been born in me. During my girlhood I saw and felt a good deal of masculine tyranny’. … I made the deliberate choice to devote myself, body, soul and spirit, to what was then the unpopular cause of women’s emancipation. I have never swerved a single instant from that position.

Henrietta regularly put her words into action. In 1876 she launched a women’s printing press with Emma Paterson and Emily Faithful. The printing press for example hired 40 women to print materials for women’s suffrage and paid them equal rates to men doing a similar job. The *Women’s Penny Paper*, similarly set out to give a voice to women’s experience and ideas. She was committed to women’s right to vote, which had her arrested in 1884. Henrietta was close to her sister, Eveline, or Eva, and enjoyed similar interests, in regards to feminist activities, mountaineering and travel. They lived together in Cadogan Place, London, which gained media attention in 1884 when they refused to pay Council Tax on the grounds that they, as women, were being taxed without representation. They were arrested and their goods taken by bailiffs and sold. Henrietta explains her actions in a letter to the editor of *The London Times*:

It is not necessary for me to enter into any arguments upon the merits of woman suffrage. All that I desire to do is to offer a few remarks in my own justification… I should like to ask those who disapprove of my action, what course was open to me
compatible with my conscience. The principle that REPRESENTATION ACCOMPANIES TAXATION has been the basis of every argument used by me during the last six or seven years when pressing the claims of women to representation. It appears to be urged by my critics that on the first application of a practical test to the sincerity of my words I should have abandoned my position and thereby admitted the feebleness of my convictions.\footnote{9}

She continued to agitate for women’s emancipation on a number of platforms. She campaigned for education reform through the London School Board for 12 years from 1879, against sexual violence towards women and girls, equal pay for equal work in 1883 and argued for contraception to free women from continual child-bearing in 1884. Although she was a regularly writer for The Westminster Review, she became so frustrated by the lack of women’s voices in the media that she felt she had to do something more substantial.

One of the things which always humiliated me very much was the way in which women’s interests and opinions were systematically excluded from the World’s Press. I was mortified too, that our cause should be represented by a little monthly leaflet, not worthy of the name of a newspaper called the Women’s Suffrage Journal. I realised of what vital importance it was that women should have a newspaper of their own through which to voice their thoughts, and I formed the daring resolve that if no one else better fitted for the work would come forward, I would try and do it myself.

Henrietta set up a weekly periodical The Women’s Herald in 1888 (later called The Woman’s Signal). She edited it for five years under the name Helena B. Temple from a central London office at 86 Strand W.C. She explained the reason for pseudonym ‘was in order that my own individuality should not give a colouring to the paper, but that it should be as far as possible, impersonally conducted and therefore open to reflect the opinions of women on any and all subjects’. The newspaper covered a spectrum of issues and subjects related to the suffrage cause and women’s rights such as law court news and legal challenges, maternity rulings and parliamentary debates and types of women’s employment. It also featured interviews with hundreds of famous emancipists such as Millicent Garrett Fawcett, Frances Willard (President of the National Women’s Christian Temperance Union) and Elizabeth Cady Stanton (President of the American Women’s Suffrage Association). The newspaper banner defiantly declared it to be: ‘The Only Paper Conducted, Written, Printed and Published by Women’.

The newspaper also featured articles on dress reform, patenting and cycling. The very first edition on October 27, 1888 featured a column discussing the popularity of cycling for women despite its critics.

Cycling has become very popular with women and it is a rare thing to hear of any one being injured in healthy by it, though there have been, and still are, plenty of people who cry it down as the unwomanly exercise calculated to inflict injury. Curiously enough the people who utter these sentiments are generally those only fit, as someone
expressed it, “to be dragged about by horses”. As a matter of fact cycling has a most invigorating effect on the constitution. The second edition in November included a ‘Current News About Women’ column that became a regular feature in subsequent weeks. This first included news of a recent patent by an American woman, Mrs Emma D. Mills who invented a typewriter attachment and was planning to manufacture and sell it herself. The Women’s Herald continued to dedicate column inches to many issues and service relevant to women at the time, such as accounts of Rational Dress Society meetings discussing the ‘disadvantages of the present system of dress’, ads by the Rational Dress Society for ‘Divided skirts ready made or to order’ available from Sloane Street S.W as well as the services of local dressmakers and milliners.

Henrietta continued the peripatetic life she was born into by travelling extensively as an adult. She visited nearly every country in Europe, as well as being a frequent visitor to India and the US. She also had many outside interests from gardening and rowing to mountaineering with her sister Eva, and also cycling. She writes: ‘At one time I was very fond of tricycling. I remember once I came up from Farnham to London, a distance of nearly fifty miles, it took us the whole day, but the roads were in splendid condition and it is an amusing experience to see the milestones pass by so quickly – fifty in a day make a show’.

Fig. Portrait of Henrietta that accompanied an interview in The Women’s Herald – Women’s Penny Paper in 1891

Fig. Women’s newspaper launched by Henrietta in 1888
Over the next decade Henrietta travelled to India, China and America and gave lectures on her travels and women’s rights. She became involved in the Theosophical Society and linked her theories about women’s freedoms and freedoms from religious doctrines all over the world. This developed her reputation but also, according to this report, impacted on her health.

Miss. F. Henrietta Muller, owing to prolonged ill health her active, hardworking days are over for the present, though her interest in all matters, political and social are as keen as ever. Only a few weeks ago I visited her in the charming cottage near Maidenhead, Berks, in the quiet of which she hopes to regain her strength. It is a real old English red brick cottage standing back from the lawn in a delicious over-grown garden on the borders of a great common, and furnished within with a simplicity equally appropriate and artistic. Here, far away from the rush and roar of London, Miss Muller reads and writes and sees a few friends. She talked eagerly of her past work and on the whole subject of the independence of women, of which she is such a determined and able champion.

In 1891, she was 44 years old and living in Pinkneys Green, Berkshire. The Census notes her vocation is ‘Editor’ and she is ‘living on her own means’. She clearly overcame this reported period of ill-health as she continued to travel. In 1895, she is reported to have retuned from a third visit from India and had adopted a young Hindu boy, Akhraya Kumara Gosha-Muller, who was being educated in Law at Cambridge. She left London again in 1901 and traveled around the world, on her own. She was still giving public talks into the turn of the century. These ads tell of talks in 1904 and 1905.
Henrietta was 50 years old when she registered her UK cycle wear patent. She’d already lived an incredibly productive life when she directed her attentions towards women’s clothed mobile bodies in this new way. Given the breadth of Henrietta’s interests it is easy to see why she focused not just on a single piece, but also on an entire three-piece costume. She was committed to the idea of progress for women; and not content with trying to fix one element, when she could see problems with the entire system. Few technologies at this time could match the potential freedom represented by the bicycle. Attending to clothing was one way of directly addressing the barriers facing women and encouraging them to embrace this new freedom of movement.

Unlike the other women in this collection, Henrietta’s life is the most explored and readily available online and in archives. Her contributions to the feminist cause are undeniable. Yet, still, given the breadth of her activities and coverage, her name remains largely unknown. Women’s patenting histories are similarly disconnected and unknown. At the time of writing Henrietta’s patent had not been linked to her suffrage identity. There are no statues or plaques to commemorate her work towards the emancipation of women. The Cambridge Orlando Project has collated the most substantial collection of her many works, and hypothesize why this is the case:

HM is less known than one would expect, given her extensive activism in the early feminist movement and her importance as the founder of the first English newspaper produced by and for women. The fact that most of her work was produced as journalism, and did not appear in volume form, is likely one reason that her trenchant analyses of the situation of women in the later Victorian period have not received greater attention.

Henrietta died of pneumonia at 11am on January 4, 1906 at her Washington home, 1443 Staughton Street, Northwest. She was 59 years old. She still kept a UK address at the Westminster Palace Hotel on Victoria Street, Westminster. Her estate, valued at £12750 15s 7d, was left entirely to her sister, Eva. The death notice lists her as a Middlesex Spinster, which sits in striking contrast to her self-identification as a gentlewoman on her patent and what we know of her larger-than-life accomplished and dedicated life in support of women’s rights and freedom of movement.

The Gender Politics of Pockets

Henrietta’s long history of agitating for women’s freedom of movement is materialized not only through the design of a convertible cycle costume but even more specifically through her suggestion that the wearer should include as many pockets as was desired. She writes: ‘As regards pockets, I find it a convenient arrangement to put two watch pockets, one on each side, in the breast of the vest, a single pocket in the skirt, and two in the coat, though extra pockets according to special taste may of course be added’. Her suit is comprised of many pockets, only some of which become evident when wearing and converting the garment.
Some were for display. Some were designed and located for more private, hidden purposes. The mixture of these is important when considering the history of pockets.

Pockets are political objects. Although small, mundane and easily overlooked, they play strikingly fundamental roles in the construction of mobile and social bodies. Pockets, and moreover their absence (even in contemporary women’s fashion), have long held a powerful practical and symbolic value. They provide a self-sufficiency and security. They hold objects which free hands to do other things. They point to roles and responsibilities, of capabilities and capacity for social, cultural, financial, political action. As Barbara Burman and Seth Denbo argue: ‘The things we carry with us on a daily basis reveal a lot about the pace and complexity of our lives’.

It is not just what we carry with us, but how we do this that is fascinating. Pockets for men have been sewn into garments since the seventeenth century. They were rarely hidden as they displayed power and property. For women, pockets were often separate to their main garments, constructed with ties that could be worn under skirts and moved between garments. They could be specially made, handed down, gifted, purchased and stolen. They were made and worn by all classes; mended and refashioned in the transition from one generation to the next. Pockets could be inherently practical and worn much like underwear. They could also be heirlooms, part of ritualistic practice and gift exchange, passed on from generation to generation. For women, a pocket was a prized personal and private space. For many centuries people – and particularly women - lived very closely to one another, often with little personal or independent space. For women who have traditionally owned few personal goods, and were legally not able to own property and were more often considered property, pockets were a way of keeping something to themselves. Ariene Fennetaux who writes about women’s pockets in the eighteenth century argues that pockets were ‘one of the few places women could call their own’17. Therefore, the changing nature of pockets, in particular their move from inside to outside garments, and in Henrietta’s case, to the increasing volume of them in women’s clothes ‘testify to their increasing mobility and independence’18.

Pockets become even more critical in the context of the introduction of new active lifestyles and mobile technologies, such as bicycles. Women were starting to move more and in more places and their hands were required to manage machinery. Pockets started to take on new shapes and different kinds of use. However, as Barbara Burman writes, ‘[t]here is evidence from the extant clothing itself, and elsewhere, that women were not able to rely on practical pockets being readily available in their clothing, whereas a man could assume his ready-made or bespoke suit or coat would be liberally provided with pockets.’ This meant that women became more ingenious in regards to the nature and location of pockets, such as ‘concealed pockets sewn inside hand muffs, travelling rugs and foot muffs for use in trains or later in motor cars, and travelling bags and hand-held cases designed with pockets and straps to secure small personal possessions’19.

One of the more ingenious responses to the practical pocket problem is in 1885, when Madame Brownjohn of 35 Churton Street, Belgravia, designed a cycle costume for ladies,
which was so highly regarded that it was displayed at the International Inventions Exhibition. It was part of a World Fair held in South Kensington, London, which demonstrated cutting edge design and industry from UK, US, Italy and Japan. It attracted 4 million visitors in six months. Madam Brownjohn’s design The *Cripper Ladies Tricycling* costume was awarded a medal for its ingenuity. One of its lauded features was the use of pockets: ‘A number of pockets are placed in the dress, one of which (placed inside the under-skirt) is sufficiently large to carry all the luggage a lady might require if she intended to stay the night at the end of her journey’.*

Fig. Photo of a model wearing Madame Brownjohn’s tricycling costume*
We can only imagine what a pocket large enough to carry a lady’s luggage might have looked like, or how it might have felt to cycle while wearing such a pocket, but it points very clearly to how women were creatively expanding on existing ways in which they had always negotiated materials, technologies and their bodies to carve out new forms of independent mobility. Pockets were even more important for mobile women, so much so, that they began to be associated with emancipists.

She was ordering a pair of bicycle bloomers from a man dressmaker who had formerly catered exclusively to the male trade. “You will want two hip pockets, I suppose?” he said. “Yes”, replied the emancipated one. “Er – pint or quart size?” asked the man milliner with a far away look in his eye. She glared at him for a moment, then for the first time he noticed that she wore a temperance badge! As she flounced out of the door he kicked himself several times in the same place.

Women who were making their own cycle wear were encouraged to add useful pockets. Marguerite from Bicycling News offers this advice for the dressmaker:

> The usual place for a pocket is in the back of a skirt, but this is most uncomfortable for riding. I have found it a good plan to have two pockets – one let into the skirt in the ordinary way, but not quite so far back as is customary; the second, an outside pocket in which the handkerchief can be carried and can be got at without any trouble.

The turn of the century saw an increase in patents for pocket inventions. This reflected a change in mobility of the population moving outside the home seeking employment combined with the increasing proximity in which people lived and socialized as a result of the industrialised revolution. With pickpocketing rife in city centres, inventors were motivated to find ways to protect people’s personal possessions. Inventions of this time include Amy Hart’s, of Balham, Surrey, 1895 patent for ‘Improvements in Pocket Protectors’ and Blanche Ward’s 1898 ‘Improvements in Dress-Pocket protectors against Pocket-picking’.

In 1914, Charlotte Perkins Gillman’s writing provides a particular illustrative example of the political relevancy of pockets for women in an age of technological advancement. She was an American utopian feminist renown for her novels, both fiction and non-fiction, and social reform activities. In 1914 she published a short story ‘If I Were a Man’. It tells the compelling tale of Mollie Mathewson, who awakes to find herself in her husband’s body and proceeds to walk through the streets on the way to catch a train to work. She conveys the striking feeling of freedom that came from being dressed as a man, not only in terms of her free moving legs, ability to breath easily and run in comfortable shoes but in terms of having pockets.
These pockets came as a revelation. Of course she had known they were there, had counted them, made fun of them, mended them, even envied them; but she had never dreamed of how it felt to have pockets (1997:58).

Charlotte Perkins Gillman’s character was able to inhabit and negotiate the urban mobile landscape differently in her husband’s clothed body. She was able to control her body in new ways and her free hands enabled her to engage with public space. In this story, the pocket is a metaphor for the frustrations women were feeling about barriers to access to money and property. In this context, it is not hard to see why the inclusion of multiple pockets in a mobile garment were so critical to Henrietta’s costume for cycling.

Interviewing Henrietta’s ‘Garments for Cycling’

Henrietta’s patent provides detailed instructions to produce a three-piece suit suitable for walking or cycling – long tailored jacket, convertible skirt and all-in-one bloomer suit. As per the other garments, the process involved working with a pattern cutter to produce a block pattern inspired by the patent. We made mockups of all the garments in a similar wool weight to work through the design.

![Fig. Skirt pattern](image-url)
Fig. Combined vest and knickerbocker pattern
Upon first impression the patent seems complicated. The drawings demonstrate different elevations and assemblies which make the suit look even more intricate than the detailed textual description. Added to this is the sheer volume of pattern pieces required to make three garments. In total 38 pattern pieces were required to construct the suit, the most of all garments in the collection. Yet, upon making Henrietta’s invention what emerges is its simplicity. In contrast to Alice’s patent, Henrietta strips away extraneous materials and details, and concentrates on what is essential – a garment that has no unnecessary frills of layers, is light, easy to put on, simple to convert, and enables a woman to move relatively freely. Henrietta’s commitment to progress for women is materialized in this garment.

Historical and genealogical research revealed how Henrietta approached the idea of women’s freedom of movement from every angle – heath, education, marriage, reproduction, employment, media, politics, religion and beliefs, travel and the body. If in doubt she declared her aims in The Women’s Herald: ‘Our readers know that the aim of the paper is to further the emancipation of women in every direction and in every land’24. A similar drive emerges in her patent. ‘These improvements consist in the form and combination of three
specially constructed articles of ladies’ costume, so made as to afford special facility and convenience when cycling’.

Other costumes in this book suggest ideas for complementary garments or fabrics, but generally leave details and accessories to the wearer’s discretion. Henrietta does not. She addresses the entire suit as a system. Every piece in this suit operates to streamline their impact on the body. This is particular evident with the undergarment. Two conventional garments – the blouse and bloomer - are replaced with a combined vest and knickerbocker garment. The fact she has even focused on an undergarment is a thought-provoking move. In doing so she renders visible and important a seemingly trivial item that remains hidden under the surface. This is not a garment to be seen by the public, but the comfort of the wearer is greatly improved by lighter less cumbersome undergarments. The combined vest and knickerbocker also removed the issue of having to contend with a double waistband. (This might be a reason also why the jacket is without a belt). A combined garment was one way of dealing with the problem of heat and irritation caused by wearing layers of garments. Buttons at the neck and arm and also at the waist and knee kept it in place. Strategic buttons at the lower back enable wearers to relieve themselves without removing the entire garment. There is no mention of the need of a corset.

The skirt is based again on a simple A-line form. This version differs from others with a centre front seam that is closed with 9 buttons/button holes. Darts at the waist shape it to the waistband. Like the rest of the suit, Henrietta sheds as much as possible. She suggests a short length skirt to ‘clear the ground say by about six inches’. She removes the lining and fancy hem. ‘Dispensing entirely with the lining, it has only a narrow stitched hem around the bottom and a waistband provided with a row of buttons on the outside’.

The convertible mechanism in this patented design comprised a clever but simple system of ribbon loops and buttons. They are located on the hem with corresponding 6 buttons on the waistband. To convert the garment, the hem is hooked up the waistband via these loops. Depending on how many loops are fastened, the entire skirt can be lifted from the ground, or just the front. The long sleeved, collared, tailored coat is knee length with 10 buttons to close. It features flexibility in how it can be worn fully buttoned or half buttoned up. Extra buttons are included so that the front panels can be fastened back to allow for even more freedom of movement. For Henrietta, clothing is as much a device of freedom and progress as the bicycle itself.

Henrietta’s looped skirt can be compared to Julia’s gathered skirt in terms of the inside out nature and the radical change it enacts from the ordinary skirt. However, the former is not on show. ‘By continuing the looping process this garment can be entirely hidden under the coat. [...] The limbs would not be free altogether as far as a skirt restricts their action, and a machine of the diamond frame type could be readily ridden’.

Henrietta’s costume is the most formal of all the designs in this book. It would not have looked out of place in a parliamentary debate or lecturing on a public stage. It is not a
complex design, but one born of experience and interest in making things better. It maintained what worked and removed what was unnecessary. Her aim was to give ‘flexibility and freedom to the wearer’. The costume was designed for whatever active life was for its wearers.

The only significant addition Henrietta makes to the otherwise pared-down design is in terms of pockets. To make six (or more) pockets in Henrietta’s suit provided time to reflect on pockets as mobility devices, as discussed above. While Henrietta makes clear the nature of the pockets, the drawings do not provide instruction for specific style. Yet, each is different – in location, construction and purpose. The nuance is left up to the maker. The two in the jacket were bigger, and the easiest to access in the context of the complete suit. They would have been pockets on show, a demonstration of power. We made them slashed pockets with welts and flaps and positioned them at the hip. The vest pockets would have been smaller, given they were for a (pocket) watch and the like. The skirt pockets were medium sized and placed so to not to hinder the movement of the legs or comfort on the saddle.

What becomes clearer when wearing the skirt is how the folded up hem to the waistband creates even more pocket-like spaces. When the front it looped up, the material creates two large encloses spaces and then the back is joined at the waist, it creates four. Henrietta refers to it as a ‘Fishwife’ skirt. This was a full double-layered style of skirt worn by a working woman in Scotland’s fishing industry. The upper layer could be caught at the waist to create more coveted holding capsules. Henrietta’s entire garment is in some ways a giant pocket.

Henrietta was not interested in addressing a single barrier to women’s emancipation, but to approach all of them systematically. She was sensitive to the restrictions on women’s lives, having fought on many fronts for her own and other’s rights to gain an education, the vote, reproductive freedom and equal pay. Women’s rights activists knew that you needed to change lots of things, not just one to have true freedom and equality. It makes sense that she would also focus her attentions on an entire assembly of clothing for newly mobile women.
**Fig. Close up of the hooked skirt hem that creates large pockets**

**Fig. Button details on the combined vest and knickerbocker pattern**

<table>
<thead>
<tr>
<th>Material</th>
<th>Extra garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 metres Dashing Tweed – Urban Check</td>
<td>Boots, tights, scarf, hat</td>
</tr>
<tr>
<td>3 meters mustard linen blend</td>
<td></td>
</tr>
<tr>
<td>Printed research lining</td>
<td></td>
</tr>
<tr>
<td>14 buttons for combined vest and knickerbocker</td>
<td></td>
</tr>
<tr>
<td>9+6 skirt buttons</td>
<td></td>
</tr>
<tr>
<td>10 jacket buttons</td>
<td></td>
</tr>
</tbody>
</table>
Fig. Henrietta’s converted cycling suit in action (Credit: Charlotte Barnes)
1 The Women’s Herald: The Women’s Penny Paper. (1891) Interview: Miss F. Henrietta Muller, Editor of the Woman’s Herald, by Clara E. De Moleys. 28 Nov, p. 916

2 1871 UK Business Register Records William Müller, Esq of Hillside, Herts as a Magistrate for Middlesex

3 The Women’s Herald: The Women’s Penny Paper. (1891: 915)


5 Maudsley, Henry. (1894) Sex in the Mind and in Education, Popular Science Monthly, Volume 5, June,


8 The Women’s Herald – Women’s Penny Press. (1891) Interview: Miss F. Henrietta Muller, Editor of the Woman’s Herald, by Clara E. De Moleys. 28 Nov, p. 916

9 The Inter Ocean, Sat 16 Aug, 1884

10 The Women’s Penny Press (1888), No, 1, Vol, 1. 27, Oct, p. 4


12 The Women’s Herald: The Women’s Penny Paper (1888) No, 6 Vol 1. 1 Dec, p.2

13 The Women’s Herald: The Women’s Penny Paper (1889) 2 Mar, p.7

14 The Inter Ocean, June 2, 1889


16 Cambridge Orlando Project: Women’s writing in the British Isles from the Beginning to the Present. Henrietta Muller, http://orlando.cambridge.org

18 Fennetraux, Ariane (2008:315)

19 Burman, Barabara (2002:435)

20 The Express (1885) 5 Sept,

21 Mannequin on tricycle. The Women’s Library @LSE. Ref: 7LEB/2/11/1. Alt Ref No. CM Object/7/LEB/1/11/1. Accessed at: https://twl-calm.library.lse.ac.uk/CalmView/Record.aspx?src=CalmView.Catalog&id=7LEB%2f2%2f11%2f1&pos=1 (Many thanks to Shelia Hanlon who told me about this great example).


23 Bicycling News and Sport and Play (1985) *Lines for Ladies by Marguerite*, 16 April, p.18

24 The Women’s Herald: The Women’s Penny Paper. (1891) ibid
Chapter 9

*Patent No. 13,832*

Mary Elizabeth Pease and Sarah Anne Pease

‘Improved Skirt, available also as a Cape for Lady Cyclists’

Mary Elizabeth Pease and Sarah Anne Pease submitted a complete specification on 5th March 1896 and their patent was accepted on 11th April 1896. They were residing at Sunnyside, Grove Road, Harrogate, Yorkshire and like Henrietta they identify themselves as Gentlewomen.

The Pease sisters are two of the younger patentees of the period and their design reflects their exposure to a changing society. This garment is one of the more radical designs of the time, because the skirt completely comes away from the body. If made in a light fabric, it could be rolled up and attached to the handlebars using the gathering ribbon. The sisters write about the popularity of rational attire for cycling women but are clearly also acutely aware of how this costume exposed women to scorn and abuse. ‘The rational dress now greatly adopted by lady cyclists has one or two objections inasmuch when the lady is dismounted her lower garments and figure are too much exposed’. 1896 was the height of the cycling craze in Britain and many women were wearing some kind of cycle wear, often a version of Rational Dress, in a range of urban and rural places, and in doing so, pushing at the parameters of how and in what ways women could move independently in public space.

Mary and Sarah identified a potential market for costumes that enabled women to challenge social convention at times and places of their choosing. Their response was to improve the skirt by making it detachable and give it a dual purpose. They explain: ‘Now the object of our invention is to obviate these disadvantages by the formation of a cape like garment which can be secured round the neck as a cape or be secured round the waist as a skirt and occupy a position under the usual “fall” of the tunic but to a lower level’. The skirt/cape’s dual identity points to the tensions implicit in the desire to participate and support a new order and at the same time not completely reject social propriety. Unlike other convertible skirts in this collection the wearer could completely remove this version when they wanted to free their legs and either wrap around their shoulders or carry it on the handlebars. The garment could be returned to a skirt when social discomfort became too much.

The theme in this chapter relates to cycling’s visual culture for women. Cycle wear radically changed how they looked in terms of the shapes of their bodies and also the speed at which they moved. On a bicycle, women were outside, moving much faster than on foot and often without a chaperone in urban public spaces. New styles of cycle wear in the form of bifurcated garments, such as bloomers, knickerbockers or short divided skirts, instead of conventional floor length skirts and loosened or no corsets produced a very differently shaped female form. As a result, what women wore on the streets to cycle swiftly became representative of social change regardless of the rider’s politically alignments. As Fiona
Kinsey notes ‘Such women, while not necessarily suffragist themselves, were at the vanguard of changes in gender roles which enabled them to take up new forms of physical activity’. Many of cycling’s early adopters took to other new emerging technologies, such as the camera. Being able to adopt both in some form displayed their social status and accrued cultural capital. Together they enabled women to embody and represent different forms of public mobile femininity and play a role in changing the visual landscape of gendered mobility and citizenship in Victorian England.

N° 13,882 A.D. 1895

Date of Application, 19th July, 1895
Complete Specification Left, 5th Mar., 1896—Accepted, 11th Apr., 1896

PROVISIONAL SPECIFICATION.

Improved Skirt, available also as a Cape for Lady Cyclists.

We MARY ELIZABETH PEASE and SARAH ANN PEASE both of Sunny Side, Grove Road, Harrogate, Yorkshire, Gentlemens, do hereby declare the nature of this invention to be as follows:

This invention relates to an improved skirt available also as a cape for lady cyclists.

The rational dress now greatly adopted by lady cyclists has one or two objections inasmuch that when the lady is dismounted her lower garments and figure are too much exposed.

Now the object of our invention is to obviate these disadvantages by the formation of a cape like garment which can be secured round the neck as a cape or be secured round the waist as a skirt and occupy a position under the usual “fall” of the tunic but to a lower level. The garment can be readily put on by first suspending the front from a hook or other fastener.

Our cape and skirt garment is preferably made of a light or thin waterproof fabric of the desired pattern to coincide with the colour or texture of the dress, it is of circular shape with a clear opening at say the front, to be secured by buttons hooks and eyes or other fasteners in its depth to overlap and with a band in which a running cord or tape is arranged for drawing the band in to the required diameter or size of waist when worn as a skirt and of the neck of the wearer when worn as a cape the band being so made that when drawn in for the neck it gives the appearance of a Ruche collar.

The duplex garment thus made can when not in wear be rolled for attachment to a cycle or be folded and be carried in the cycle pouch or it can be suspended in a rolled up condition from a lady’s waistbelt.

Dated this 19th day of July 1895.

H. GARDNER,
Patent Agent, 166 Fleet Street, London,
Agent for the said M. E. & S. A. Pease.
The inventors and their lives

Co-patentees were rare. Sole inventors are the norm, even if the reality of the origins of the design was anything but the result of independent invention. Mary and Sarah were sisters and close in age. Mary was 23 and Sarah was 24 in 1896 when they patented their design. They were living at ‘Sunnyside’, their family’s farming estate. According to the 1881 Census, it was recorded as being a substantial sized property at 209 acres and employed three men and two boys. Mary and Sarah’s mother, Elizabeth Annie Pease, managed the estate. She was listed as head of the household and a widow. Her husband, a farmer, John Pease had recently died, in 1879. The sisters had two other siblings – an older sister, Minnie Pease and a younger brother, John Cockcroft Pease. All were listed as ‘scholars’. On the night of the 1881 Census, there were a further seven people in the house (which may have been in addition to the workers above): a governess, Eleanor Stroughaim, (26); four servants, Mary Clarkson (22), Polly Ogle (16), Richard Warrior (17) and Henry Edmundson (16); a shepherd, Thomas Dixon (72) and a Merchant, Abraham Cockcroft (36). Given the latter’s shared name with the son, he was clearly a good friend of the family. The size of the estate and household explains why the sisters self-identify as ‘Gentlewomen’.
A decade later, only Minnie and Mary are living at home with their mother. Elizabeth Annie Pease was still the head of the household at 52, and ‘living on her own means’. Minnie was 23 and Mary was 15. Sarah had a job working as a Governess with a Yorkshire family, headed by a schoolmaster and John was a clerk in a law office. The family farm ‘Sunnyside’, was still a good sized household, but had reduced in size. On the night of the Census, Sunday 5th April there with three other people in residence: a family visitor, Caroline Barclay (5) also living on her own means; and two servants; a table boy, Lupton Borthwick (14) and a domestic servant, Elizabeth Jeny (24). Given there are no other employees, its possible that the family had disposed of the larger acreage and were living on the proceeds.

Were the sister’s still cycling together, even though one was living and working away from home? Sarah was still in Yorkshire, so it is possible that she was able to return home for occasional visits. Were the sister’s sharing ideas from periodicals, sewing together or talking about things that Sarah had seen in her new job? We can’t know for sure, but we can draw on experiences of other women interested in similar pursuits. First person accounts by women about women’s cycling experiences are rare. There are more accounts about women by others in the public record. However, there are some illuminating exceptions that we can use to gain a sense of what the sister’s might have been doing and thinking. The letters shared between Kitty and her companions for instance provide a rich sense of the kinds of cycling adventures and costumes women at the time were wearing and responses they were getting from fellow road users in and around greater London. On 13 Sept 1897, Kitty wrote to Maude:

It was market day on Friday at Chippenham and we created quite an excitement, though I think as many looked on with approval as those who laughed and whooted. Anyway it was a good natured crowd and nothing to hurt was yelled. The way we steered up the street, through sheep, cattle and farmers was fine. The latter took no notice of the bells and did not budge until the front wheel was in their backs. Devises seems an uninteresting town and the waiting maid who served us with tea at ‘The Bear’ held her head in the air, sniffed and would not speak more than was necessary.2
Another first person account even more closely located to the sisters’ home in Yorkshire is to be in Emily Sophia Coddington’s diary. Emily was of a similar age when she took up cycling and cycled around the northern area of Leeds, around Harrogate, Collingham, Ilkey and Dynley. She kept a richly detailed account of her enthusiastic new hobby from June 1893 to July 1896. It is remarkable account as she rides at least a few times a week, sometimes twice a day, and keeps meticulous record of her excursions in a neatly organized book with columns headed ‘Places’, ‘Date’, ‘Miles’, ‘Weather’ and ‘Comments’. Emily rode her bicycle frequently through all seasons, in hilly conditions and the diary attests for increasingly longer distances.

Harewood, Collingham, Shadwell and E. Keswick to Chapeltown and Shaw Lane, home. June 24th 1894. 5.30-7.30pm. 22. Beautiful eve. Wind still high. Very hilly ride, went down the hills at a tremendous pace, like an engine. H. could not keep up with us. It was glorious.

She tallies the distances every year. Her total number of miles ridden in 1894 was 1,075 and then a year later it was 1,458 and a half. Her diary tells the reader much about the landscape, which may have been hilly, sometimes windy and often muddy but for Emily and her bicycle it was filled with ‘quaint small towns’, exciting downhills and beautiful vistas and in all weathers which made the effort worthwhile.

Unfortunately, Emily spends less time describing her costumes for every outing but there are still some clues. On 8th April 1894 she writes that she wore a new costume that had a ‘rational underneath’ and which was beneficial ‘especially when the wind blew’. Then on 6th September during a ‘fine but windy and rainy’ evening on a road that was ‘very hilly’, she almost had a crash while cycling. ‘Very nearly had a spill, dress wound round the pedal’ which led her to exclaim, ‘why don’t we wear rationals??’ Emily clearly saw the benefits of wearing less conventional dress while cycling, yet she continued to wear skirts even while she wore a bifurcated ‘rational’ garment underneath. Emily may well have welcomed the Pease sister’s convertible skirt and cape design.

The sisters registered their patent in 1896 and even though only one of them was still living at home, they list ‘Sunnyside’ as their residence on the patent. At the turn of the century, both daughters had left home. Only their older sister Minnie was living at home with her mother, which was unusual as she was the eldest. The presence of a hospital nurse living in the house on the night of the 1901 Census alludes to the possibility that either she or her mother were not well. Interestingly, one of their closest neighbours was Edward Dutton, a retired patent agent. In 1905, Mary married a surgeon and physician, Charles Rudolph Williams. They had a daughter, Katherine Mary Williams.

Like many women of this time, there is little record of the sisters’ lives apart from Census records. Even with this, we cannot be absolutely certain that this is the exact Mary and Sarah Pease who lodged the patent for a convertible cycling skirt and cape in 1896. This design in their name does not appear elsewhere in the public record nor is there evidence that it was
licensed and commercialised in their name. However, we still hear their voices in the patent and see their ideas emerge in a design that points to a range of issues prevalent to newly mobile women at this time.

Tactics for site-specific concealment

Mary and Sarah’s approach to the “dress problem” is very different to those of their contemporaries. In their attempt to get the skirt out of the way of the wheels, they offer an option to remove it altogether. While the sisters were aware of the benefits of cycling in some kind of rational dress such as bloomers or knickerbockers without a skirt, they were also mindful of when it might be safer to have a backup plan. They were not alone. Even for confident cyclists, like Emily Sophia Coddington who otherwise embraced cycling as part of every day life and social identity, cycling without a skirt was a risky move.

Popular columns Like Marguerite’s *Lines for Ladies* in *Bicycling News* advocated the carrying of skirts for when the wearer needed to get off the bicycle and return to more perambulate socialites. But even then, these preventative measures did not always guarantee a pleasant experience. Marguerite explains:

> We both carried our skirts on our machines so that we could slip them on for walking, and at the hotel where we were to stay for the night. We encountered plenty of adverse criticism and some rudeness in almost every town and village through which we passed, but for downright insults the manhood (?) of St. Alban’s was pre-eminent. The remarks which were hurled at us as we passed through that seemingly respectable town were such as would make any woman, however strong-minded, make a resolve that nothing should in future tempt her to venture to ride in a costume which laid her open to such insults… it is hard to break through so much prejudice, and the effort calls for much more courage than the average woman is possessed of. 

Although keen to ride occasionally without the encumbrance of the skirt, but possibly because of the adverse social response it catalysed, Marguerite was certain that the time when ‘the last lady cyclist will “cast aside” her skirt is as yet far distant’. The stubbornness of the ordinary skirt was such a common trope that was gently mocked in women’s magazines and cycling periodicals.

> Maud: “Do you wear the rational dress?”
> Gertie: “Yes, but I cover them with a skirt”
> – *The Wheelwoman*, 1897
Carrying a skirt for walking when away from the bicycle fits with the site-specific strategy outlined in a previous chapter. Women would wear one costume to fit with city riding and another for ‘proper’ riding, often sans skirt, away from social scrutiny. There were many designs at this time, which attempted to provide something in-between for readers of different active and political persuasions. Under the banner ‘A Costume for the Country’, London’s The Morning Leader suggested the following convertible costume for cycling as well as other activities like golfing or country wear:

*The bodice is double-breasted, and it fits closely down the back and side, though ponching slightly in front. It can also, you see, be buttoned at the throat. Neat breeches should be made to wear under the skirt, with a band of box cloth below the knee, and if you are sufficiently of the “new woman” you can make it into a rational costume by discarding the skirt and donning a long basque-like garment of the same material, which buttons round the waist, is unlined, and reaches only to the knee.*

Mary’s and Sarah’s patent is based on this strategy but goes further. It gives the skirt new purpose, as another garment entirely – a cape. It was designed with a quick transformation in mind. As they explain, the aim of the design was such that ‘on dismounting if the article be in wear as a cape its removal and securing round the waist would in a few moments convert it into a skirt without making the wearer unlike others in the vicinity’. It would have made an ideal garment for Kitty’s friend Minnie:

Minnie came from Harborough part of the way by train the rest cycling, she got in late for she as quite done up by the heat. K.W and self wore no skirts on Sunday, some friends of hers came to tea and she wanted them to get used to the costume. It was jolly wandering around the woods without a skirt and Minnie wished she had her costume. But she wore a skirt because of going by train and did not bring a coat.

Cycling women generated attention. While some attempted to avoid it as much as possible, for others it was unavoidable and it worked in their favour. Tessie Reynolds, for example, garnered great media response to her cycling feat and the exposure of her rationally inspired hand made costume may well have inspired many to wrestle with their own personal fears. S.S. Buckman, writing under his pseudonym in *The Lady’s Own Magazine*, was adamant about the importance of the press for the dress reform movement.

The great thing in connection with Rational Dress is to obtain publicity. Only by so doing and by familiarizing the public with the idea of the costume, as well as letting them see the costume itself, with the great desideratum be soon attained – that the public accept the wearing of the dress as a matter of course.

Lady Harberton was never a woman accused of being media shy. She sought to further the cause of the dress reformers through media attention, public debate and also a court case when she was denied entry to the Hautboy Inn coffee room in Surrey on April 5, 1899 for wearing rational dress. Lady Harberton was firm in her conviction that dress reformers
needed to used their clothed bodies to change public opinion. She encouraged women to wear their costumes at all possible opportunities to claim this modern identity as a new visual norm. ‘It is difficult to over-estimate’, she declared, ‘how much may be done in home life and private social ways.’ She was sensitive to that fact that members may well be fighting resistance at home as well as in public. But overcoming even domestic opposition was a step forward. ‘By having the courage of her convictions, the Leaguer will find that she can generally arrange to wear the dress some part of the day in her lodgings or boarding house, flat or home and so the prejudice of parents and brothers, friends and fellow-boarders may be overcome, or at least the way made easier for others’10. She was, however, less enamored by the skirt-carrying method.

We have never thought it necessary to carry a skirt on our machine. It makes a cumbersome parcel, and what good does it do? We earnestly hope those wearers of rational dress who have hitherto carried, and occasionally put on skirts, will discontinue the practice11.

While there was much encouragement to wear new forms of cycle wear and influence the view of the general public, it was not easy. While some cyclists like Kitty and Marguerite relentlessly just kept doing it, putting their radically clothed bodies on the front line, and coped with the responses as best they could, others sought to claim more private spaces first. In 1898, Miss E. Whittaker declared herself a member of the Indoors Reformed Dress League. Interviewed in the Daily Mail, she made clear that she did not cycle and chose instead to showcase her bloomers at home and claim this space first before venturing out onto the street. Miss E. Whittaker argued that “the cause” was being harmed by out-door dress reformers. She strongly felt the home was the first challenge for women dress reformers before seeking to claim outside space.

The object of the league is to make reform easier by avoiding the publicity of an out-door reform. The founder thinks that hitherto a grave error has been committed in trying to force a reform upon a public which is not educated up to it…. When this Indoors League gains all the recruits it hopes to secure…. [t]hen shall the lady cyclist who merely wears her “rationals” when wheeling feel what a spurious, half-hearted reformer she really is12.

There was space (and inventions) for all kinds of resistance. The sister’s skirt/cape offered women the opportunity to claim multiple identities at times and places of their choosing. The patentees seem to understand the importance of being part of the new visual culture of the time, to show women participating in this exciting vision of modernity and be part of the Victorian technological imaginary. However, they were also sensitive to the trouble this catalyzed and the desire to have at least some control over this.
Visual culture of women’s cycling

Victorians were quick to embrace not only the bicycle but also many other new and exciting technologies, such as photography. The fusion of which resulted in the popularity of cycling portraits. These images reinforced the subjects’ cultural cache on multiple fronts – it was a social achievement to be able to afford access to these new cutting-edge technologies, to be associated with these symbols of modernity and to demonstrate the new skills required to participate in these cultures.

Advertisements for new costumes, bicycles, sewing machines and cameras were regular features of in popular cycling periodicals. During the 1890s cycling boom, these technologies came together in the form of ‘cycling portraits’, which proved popular with new female cyclists. Portraits regularly accompanied columns such as ‘Lady Cyclists at Home’ and ‘Why a Lady Cyclist Should Always Dress Well’ in The Lady Cyclist.

Bike portraits took a number of formats, but primarily feature women in progressive new forms of cycle wear standing with or posed on their bicycles. Many were studio based, though some were taken in outside contexts. They symbolized a woman’s engagement with multiple new forms of modernity – the camera, bicycle, costume and independence. The cyclist, of all ages from young girls through to matrons, is photographed with her bicycle, alone and un-chaperoned and often in front of a natural landscape backdrop, where presumably she was about to cycle away into. The range of bicycle styles and costumes is vast – from conventionally skirted riders who sit upright on step-through frames to scorchers bent forward over diamond frames in knickerbocker suits. These images present a powerful technological imaginary of women as modern mobile citizens, confidently embracing a spectrum of new technologies, independence, being outside the home and away from the domestic boundaries that shaped more narrowconventional gendered roles. Fiona Kinsey’s research into ‘Photographic Portraits of Australian Women Cyclists in the 1890s’ illuminates the appeal:

For cyclists, having a photographic bicycle portrait was especially appealing. The bicycle was a badge of conspicuous wealth and fashionable social status, but both the bicycle and the camera, and the images it produced, signified modernity. For women in particular, in a period of gender reform, a modern identity was powerful and seductive, especially one that showed women as independent and capable of using new technology. Unsurprisingly, ‘bicycle portraits’ became a particularly potent and desirable accessory13.

Supporters of dress reform, women’s rights activists and cyclists alike shared a common interest in promoting women’s freedom of movement. Cycling radically changed how women could be in and move through public space. One way to change public opinion was to normalize it through familiarity.
Rational Dress League encouraged members to not only wear their costumes at every possible opportunity but also to actively participate in the visual culture of cycling by having their portraits taken, thereby forging cycling imagery in the public domain that featured not only men’s bodies, but women’s as well. They encouraged their members to take up an offer by a local cycling photographer:

Mr Clare Fry, of the well-known firm of photographers, C.E. Fry & Son, 7. Gloucester Terrace, S.W., is a member of the League and has generously offered to photograph free of charge any member of the League and present her with one set of finished proofs.14
Magazines often ran competitions for the best new cycling costume. This increasingly became a photo of the best new costume. A 1986 competition run by *The Lady Cyclist* stated: All intending competitors have to do is to send a photograph of themselves, either mounted on their bicycles or standing beside them, in fact, in any position they prefer, provided they are in cycling costume. The costume may be either of the skirt or knicker pattern, and the prettiest picture will gain the prize. First prize was ironically cycling accident insurance. Consolation prizes were also awarded to twelve runners up.

Many of the portraits we can still see today were published in popular magazines. There would have been many more commissioned for personal use. It is not hard to imagine that not everyone wanted to go outside or indeed even, in some less than favorable conditions, stay inside in new cycling garments. Having a portrait taken was another way of participating in this new cultural practice. As Fiona Kinsey argues: ‘Whether taken by a professional or amateur, for public or private use, their portraits were fashionable accessories’. Critically, these portraits also played a significant role in representing carefully curated and positive images of women cyclists at a time when women were consistently ‘caricatured by the media as masculinised and unattractive’. They were also regularly, as discussed early, often portrayed as poor cyclists not in control of their skirts let alone let their velocipedes. As such, these portraits contribute to a rich and vivid visual culture of Victorian women’s cycling.

The use of Cycling Portraits to contest negative public imagery can be seen as a precursor to what Lisa Tickner has called the ‘The Spectacle of Women’ in her study of ‘Imagery of the Suffrage Campaign 1907-14’. Her research explores the role of women artists in contributing suffrage imagery to the public sphere about women’s lives, rights and emancipatory intent. ‘Feminists were regularly caricatured as over- or under-sexed, ugly, hysterical, masculine or incompetent’. They recognized the power of popular visual culture ‘in the maintenance and reproduction of anti-feminism’. Much like women cycle wear patentees, they used the skills, bodies, materials and spaces available to them to intervene in this visual landscape and offer alternative ways of seeing and thinking about women in public space.

They designed, printed and embroidered all manner of political material; they taught each other the requisite skills from hand-printing to needlework; they designed major demonstrations and took part in them in their own contingents; they lent their studios for meetings and contributed to exhibitions, bazaars and fund-raising activities; they even turned pavement artists and put out collection boxes after sending their paintings to the Royal Academy.
Fig. Cycling portraits in *The Lady Cyclist*, 1896\(^2\)

Fig. Cycling Portrait of Mrs Barrington, *The Wheeler*, 1894\(^3\)

Fig. Cycling Portrait of Mrs Alfred Harmsworth *The Lady Cyclist*, 1896\(^4\)
Fig. Portraits of women cycle racers, *The Sketch* 1896
Introducing the Pease sister’s skirt/cape

Fig. The pattern inspired by Mary and Sarah’s patented skirt/cape consists of 4 pattern pieces: main skirt body, two-part hem and collar facing. (We included a lining, even though the patentees do not specify one).

This is the simplest garment of all in the collection. There is no hidden pulley system, no hooks or buttons, and it is not part of a multiple piece system. It is just a full circle skirt with a fastening at the waist/collar and a band through which a ribbon is threaded so to gather at the waist/collar. The technicality is low, so the sisters may not have been well skilled in dressmaking. But this does not negate its practicality; rather it just means that their focus is on fashionability, flexibility, and concealment.

The first unusual feature of this garment is the fact that the sisters have not started with a conventional A-length skirt. Their skirt is already much shorter than a conventional floor-length garment, and based on a circular pattern, it is round and full. This would not look as conventional when in ‘ordinary’ skirt mode as per the designs of Alice, Julia, or Henrietta. However, shorter skirts were becoming popular with cyclists, so it would have looked like a new cycling garment when worn over bloomers or knickerbockers. It is also unique in that it is one size fits many. All of the other skirts in this collection were made according to UK size 12 measurements. The cape fixes at the waist and neck according to the gather of the ribbon. As such it accommodates a broader range of bodies.

The patents’ complexity lies in the cut. The full circle skirt has a wide waistband that doubles as a high ruché collar. A ribbon or cord threads through a channel that gathers the fabric at the waist and at the neck. The sisters’ explain: ‘Figure 3 represents the skirt-au-cape, as a cape, the upper portion being drawn in at the neck to pleat the band portion, and make it look like a Ruché collar.’ This ruché collar converts to waistband of the skirt. ‘Figure 5 illustrates
the article when worn as a skirt, the band portion and runner tape being hidden by the fall of the tunic and gives the appearance of the skirt of an ordinary walking costume’. The length of the skirt meant that the it covers most of the body as shown in Figure 4. What differentiates this garment from the rest, and becomes evident in the process of making, is its flexibility. This invention is two completely different garments – cape and skirt. Neither item is compromised. They both work.

The sisters’ emphasis on the ruché collar reflects a popular style of the period. There were many references to draw upon to make this garment. High Ruché collars were routinely on display in women’s fashion magazines, mostly for spring capes and tailored coats.
The inventors paid particular attention to materials, more so than other patentees of the period. They recommended using a ‘light waterproof or rainproof material’, which would have made it a particularly practical garment in inclement weather, both as cycling skirt and cape. The lightness would have made it easier to fold up into a compact object to attach to the handlebars. So, in addition to providing site-specific options for wearers, it was also weather specific. Cyclists were early adopters of new materials and this is a clear example of the promotion of cutting-edge fabrics. Mary and Sarah also suggest using a ‘material of reverse colours, say a check and a plain colour to suit or approach the usual colour of garments generally worn’. The purpose of this was to find an appropriate match of fabrics such that the garment would seamlessly become part of an overall costume regardless of how it was worn.

The absence of extra buttons and fasteners, apart from those at the waist, makes sense when read against this objective. The wearer finds that due to the fullness of the circular design, the skirt naturally falls shut without the need for extra closures along the opening edges. It also means that a quick change between cycling and walking identities could be accomplished with minimum fuss.

Patents from other places may have inspired the Pease sisters. American, Alice Worthington Winthrop’s ‘Bicycle Skirt’ was patented in 1895\(^27\). The skirt can be converted into a bifurcated garment in the form of a divided skirt via a series of buttons. The back and front panels could be removed and folded up to become a satchel attached to the handlebars or could be turned into a cape or a hood. The skirt becomes three items. The patentee explains: ‘In case the weather should become inclement or the rider become chilled, she dismounts her bicycle, detaches the rear portion of her skirt, and forms a combined hood and cape by drawing the ends of the cord through the rings having inserted her head in the upper portion of the skirt\(^28\). ‘The most creative inventions’, write Sally Helvenston Gray and Micheala Peteu, ‘sought to provide additional utility to cycling attire\(^29\). There are many similar cape ideas in periodicals of the time. It is also possible that the sister’s idea was picked up and not attributed to them.
Fig. Converting the skirt / cape
Fig. Research linings by Alice Angus illustrating cycling portraits of new lady cyclists

Fig. Sewing the printed silk research lining into the sister’s skirt / cape
<table>
<thead>
<tr>
<th>Material</th>
<th>Extra garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5metres Dashing Tweed - Navy Raver Wave</td>
<td>Waistcoat</td>
</tr>
<tr>
<td>10 meters navy bias tape</td>
<td>Blouse</td>
</tr>
<tr>
<td>Printed research lining</td>
<td>Bloomers</td>
</tr>
<tr>
<td>2 buttons</td>
<td>Boots, scarf, hat</td>
</tr>
</tbody>
</table>

Fig. Mary and Sarah’s converted cycling cape strapped to the handlebars


4 Bicycling News and Sport and Play. (1895) Lines for Ladies by Marguerite, 18 June, p. 21

5 Bicycling News and Sport and Play (1985) Lines for Ladies by Marguerite, 16 April, p.18

6 The Wheelwoman (1897) When in Doubt – Consult Cynthia, 11th Sept, p. 19

7 The Morning Leader (1899) A rational cycling costume - A costume for the country, 6 Feb.


9 The Lady’s Own Magazine. (1897) Wayside Jottings, October, p.119


14 The Rational Dress Gazette, Organ of the Rational Dress League (1898) June, no.1, p.2

15 Photo credit – need to get approval from http://www.photohistory-sussex.co.uk/BTNFryWAH.htm

16 (ibid)


19 Kinsey (2012:46)


21 Tickner, Lisa (1987:16)


23 The Wheeler (1894) Mrs Barrington, No 115,Vol V, 27 June

24 The Lady Cyclist (1896) Lady Cyclists at Home - Mrs Alfred Harmsworth, 27 June, p.176

25 The Sketch. (1896) Women Cyclists at the Agricultural Hall, 8 April, p. 453

26 The Queen. (1896) 2 May, p. 1 and 9 May, p.825

27 Pat. No. US549472A. Alice Worthington Winthrop, ‘Bicycle Skirt’ (5th Nov). Available at: https://www.google.as/patents/US549472

29 Helvenston Gray, Sally and Peteu, Michaela, C. (ibid)
Chapter 10

Patent No. 9605
Many Ann Ward
‘Improvements to Ladies’ Skirts for Cycling’

Mary Ann Ward submitted a complete specification for ‘Improvements to Ladies’ Skirts for Cycling’ on 8th February 1897 and it was accepted just over a month later on 27th March 1897. The patent tells us her address but not her married status or vocation. She was living at the time at 92 Thomas Street, Bristol, in the Country of Gloucestershire.

The aim of Mary’s patent, like the others, was to produce a garment that converted an ‘ordinary’ skirt into a cycle specific costume. The result was to be both functional and fashionable. This is the simplest and shortest patent of the collection; it does not feature an illustration and the complete specification is over a page in length. Mary’s design is an A-line skirt made up to two ‘aprons’ joined at the waist and fastened along the sides with buttons and button-holes. The convertible system comprises two decorative straps sewn into the waistband on both sides that are hidden from view. When required, the straps are revealed and used to tether the skirt at intervals via the side buttons. The straps gather the sides of the skirt in a ruched manner, hoisting the material up and out of the way of the bicycle wheels. As will become clear, archival evidence points to the idea that Mary Ann Ward did not set out to produce a radical new garment, but rather something site-specific for an up market client. This wearer wanted to look fashionable while undertaking social visits and public forms of urban cycling and had the cultural cache to push at the boundaries of convention that defined their class and gender. Mary explains: ‘The utility of this skirt over the ordinary is, that whilst a stylish dress for walking may be worn, there is no danger, by reason of its length, in using the same when cycling’. This does not mean that the design was not located within a political framework. Mary garnered enthusiastic support for her design from both the larger cycling and dress reform communities.

The theme of this final chapter relates to influential places and communities where new modes of feminine mobility were being performed and produced. In the mid 1890s there was no single broadly accepted style of cycle wear. There were many. Women were in the process of working out what they could and should wear while engaging in this new means of moving in public. Opinions on novel forms of cycle wear were circulated, discussed and fiercely debated within the media, cycling, fashion and dress reform communities and in formal and informal channels. Ideas were also argued in three-dimensions, beyond text and talk, on the bodies of women who wore them. Mary Ann Ward’s patented skirt was known as ‘The Hyde Park Safety Skirt’, which firmly located its use and users in a highly public arena. Places like Hyde Park, especially during popular periods such as the annual Season, were critical sites where gender and class were performed on a daily basis.
The inventor and her life

Trying to gain a glimpse of Mary Ann Ward’s life a century after she lived initially presented even more difficulties for the researcher than Julia Gill. Her name is too common to even begin to come close to a firm match in genealogical records. She provides no hints of her vocation or married status. There is no evidence that her design was picked up and commercialized by a large fashion house like Alice Bygrave’s skirt. And, her patent is brief and lacking illustration. Despite this she provides some clues to follow. She tells us where she lives and her patented design is easy to understand and follow. Fortunately, there is also much to be found about the inventor and her invention in formal and informal channels of communication. Her patent, along with media articles, photographs and personal correspondence reveal a great deal about the role she played in the development of new forms of cycle wear and more broadly, women’s freedom of movement.
The first insight into Mary’s patent comes directly from the dress reform movement. Her cycling skirt attracted the attention of Lady Harbeton, the president and co-founder of the *Rational Dress Society*. The design’s merits were discussed in personal correspondence on February 12, 1898, between Lady Harbeton and the Society’s treasurer S.S Buckman: ‘I wonder if Mrs Buckman knows of the thing called “The Hyde Park Safety Skirt”, she writes. ‘For it is an invention whereby the Rational Dress can be made into an ordinary looking skirt at once’. Lady Harberton identifies the convertible advantage for women cyclists and points out who might find it useful. ‘It was made by a Mrs Ward and I have seen it and though I don’t want it myself, it might be convenient for anyone paying calls who wants to leave their cycle and walk about’. She then suggests the kinds of riding that might be appropriate with this garment: ‘It would not prevent a person riding a diamond frame’. She ends the missive with further clues for the researcher. ‘It was described in the *Lady’s Own Magazine* for December.’ And just in case we were not already completely certain that this was our inventor, she confirms: ‘The address of the inventor is Mrs Ward, 92 Thomas Streets, Bristol’.

Mary’s skirt had been patented for just under a year when Lady Harberton wrote this letter. It had been generating media attention during this time, which is why she wonders if S.S. Buckman’s wife had an opinion on the garment. The article to which she refers is a two-page three-photograph account of the garment in action. *The Lady’s Own Magazine* was clearly as interested in this as rational dress supporters. In the article titled ‘The “Hyde Park” Patent Safety Skirt’, Mary is introduced to readers as a woman who ‘for the past dozen years has been a keen follower of the pastime and a hearty supporter of the cause’\(^2\). The ‘cause’ in this context is rational dress. She was apparently a pioneering member of both cycling and rational dress communities in the West and South of England and committed to ‘further the interests of wheelwomen and the Cause in particular’. She must have been a cyclist herself, as the article states that ‘it is only those ladies who are actual riders who can be expected to know actually what is most comfortable and suitable’.

The article explains how the ‘construction is simplicity itself; dispensing entirely with cords, tapes and elastics for alteration of shape. It can be worn *a la* Rationals, and at the end of a ride immediately dropped into a full-length walking skirt; or it can be worn as a perfect safety skirt, being capable of adjustment to any height from the pedals.’ We are told that the skirt ‘can be made at a most reasonable price’ and that it has been proven to work, as ‘its practical use has been tested for close upon two years’. As per most inventors, Mary must have tested her garment for at least a year before she patented it, and during the year after. The article goes on to describe even more advantages of the skirt beyond that of the description in the patent:

> If on a journey, the wind is strongly against the rider, the divisions can be undone, and by buttoning crossways a short peak is formed in front and behind one upon which the rider sits, the other hanging down, both serving as shields to hide the fullness of habit natural in a lady, the disclosure of which, by the ordinary Rationals, is the very proclamation of their ugliness. If on the other hand, the wind is found to be strongly
on the rider’s back, the Dress may be worn skirt fashion, so as to receive its full, sail-like benefit – an advantage which even a gentleman cannot obtain.

Three photographs illustrate these convertible options. We are not told who the woman demonstrating the garment is, but it could be Mary Ann Ward. A year later the design was still regarded in high esteem. In April 1899, the garment was promoted on the front page of the *Rational Dress Gazette* where it was considered ‘the most cunningly contrived thing we have seen’. The skirt was recommended for ‘ladies who wish to avoid the remarks made to rationalists’. Interestingly, it was talked about as a garment that could ‘be adjusted on the machine in a moment as knickerbockers, as a short skirt and as a long skirt’. As per the League’s commitment to connecting inventors with members, there was a suggestion that ‘a pattern and illustrations of this skirt’ might be made available to members in the future.

![Fig. Illustrations of the many convertible options of the Mary’s “Hyde Park” Safety Skirt](image-url)

*Fig. Illustrations of the many convertible options of the Mary’s “Hyde Park” Safety Skirt*

*Lady’s Own Magazine 1897*
Promenading in the Parks

The name of the design ‘The Hyde Park Safety Skirt’ provides another valuable clue for developing a picture of Mary Ward’s influences and interests. Parks were primary public spaces where the Victorian elite promenades their new velocipedes and costumes. It was a place to see and be seen. In London, the main sites were Hyde Park in the city centre, particularly the Inner Circle and Rotten Row, and Battersea Park in the west. Prior to the cycling boom, the parks were congested with lines of carriages carrying the social elite. As an article in The Queen notes, this changed in the 1890s when the upper classes took up cycling: ‘From the Achilles Statue to the Powder Magazine during the early hours the tinkling of the bicycle bell is the most dominant of all sounds, and the eclecticism of the riders is displayed in their way of riding, in their machines and their decorations, their toilettes, and in their general demeanour’.

As discussed earlier, many Victorian women employed site-specific cycle wear strategies, which required different garments for ‘ordinary’ social riding and ‘proper’ cycling. Park riding firmly fitted within the former and demanded particular attention to detail. Miss F.J Erskine’s Lady Cycling, written in 1897, provides hints and tips for ‘what to wear and how to ride’ for both town and country. ‘For park riding, ‘ she counsels, ‘ we must have an artistically cut skirt, artfully arranged to hand in even portions each side of the saddle’. Miss Erskine is equally clear about what not to wear. She concedes that a fashionable ‘blouse of silk or cotton, belaced, and with huge puff sleeves’ is only suitable for good weather and ‘as to their being any good beyond Battersea Park and the Inner Circle, the idea is absurd’. While more sensible clothes were appropriate for country riding, she was adamant that ‘those riding in town must study the fashion of the hour’. Cycling in the park was not only for the pleasure of the cyclist. ‘[C]yclists can turn out so that it is a pleasure to see them’. These fashionable garments were not hard wearing, but this was not their purpose, as Miss Erskine was well aware: ‘These costumes will not stand wear, but those who ride in town can afford a change of dress for different surroundings, therefore consideration need be no drawback’.

Cycling in Hyde Park in 1896 was a relatively new practice. In February, The Queen reported that after much lobbying, cyclists were officially allowed the cycle there from eight until midday. ‘The patience, the enterprise, and the frequently renewed efforts on the part of the society cyclists to annex some portion of Hyde Park in which to exercise the iron horse have at last been rewarded’. It proved popular. Thousands flocked there to enjoy the fresh wintery cycling.

A month later, despite the frosty weather, The Queen continued to enthuse about the popularity of the park, providing detailed description about the many types of cycling and cyclists who made use of the space. From eight through to ten, professional men used the park before heading to the city for work. Then from ten to midday, the park was filled with the echelons of society and spectators eager to glimpse the latest fashions. This was the late nineteenth century’s equivalent of celebrity culture.
Hyde Park from ten to twelve very morning is quite sight. Whenever the weather is fine and the roads dry, from a couple to three thousand bicyclists ride up and down between the Archilles monument and the Magazine. Not only is there this vast concourse of bicyclists, but crowds of spectators line the side walks, promenading up and down, or standing leaning over the railings, to watch the passers-by!

Did it really get this busy? The Hub ran a regularly feature called ‘Pars from the Parks’ which reported on happenings in London’s parks. A park policeman was asked about the best time not to cycle but to ‘properly see’ what was called ‘Cycle Row’. He suggested ‘before breakfast, especially from 8 to 10 and about 11 o’clock’. He also declared that the biggest day they had during the 1896 Season was when ‘about 370 cyclists passed along the Row’. There is a significant difference between this and the 3,000 figure mentioned above, but what we can glean is that Rotten Row, which led from Hyde Park Corner to Serpentine Road, was immensely popular for those on bicycle and on foot. So popular was park cycling that they threatened to usurp conventional modal dynamics. ‘A great grievance of Hyde Park cyclists’, declared The Queen, ‘is that carriages come in large numbers to the already crowded road’.

In fact, a petition was submitted to the First Commissioner of Works in 1896 to allow cyclists’ sole to access to parts of the park for two hours a day. This was in recognition that ‘cyclists are now in excess of all other forms of traffic which frequent the park’.

The Park was not a place for training or racing, but for socializing. Illustrations show cyclists talking and waving to the crowds. Some are doing tricks, such as riding with hands behind their backs. All look well dressed with hats and gloves and other accoutrements. It was a primary place to see the latest fashions on all ages, which apparently varied from 8 to 80, but the ‘majority of the rapidly-riding midday crowd’ were women. Critique was made, not only on their class as evidenced through what they were wearing, but also their choice of velocipede, body position and skills and technique.

The company is entirely cosmopolitan, members of the best society, of all professions, and of the services being all en évidence. The ladies are naturally the more interesting of the wheeling votaries, and in all justice to them it must be admitted that they are by far the more pleasing riders, more especially in a place like the park, where speed is by no means a desideratum, but where a graceful, becoming, and altogether correct seat is not only more enviable, but also much safer.

Park cycling may have been relatively new but it quickly found a place in Victorian social life, such that many a social drama was played out against these backdrops. Battersea Park played a key role in the 1897 humorous story Women and Wheels in which an aggrieved protagonist seemingly lost his wife to cycling. They had only been married for a short time before she became caught up in the cycling craze that swept the nation at this time. The man’s supportive friend initially has difficulty understanding the appeal of the park for women:
The New Woman is difficult to fathom. You have to be prepared for everything. I could understand her running away from a loving husband after a few months of wedded bliss, but why to Battersea Park! It seemed an inadequate place as a refuge for a disappointed woman.

The jilted husband explains that his wife went there nearly every day to learn to cycle with different instructors. He tried to join her but was too slow and it was not something he enjoyed. ‘I followed her for miles. Don’t ask me to go again; I can’t bear it’. He feared the extent of this widespread attraction. ‘This thing’, he exclaimed, ‘is undermining the femininity of the nation’. Even his Aunt Jane, a ‘heavily built, elderly lady, of strong pronounced Evangelical views’, was at it. She was apparently wearing her Rationals ‘in the house to get used to them’ but he was certain that ‘you will see her riding in them in Hyde Park!’ Even worse, his missing wife was experimenting with new forms of costume. The man confessed he had ‘lost four pairs of trousers in the last fortnight’. He explained to his increasingly shocked friend that ‘they wear them underneath their skirts’ but that this was only temporary. ‘You mark my words, there will come a day when they will wear them openly. I tell you this thing is interfering with religion’.

For the most part the women cyclists were wearing ‘sensible short skirts and smart, tight-fitting little coats of tweed, serge, or clothing, with a neat Toque or hat to match’ which appeared to pass the high standards of the viewer. Less positive commentary was reserved for those challenging these conventions: ‘Once or twice during the last few weeks has the serenity of the bicycling row been disturbed by an apparition in black satin knickers, surmounted by the incongruous widow’s bonnet and crêpe-covered coat; the “skirtless” ones are not of these park riders, and it is to be hoped that they may long remain aliens to it’14. In contrast, The Lady Cyclist saw little in the parks that warranted harsh comment: ‘Cycling costumes are still commanding a great amount of attention… Some of the riders in the London parks are noted for a little eccentricity in matters of dress, but the majority are both suitably and becomingly attired for the summer15’

Given the popularity of Hyde Park cycling, it is perhaps not surprisingly that Lady Harberton often organised and led rides through the park in rational dress. It was well known that she was not easily intimidated by social scandal but she declared ‘that she rode in Hyde Park daily, and met with no unkind or discourteous remarks’. But she also said that ‘even if the street lad did venture to say hard words concerning her dress, she preferred hard words to broken bones’16. Many, such as The Queen, argued that such a radical costume was not necessary for this kind of cycling:

In that vast throng not one single woman was riding in rational dress, although one or two had certainly donned well-cut divided skirts – so well cut, in fact, that one hardly noticed that they were divided at all. There is no doubt about it, a well-cut ordinary bicycling skirt is all that is necessary for Park riding, or for any ordinary riding, for the matter of that17.
The Parks were important places where many kinds of cycling, cyclists and costumes were being presented, experimented with and claimed. The fact that Mary’s design is called ‘The Hyde Park Safety Skirt’, tells us that it was seen by as attempting to find a happy medium between rational and ordinary dress. Much like cleverly designed divided skirts, it successfully inhabited a place between the binaries of ordinary and rational dress. Garments like Mary’s skirt equipped wearers for multiple mobilities. They could have more than one identity. They could have choice. These convertible options signify how women were carving out new ways of moving in and through public space with their clothed mobile bodies.

Fig. Cycling by the Serpentine in Hyde Park, *The Hub* 1896¹⁸

Fig. Watching cyclists in Hyde Park, *The Hub* 1896¹⁹
Fig. Cycling was popular in Hyde Park, *The Sketch* 1896.\textsuperscript{20}

Fig. ‘The Ruling Passion’, Cycling in Hyde Park, *The Queen* 1896\textsuperscript{31}
Interviewing the Mary Ann Ward Hyde Park safety skirt

Fig. Pattern inspired by Mary Ann Ward’s patented cycling skirt consists of eight pattern pieces; front, back, front side facing, back side facing, hem front and back, side strap and waistband.

Mary sets out the problems of conventional dress that she seeks to remedy with her patent. ‘The danger of ladies wearing an ordinary walking dress when riding a cycle being so great through the liability of being caught in the machine’. To do this she improves an ordinary full length A-line skirt. Unlike the others, this is not a conventionally sewn garment. It is made up of two pieces – front and rear panels – which Mary calls an apron. The side edges of the two pieces are joined by buttons and button-holes. The convertible system operates via two straps attached and hidden under the waistband until needed. The straps feature buttonholes and turn into gathering devices when they catch every second or third button, thus shortening the skirt to a desired length. Mary explains:
The two edges of each division are then buttoned one other the other; and the two straps having holes worked down them as convenience spaces apart are also buttoned over the divisions; and by missing one or two or more buttons when fastening the straps are consequently made to life and hold the skirt to any height required for the safety of the rider.

While the mechanism for convertibility seemed more straightforward in text than others in the collection, we made a toile for this garment before embarking on the final piece. There was no illustration in the patent. Also, the process of mocking-up the garment enabled us to work out the best locations of the buttons and buttonholes. We also explored the best gathering mechanism and settled on the strap device attached to the waistband. Mary offered alternatives. She suggested that ‘more than two straps may be used if preferred’, the use of studs or links in place of buttons and that ‘straps may be attached to a separate waistband instead of directly to the skirt’. This latter variation suggests that the device could be added or adapted to other skirts with buttoned edges.

This is an effective system. The strap-button device hoists material up from the ground and out of the way of the wheels and the ruching effect is aesthetic. Like Alice’s pulley system skirt, the material becomes ‘festooned’, however in this case the drape runs across the front and rear of the skirt, rather than over the side and hips. The wearer has the choice as to which buttons and buttonholes to catch with the straps, and this adapts the height of the skirt to whatever length is appropriate for the intended activity. Our illustration shows the raised skirt at a high point. It could also be much lower. In the context of fashionable high-society park cycling, with this device the wearer could still give the appearance of wearing a long modest ordinary skirt and yet raise it to safe cycling skirt length.

There are other differences between this and other convertible costumes in the collection. Mary’s straps are expressed design features. When activated they sit outside of the skirt. All the other inventions are inside; sewn in seams, hidden under peplums or sited under flounces. Another difference lies in the quick-change nature of the invention. Unlike Alice’s pulley skirt with its weighted hem, even with practice it takes time to affix the Mary’s straps to the side skirt buttons. While The Rational Dress Gazette article may have declared that the skirt ‘can be adjusted on the machine in a moment’, in reality it is fiddly. Both straps need to catch buttons at the same intervals to achieve a matching sweep of material. The process of doing this is not difficult, however it seems unlikely that you could cycle and button at the same time. It is more likely that the wearer could undo the buttons, to drop the skirt in place. As such, there is no massive change, nor moment of risk whereby undergarments could be revealed.

Mary argued that her design was useful for walking as well as cycling. She identified one of the usual problems for perambulate women as having to use one or both hands to lift skirts out of the way of water and mud or clear of kerbs and carriages. This made other activities difficult, such as carrying goods or caring for children. The strap system eliminated this problem.
The action of the straps lifting the skirt is in reality imitating the way in which a lady gathers and holds up. With her hands, her skirt when wishing to keep the bottom part out of ganger of being soiled – say from a muddy road – whilst walking.

Mary’s design can be compared to what was commonly called a skirt raiser or holder. These were popular devices worn attached to a waistband or chatelaines that gripped the lower part of the skirt in order to lift and suspend it above the ground. Wearers would move these devices from skirt to skirt. The problem of women’s skirts dragging along the ground was motivating to other patentees at the time who attempted like Mary to build these advantages into the skirt itself. Florence Donnelly, a gentlewoman of Manchester, registered a patent in 1895 for an ‘Improved Skirt-Lifter and Suspender’. This appliance was located inside the back of the skirt and used a combination of cloth, eyelets, rivets and leather to hoist the material up and out of the way of the ground. Marie Augensen, a Manufacturer and Spinster, patented a completely different version of an ‘Improved Skirt Raiser and Protector’ in 1897. Her device featured a length of chain attached to the outside back of the skirt that ran horizontally around the body. The wearer pulled on two ends located at the sides and the skirt was lifted up off the ground. Mary’s is unique in that she links hers directly to the needs of the lady cyclist. Designing a skirt lifter into a cycling costume had many advantages over detachable devices. It could not become un-attached or snagged. Mary’s strap device remained safely hidden inside the skirt until activated and then lay flat against the apron’s buttoned edge. Her device made of fabric was also light and relatively simple to make or add to an existing skirt.

There is also evidence of similar designs in circulation around the same time. The Lady Cyclist reports on the newest offerings by Albert Walter Gamage in March 1896, a year before Mary’s design was patented. Albert owned a ‘vast emporium’ in Holborn and was well known as the ‘“Universal Provider’ of all that a cyclists requires’. The magazine reported that he was now turning his attentions towards women cyclists. Albert was not only a retailer. He was also an inventor, with five patents to his name, from 1894 to 1899, for improvements to saddles and seats, toe clips, sporting sweaters, lawn tennis posts and cyclometers. The magazine reports on his new forays into women’s wear. His shop stocked new cycling shoes that apparently looked good on and off the machine and a series of cycling outfits ‘all at popular prices’. One skirt had ‘all the appearance of an ordinary walking skirt with a trimming of small tabs on either side, allowing the skirt to be removed without passing over the head’. Another, the “Duchess”, was a cycling skirt which ‘unfastens in front and hooks back’. All of these designs experiment with ways to get the skirt out of the way of the wheel and give freedom to independently moving legs.

This issue is raised in Charlotte Perkins Gilman’s short fictional account written nearly twenty years later about Mollie Mathewson, who experienced a day in her husband’s body and clothes in urban Victorian streets. It is a classic body-swap tale interwoven with gender politics, clothing and ideas around mobility. Mollie articulates the striking sensation of not only being in another body but a differently mobile gendered body that is enabled as opposed to inhibited, as was the conventions for women, by clothing. Mollie is surprised by how her
new male legs move freely in trousers, unencumbered by layers of heavy petticoats and long skirts, how her waist felt free of a corset, and how her feet comfortable in flat shoes. She does not need assistance to get about. Her body is differently contained by her costume. Profoundly, she finds that she fits in the urban landscape:

Everything fitted now. Her back snugly against the seat-back, her feet comfortably on the floor. Her feet?... His feet! She studied them carefully. Never before, since her early school days, had she felt such freedom and comfort as to feet – they were firm and solid on the ground when she walked; quick, springy, safe – as when moved by an unrecognizable impulse, she had to run after, caught, and swung aboard the car.

Mollie’s husband’s clothing provided the capacity to move. Without a long skirt, her hands were free to be otherwise engaged. Pockets were one way that writers and inventors sought to address this problem. Skirt lifters were another. What emerges in Mary’s patent and through related devices is a central problem that plagued mobile women and how inventors sought to remedy it. Ordinary skirts were long and streets were muddy. Lifting them out of dirt and danger made a woman less mobile. Wearers had to use one or both hands to manage their clothing. This was difficult for everyday mobility such as walking and accessing vehicles. It was even harder on a bicycle. The many open moving parts of a velocipede amplified these difficulties. Mary’s design provides insight into how designers were seeking solutions for one of many specific kinds of cycling – Park cycling. This was very different to riding in other public spaces or outside the city. Here, cyclists were scrutinized and judged. There was apparently ‘hardly a better place even now for seeing the best style of fashions worn in London’²⁵. What you wore to cycle reflected who you were and also who you wanted to be.

Fig. Drawings made of the garment and convertible strap device before and after conversion
Fig. Converting the Mary Ward Cycling skirt
<table>
<thead>
<tr>
<th>Material</th>
<th>Extra garments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3m Dashing Tweed - Raver tweed</td>
<td>Waistcoat – 1m Dashing Tweeds New Turquoise</td>
</tr>
<tr>
<td>3m blue/white stripe cord edging</td>
<td>Blouse</td>
</tr>
<tr>
<td>3m blue silk lining</td>
<td>Bloomers</td>
</tr>
<tr>
<td>14 white buttons</td>
<td>Boots, tights, scarf</td>
</tr>
</tbody>
</table>

Fig. Mary’s “Hyde Park” Safety cycling suit being converted (Credit: Charlotte Barnes)
1 Lady Harberton to S. S. Buckman, 18 April, 1898, In: The Buckman Papers, Part of the Papers of Sydney and Maude Buckman relating to the Rational Dress Movement and Cycling for Women, Accessed at The Hull History Centre. Ref: U DX113.


3 The Rational Dress Gazette (1899) Notes and Comments, No. 7, April, p. 1

4 The Queen, The Lady’s Newspaper. (1896) The Culture of the Cycle, 25 Jan, p.169


6 The Queen, The Lady’s Newspaper. (1896) The Culture of the Cycle, 25 Jan, p.169

7 The Queen, The Lady’s Newspaper. (1896) Bicycling in Hyde Park, 8 Feb, p.258

8 The Hub (1896) Pars from the Parks, 15 Aug 17, p. 67

9 The Queen, The Lady’s Newspaper. (1896) Cycling News, 21 Mar, p.515

10 The Queen (1896, Mar ibid)

11 The Queen (1896, Feb ibid)


14 The Queen, The Lady’s Newspaper. (1896 Jan ibid)
15 The Lady Cyclist (1896) No. 6, Vol. 1, June 17, p. 163

16 The Queen, The Lady’s Newspaper. (1896, Jan ibid)

17 The Queen, The Lady’s Newspaper. (1896, Feb, ibid)

18 The Hub (1896) By the Serpentine, Hyde Park, 19 Sept, p.267

19 The Hub (1896) Pars from the Parks, 26 Sept, p.297


21 The Queen, The Lady’s Newspaper (1896) The Ruling Passion, Cycling in Hyde Park. 4 April, p.576


23 Pat. No. 20,350 (GB189720350A) Marie Augensen, Manufacturer and Spinster, of No. 1606 N. Troy Street, Chicago, Illinois, USA. ‘Improved Skirt Raiser and Protector’. (5th Oct 1897)

24 The Lady Cyclist (1896) Provides Everything, Part I. Vol II. March, p.55

25 The Queen, The Lady’s Newspaper. (1896) Hyde Park on Sunday, 18 Jan, p.89
PART III
Why do stories about (convertible) cycle wear still matter?

Look at what has happened, and consider the present: – Twenty-five years ago (1873) – men arrested and knocked down in the road for riding bicycles. Fifteen years ago – ladies howled at and almost assaulted for riding tricycles. Six years ago – ladies howled at and threatened by mobs for riding bicycles in everyday costume. Present day – ladies insulted for riding bicycles in cycling costume. Consider the above, and it will show how much as been won. The present hostility of the public is only transitory. […] The present hostility is a good omen. It is always darkest just before the dawn.

A. Wheeler (S.S. Buckman)
Wayside Jottings, The Lady’s Newspaper, 1898

This is not a conventional heroic account of cycling. It’s not about winning races and holding trophies aloft to screaming crowds. There are no awards, only patchy recognition and a little bit of commercial success, and even then it is not certain. The ability to track and trace women’s lives and contributions to historic inventions can only ever be partially known due to the dominance of patriarchal knowledge systems that fail to document women’s lives coupled with the patenting practice of renaming inventions. This book is not about best design practice. Nor do I offer any certainty in the accounts presented. We cannot fully know how impactful these ideas were, how and if they even worked and how women who made and wore them really felt about them. Some designs travelled around the world, while others did not seem to get much further than the patent office. In many cases the very nature of their design inversely ensured their erasure from history. Convertible cycle wear inventors did their jobs so well, by deliberately concealing their inventions from view, that history has all but forgotten them.

What then do these stories do?

This book has sought to place women’s bodies into their inventions and their stories into the record. Convertible cycle wear is an exciting example of women’s inventive and creative contributions to cycling’s past. As these stories attest, women responded to the social, material and technical challenges to their freedom of movement with a spectrum of vivid creativity. They were not passive participants. They actively and directly worked with, through and around barriers that sought to prevent from taking up cycling. Their designs offer a plethora of ways for women to move independently, un-chaperoned and at speed and, through patenting forged new paths into new social, cultural and economic worlds. This is not a neat, fixed or linear account. These five inventors are not the only women creatively responding to challenges to their freedom of movement, but it is a start. There are more. They were just some of the real people with real lives and diverse responses to fluctuating landscapes and social challenges. What designs like convertible cycle wear
remind us is that not all inventions are told through loud or triumphant narratives. The very nature of success is reconfigured. A lot of the work is hidden, in the lining, under the surface, in the seams. Inventors put in an awful lot of work to not be seen. Many of these designs also do not look special off the body. They are hard to know if you are not wearing them. It is no wonder that these skirts did not make it into today’s museums and galleries. But it raises questions about how we account for technology stories that do not fit conventional narratives: why do we know so little about these kinds of inventions? What else have women invented that is hidden in plain sight? What else don’t we know about?

Matthew Sweet in *Inventing the Victorians* asks: ‘Suppose that everything we think we know about the Victorians is wrong’². He revisits historical materials with a desire to relook and reconsider how we as moderns narrate the past. Contemporary society invariably considers itself vastly more socially, culturally and politically advanced than those who have gone before. It is how we make sense of the past. Sweet explores if Victorians were actually more liberal, fun, open, deviant and experimental than we give them credit. Perhaps, we have misread them. Perhaps the stories we repeat are not the only stories to tell.

Cycling’s history seems similarly fixed and familiar. Technological trajectories of the bicycle present a clear story of advancement. We can map out where have been, why we are where we are now and where we might be headed. There are gaps. Cycling’s history is predominantly told as a history of men’s relationship with technology. There is for instance little record of women riding early nineteenth century velocipedes. There are very few women inventors. Women tend to pop up in the trajectory as occasional users of velocipedes such as Boneshakers and Ordinary high wheel tricycles and later with the advent of the safety bicycle. They also appear in relation to fashion and with regard to terrible incidents and accidents. They sometimes raced but were largely depicted as novelty acts. They were rarely represented as ‘proper’ cyclists. Casting women as partial players is one way in which they are written out of larger narratives. Yet, we can be sure that there were many more who contributed and participated in cycling’s past without detection. They may have inhabited less than public spaces, as Diana Crane argued, which rendered them ‘invisible’, such as English working women in rural areas who took to wearing masculine clothing. They may have simply been successful in avoiding the social gaze, or, they disguised themselves, cross-dressing as men, in order to take to the wheel. Ostensibly, what I am arguing is that just because these women are not in the public record doing things does not mean they were not done.

Jo Stanley has written about the history of women pirates in *Bold in Her Breeches*³, which shares many surprising commonalities with early women’s cycling. Piracy offered women exciting new forms of mobility, and with it power and freedom. They left behind the restraints of indoor life, shook off the constraints of gendered clothing and with it the subordinate norms of feminine life. Perpetrators shocked the establishment; their morality was questioned, their sexuality disputed and their pursuit of masculine lives considered perverse. Some of this had to do with their adoption of masculine practices and clothing. ‘Women who take up public space have been seen in many cultures as sexually available’
argues Stanley, and the ‘wearing breeches places a woman pirate in reality or fiction in the position of a sexualized outlaw’⁴. They bucked conventional systems, igniting social furore, debate and storytelling. Although this role seemed to offer to rescript conventional narratives, women who took to the seas were cast as either sexual predators or sexual victims. Jo Stanley focuses on the many myths associated with female pirates and attempts to get underneath and around thin, two dimensional caricatures by asking, ‘how do stories of piracy change if we add flesh-and-blood women and delete the violent glamour?’⁵

Another illustrative example of women’s presence in unexpected domains comes from stories of women who appropriated alternative identities in order live different lives. James Barry was a brilliant Victorian military doctor who forged a medical career in the eighteenth century despite insurmountable gender barriers. Born in 1790 in Cork, Margaret Bulkley took on her late uncle’s name and network, and presented herself as his nephew, to became the first female doctor in the UK, over half a century before women were even allowed to study medicine. Dr Barry lived a life of worldly adventure as a highly respected skilled surgeon, pioneering new medical procedures including the first successful cesarean⁶. He was a vegetarian, a humanitarian who treated rich and poor alike, an excellent dancer and a celebrated ladies man, renowned for being foul mouthed and a legendary dualist, which got him in and out of scrapes. His birth identity was exposed only after death and then covered up by the British military until recently. Dr Barry did not fit the cultural script, then or indeed for over a century after his life. A series of recent books do much work to reclaim Dr Barry’s remarkable contribution to medicine and his stubborn rejection of the barriers to sex⁷.

This is also a reclamation project. Up until now, little has been known about the radical inventive capacities of early women cyclists. The history of The Rational Dress Movement is much better known than the stories of women who exploited the patenting system by sewing a way out of the “dress problem”. And, yet the former is largely considered a failure. This book challenges the narrow view and binaries through which much of cycling’s history is presented and continues to shapes how we remember the past and think about the present. It might have come as a surprise to readers that women were so involved in the inventive technological cultures of Victorian era and that there were so many creative channels through which they contested restrictions on their freedom. Their stories interrupt cycling’s seemingly smooth socio-technical histories. As we have seen, how women took to cycling and what they wore was not a case of wearing rational or ordinary dress, of producing reputable or disreputable identities, of supporting or not supporting women’s rights, of being a good or poor cyclist or indeed dressing or not dressing like a cyclist. These dichotomies are too simplistic to explain Victorian women’s cycling. Their daily realities, much like ours today, were much more complicated, situated and multiple.

These binaries are not only problematic, they are also unrepresentative of the reality of Victorian life. It is deceptively easy to look at different societies, and especially at those located in archives, and compartmentalize them into neat, single dimensional entities. Yet, life then, as now, was rife with contradictions and complexity, in all its vivid, lively and messy experience. Binaries blind us to the creativity in between. These women were
personally and politically motivated in different ways and they contested and constructed gender roles and mobilities in the course of their everyday activities. Convertible cycle wear is an exciting example of women’s creative engagement with and responses to social, cultural and political shifts taking place at the turn of last century. They are stories of women just getting on with it; negotiating how they could be part of this new and exciting activity. They shared the desire to make change. They harnessed the skills, networks and materials at their disposal and combined resourceful adaptability with shrewd practical knowledge. Much of their contribution took place behind the scenes away from the social gaze. The fact that these dynamic devices are built into women’s skirts should ensure they are recognized even more for their inventiveness, not less.

The fact that we do not know about them, without sounding too dramatic, is a design tragedy. These women did their jobs so well that their designs were relegated to a history known by few. As we discovered in doing this project, even with the patent and the garment in hand, these designs remained stubbornly reluctant to reveal themselves. Some simply do not work well off the body. They require the labour and commitment of imagination and embodiment to come to life. But this is the point. Camouflage and concealment are the very essence of their enterprise. These garments were deliberately designed to enable and empower women to move, but only if, when and how they wanted. As such, these devices remain undetected until activated. But this has not served them well in the tomes of history where invariably the largest loudest and showiest stories tend to win our hearts, minds and memories. Matthew Sweet argues that many of the stereotypes of Victorian life arise from the fact that, ‘we have systematically forgotten many of the interesting and distinctive aspects of the period’. This is not the case of cycle wear inventors. Women during this period were rarely cast as history tellers or makers. They struggled for recognition over a century ago. Perhaps we have never known them.

Why does this still matter?

The history of cycling is not just about men. The herstory of cycling is just as compelling. Women have long been active and enthusiastic velocipedists in spite of the many barriers to entry at every turn. They have also been involved in broader cycling cultures, from patenting through to manufacturing at all levels of society. Just because we do not know their cycling stories, does not mean women were not cycling. This book is an attempt to insert women back into cycling’s history. It follows what feminist scholars have argued about the need to question the archive itself, as well as what is in the archive. I draw on what Kate Eichhorn calls a ‘reorientation to history’ and Clare Hemmings’ invitation to ‘tell stories differently’. Depositories of knowledge are revealing of what and who was considered important at the time. The presence of certain voices and artefacts and the absence of others can tell us a great deal about power and value. The tales we tell about cycling continue to matters as we use this material to make sense of the past, live in the present and imagine the future.
Writing about British women’s sewing, cycling and suffrage provocatively re-casts and re-configures conventional knowledges and understandings of inventive pasts. These stories invite us to re-imagine people who have lived before. These are optimistic spirited tales about the process of becoming. They are about imagination, creatively working with materials at hand in time and space previously off limits. They are about being extra-ordinary with the ordinary. As Wiebe Bijker writes: ‘the stories we tell about technology reflect and can also affect our understanding of the place of technology in our lives and our society’12. This matters because technology innovation stories tend to attend to those in big authoritative fields of science and engineering or what John Law in science and technology studies has called ‘heroes, big men, important organisations or major projects’13. Smaller, less triumphal and more mundane or deliberately hidden technologies can easily slip by unnoticed. To avoid this, Susan Leigh Star advocates looking beyond the surface, to ‘unearth some drama’, do ‘some digging’ and ‘restore some narrative to what appears to be dead lists’14. In telling these stories I add new and different voices, bodies and things, in the form of convertible costumes, to historical dialogues about cycling.

It also matters because contemporary cyclists are still riding many of the same streets as their Victorian counterparts. The mass motorisation of the urban landscape may differ, but the animosity between modalities does not seem diminished by time. Cycling bodies continue to be disparaged in the media: they remain popular sites for debates about scarce urban resources, citizenship rights and social etiquette. Women in particular still share many of the concerns cyclists had in the 1890s - how to get clothing that works well on and off the bike, how to deal with abuse and catcalling in public and how to gain equal recognition for equal achievements. Cycling is undergoing resurgence and we are living through a period of social, technological and cultural change, yet women are still struggling to make their bodies ‘fit’ bicycles. And, few people can name famous women inventors; they rarely feature in popular visual culture on statues, media or currency. The fashions may have changed but the conditions of invention seem all too familiar.

The quote above in The Lady’s Newspaper by Sydney Savory Buckman, writing under his pseudonym A. Wheeler is poignant. Sydney was Kitty’s brother, and treasurer of the Rational Dress Society led Lady Harberton. He thought public hostility to differently dressed mobile women would not last. Society would change. ‘The present hostility is a good omen,’ he wrote. ‘It is always darkest just before the dawn’.

Stories about (convertible) cycle wear still matter because they symbolise cyclists’ and more specifically women’s fight for equality. And we are not there yet.

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1 The Lady’s Newspaper. (1895) Wayside Jottings, by A. Wheeler (Pseudonym of S. S Buckman) July, p. 177

2 Sweet, Matthew (2001) Inventing the Victorians, London: Faber and Faber
3 Stanley, Jo. (1995 ibid)

4 Stanley, Jo (1995:46)

5 Stanley, Jo (1995:15)


8 Sweet, Matthew (2001:230)

9 For instance, In 1896 *The Lady Cyclist*, reported on how the popularity of pneumatic tyre had ‘opened up a new field of labour for women’ as their ‘fingers seem better fitted to joining and fitting’ – See: *The Lady Cyclist* (1896) *Tyre Making*, 27 June, p.164


While discussing this subject, it may be interesting to note that a celebrated London dealer in tailor-made costumes for ladies has confided the following to a writer in *Home Sweet Home*: “I do not for one moment doubt that all lady cyclists in this country will ultimately wear the same dress as men. The barriers between man’s distinctive costume and women’s ditto have been greatly broken down in all ways of late year”.

*The Ladies Page*
*Bicycling News, 1893*

How thankful we should be that we do not live in the “good old days”, as represented to us by a correspondents in one of our popular weekly periodicals, when some were content with their knitting, their crocheting, and what not. What is the hidden meaning of the “what not”, I wonder. How I pity those women of a former age, who had to sit quietly at home and endure, without knowing the meaning of the word life as we know it; whilst such insensate creatures as the man who publishes to the world the awful threat that he shall “most certainly cut the acquaintanceship of any female friend or relative” who dare to take up cycling, lorded it over them and kept them in subjection. If those were the “good old say”, let me say a profound *deo gratias* that the days allotted to me are new ones. “Should women cycle”, is a question which has long since been decided by woman herself, and every man who is worthy of the name is with her in sympathy, and will help her to make the most of the good things of life, amongst which cycling stands pre-eminent.

*Marguerite*
*Lines for Ladies*
*Bicycling News and Sport and Play, 1895*
### British Patents for New or Improvements to Women’s Skirts for the Purposes of Cycling 1890-1900

**Source:** British Library Patent Archive (Abridgement: ‘Wearing Apparel’)

<table>
<thead>
<tr>
<th>Year</th>
<th>Patent No.</th>
<th>Inventor</th>
<th>Description</th>
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<tbody>
<tr>
<td>1893</td>
<td>13442 (GB189313442A)</td>
<td>Sidonie Meissner, Spinster, Gross Brudegasse, Dresden, German Empire</td>
<td>Garment for Lady Cyclists (23rd Sept)</td>
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<tr>
<td>1894</td>
<td>7292 (GB189407292)</td>
<td>James Cornes, Professional Tailor and Cutter, of 37 Melbourne Street, Leicester</td>
<td>Improvements in Breeches, Knickerbockers and analogous Garments for Cycling and Riding Purposes (16th Feb 1895)</td>
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<tr>
<td>1895</td>
<td>9452 (GB189509452A)</td>
<td>Margaret Albina Grace Jenkins, Gentlewoman, of 13 St. George’s Place, Hyde Park Corner, London</td>
<td>New or Improved Cycling Dress for Ladies (5th Oct)</td>
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<td>1895</td>
<td>11,850 (GB189511850A)</td>
<td>John Gooch, Outfitter, 67 Brompton Road, London</td>
<td>Improvements in Ladies’ Skirts or Dresses for Cycling (18th April)</td>
</tr>
<tr>
<td>1895</td>
<td>9753 (GB189509753A)</td>
<td>Abbie B. Galloway, No. 9 Lincoln Street, East Somerville, County of Middlesex, State of Massachusetts, USA</td>
<td>Improved Costume, chiefly designed for Lady Bicyclists</td>
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<tr>
<td>1895</td>
<td>23,298 (GB189523298)</td>
<td>James Rossdale, Ladies Tailor, trading as J.R. Dale &amp; Co, of 125 Gloucester Road, South Kensington, London</td>
<td>Improvements in Cycling Skirt for Ladies’ Use (15th Feb 1896)</td>
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<td>1895</td>
<td>14,767 (GB189514767A)</td>
<td>Frederick James Haworth Hazard, City of Toronto, York, Ontario, Canada</td>
<td>Improvements in Bicycle Costumes (11th July 1896)</td>
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<td>1895</td>
<td>20,943 (GB189520943A)</td>
<td>Samuel Mintus Clapham, Tailor’s Cutter, of 13 Queen’s Road, Bayswater, London W.</td>
<td>A New or Improved Combined Safety Cycling Skirt and Knickerbockers for Ladies’ Wear (18th July)</td>
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<td>1895</td>
<td>19,760 (GB189519760A)</td>
<td>David Smith Legg, Foreman Tailor, of 79 Lavender Hill, London S.W.</td>
<td>A New or Improved Cycling Skirt for Ladies’ Wear (12th Sept)</td>
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<td>1895</td>
<td>16,062 (GB189516062A)</td>
<td>Ida May Rew, Manufacturer, of 124 West 23rd Street, New York</td>
<td>Improvements in Ladies’ Wearing Apparel for Athletic Apparel (28th Sept)</td>
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<td>1895</td>
<td>19,191 (GB189519191A)</td>
<td>Evelina Susannah Furber, of 118B Cromwell Road, in the County of Middlesex</td>
<td>Improvements in Bicycle Skirts (23rd Nov)</td>
</tr>
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1895 Pat. No. 19,258 (GB189519258A)
Benjamin Altman, Merchant, of 25 Madison Avenue, New York City, United States. ‘Improvements in Bloomer Costumes’, (7th Dec).

1895 Pat. No. 19,259 (GB189519259A)
Benjamin Altman, Merchant, of 25 Madison Avenue, New York City, United States. ‘Improvements in Bicycle Skirts’, (7th Dec).

1895 Pat. No. 22,302 (GB189522302)

1895 Pat. No. 23,552 (GB189523552A)

1896 Pat. No. 17,145 (GB189517145A)

1896 Pat. No. 11,855 (GB189511855A)

1896 Pat. No. 13,575 (GB189513575A)
Emma Grimes, of Knapton Hall, North Walsham, in the County of Norfolk. ‘A Combined Bicycling and Walking Skirt’, (16th May).

1896 Pat. No. 8766 (GB189608766A)
Frances Henrietta Muller (Mueller), Gentlewoman, Maidenhed n the Country of Meads, Berks. Improvement in Ladies’ Garments for Cycling and Other Purposes’ (30th May).

1896 No. 192 (GB189600192A)
Peter Nilsson, Ladies Tailor and Habit Maker, of 33 Conduit Street, London W. ‘A New or Improved Cycling Habit for Ladies’ Wear’, (15th Feb)

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Bloomers
Tailored skirt
Convertible costume
Convertible costume
Convertible costume
Convertible costume
Built-in bifurcation
Convertible costume
Built-in bifurcation
Built-in bifurcation
Convertible costume
Tailored skirt
Convertible costume
1896 Pat. No. 7044 (GB189607044A)

1896 No. 15,659 (GB189615659)
Harry Harrison, Ladies’ Tailor, of 89 Corporation Street, Birmingham. ‘An Improvement in the Skirt of Ladies’ Cycling Habits’ (22nd May).

1896 Pat. No. 11,822 (GB189611822A)

1896 Pat. No. 14,059 (GB189614059A)
Richard Thomas Smailes, Manufacturer, of 1 and 2 Moreton Terrace, South Kensington, London. ‘Improvements in Skirts for Lady Cyclists’, (1st Aug).

1896 Pat. No. 15,146 (GB189615146A)
Diana Elizabeth Togwell, Schoolmaster’s Wife, Earl of Jersey’s School, Middleton Stoney, Bicester, Oxon. ‘Improvements in connection with Skirts for the use of Lady Cyclists’ (8th Aug).

1896 No. 18,906 (GB189618906)
Frederick Hooper, Tailor, of 460 Fulham Road, Walham Green, in the County of London. ‘An Improvement in Lower Garments for female Cyclists or Riders’ (24th Oct).

1896 Pat. No. 3903 (GB189603903A)

1896 Pat. No. 26,391 (GB189626391)

1896 Pat. No. 14,058 (GB189614058A)
Lily Sidebotham, wife of George Henry Sidebotham, Draper, of Newport in the County of Salop. ‘An Improved Appliance for Keeping Dress Skirts in Position while Cycling’, (16th Jan 1897).

1896 Pat. No. 4267 (GB189604267A)
William Fletcher, Ladies’ Tailor, of No. 10 Princes Street, Hanover Square, London. ‘Improvement in Ladies’ Cycling Skirts’, (30th Jan 1897).

1896 Pat. No.19,987 (GB189619987A)
William Parker Brough, Engineer, of “Springfield” Kettering in the County of Northampton. ‘An Improved Ladies’ Cycling Skirt or Habit’, (30th Jan 1897).

1896 No. 29,448 (GB189629448A)

1896 No. 29,448 (GB189629448A)
Helena Wilson, Costumier, of 76 Regent Street, London W. ‘A New or Improved Combined garter and Skirt Distender for Cycling and other Skirts’, (6th Feb 1897).

1896 Pat. No. 7133 (GB189607133A) Martha Redhouse, Court Dressmaker, 16 Hinde Street, Manchester Square, Parish of Marylebone. ‘Improvements in Ladies’ Cycling Skirts’, (13th Feb 1897).

1896 Pat. No. 780 (GB 189700780A) Sebastian James Sellick, Tailor and Outfitter, of 23 High Street, Westonsuper-Mare. ‘Improvements in Ladies’ Skirts for Cycling and Ordinary Ware’, (27th Feb 1897).


1896 Pat. No. 10,332 (GB189610332A) Emily Christabel Woolmer, Spinster, of The Vicarage, Sidcup, in the County of Kent. ‘An Improved Skirt Holder for Lady Cyclists’, (17th April 1897).

1896 No. 17,920 (GB189617920A) Thomas Henry Brown, Commission Agent, of 12 Lever Street, Manchester. ‘Improved Skirt or Garment for Ladies’ (12th June 1897).


1897 Pat. No. 8778 (GB189708778A) William Howard Swinger, Ladies’ Tailor, and Henry van Hooydonck, Ladies’ Tailor’s Cutters, of 15 Hotel Street, Leicester. ‘Improvements in Ladies’ Costumes adaptable for either Cycling, Riding, or Walking Purposes’, (26th Feb).

1897 Pat. No. 1358 (GB189701358) Charles Bristow, Settler, of 54 Lambton Quay, in the City of Wellington, in the Colony of New Zealand. ‘A New or Improved Skirt Attachment for Use by Lady Cyclists’. (13th Mar)

1897 Pat. No. 12,684 (GB189712684A) William Howard Swinger, Ladies’ Tailor, and Henry van Hooydonck, Ladies’ Tailor’s Cutters, of 15 Hotel Street, Leicester. ‘Improvements in or relating to Ladies’ Cycling Skirts’, (7th May).

1897 Pat. No. 11,941 (GB189711941A) Martha Kate Ross White, of 20 Wellesley Road, Croydon. ‘Improvements in Ladies’ Skirts, especially intended for Cyclists’, (19th June).

1897 Pat. No. 13,691 (GB189713691A) Carri Gibbs Tresillian, Governess, of Marmion Road, Southsea Hants. ‘Improvements in or relating to Skirts for use when Cycling or Walking’, (17th July).


1897 Pat. No.17,115 (GB189717115A)


1897 Pat. No. 1377 (GB189701377A) George Albert Shipman of 26 Filey Street, in the City of Sheffield, Manufacturer and Charles Christopher Walker, Engineer, of The Wicker, Sheffield. ‘Improved Appliance for Holding the Skirts for Lady Cyclists’, (20th Nov).

1897 Pat. No. 2363 (GB189702363) Reuben Payne, Clothier, of 2 Chichester Street, Belfast. ‘A Combined Cycling and Walking Skirt for Ladies’ (27th Nov).

1897 Pat. No. 5831 (GB189805831A) Esther Matthews, Married Lady, of Abbey Foregate, Shrewsbury and Catherine Carter, Spinster, of Brampton House, Havelock Road, Bell Vue, Shrewsbury. ‘Improved Means of Retaining Ladies’ Skirts in Position when Cycling’, (30th April).


1898 Pat. No. 16,881 (GB189816881A) Eva Molesworth, Spinster, of Manor House, Bexley, in the County of Kent. ‘Improvements in Cycling Skirts’. [Communicated from abroad by Louisa Mary Dennys, Married, of Nungam-baukam Road, Madras, India], (10th June).


1898 Pat. No. 17,768 (GB189817768A) Edward Barnes, George Barnes, Arthur Barnes, Frederick Barnes and James Vincent, Ladies’ Tailors and Outfitters, all of Old Christchurch Road, Bournemouth, Hampshire. ‘An improved Cycling Skirt’, (8th Oct).


1898 Pat. No. 3459 (GB189803459) Henry Albert Harman, Costumier, of 98 Palmerston Road, Southsea. ‘A New or Improved Appliance or Attachment for use in Cycling Skirts and the link’. (11th Feb 1899).

Built-in bifurcation
Pat. No. 23,244 (GB189823244A)
George William Fletcher, Ladies’ Tailor, of The Square, Barnstaple in the County of Devon.
‘Improvements in Ladies’ Cycling Skirts and the Like’, (17th June).
1899 Pat. No. 26,321 (GB189826321A)
Edwin Slatter, Outfitter, George Slatter, Outfitter, and George William Richardson, Foreman Tailor, all of 6 Carlton Nottingham. ‘Improvements in Cycling Skirts’, (22nd July).
Tailored skirt

1899 Pat. No. 14,673 (GB189914673A)
Built-in bifurcation

1899 Pat. No. 7085 (GB189907085A)
Robert Skelton, Tailor and Outfitter, of 40 and 41 Aungier Street, Dublin Ireland. ‘Improvements in or relating to Ladies’ Cycling Skirts’, (21st Oct).
Convertible costume

1899 Pat. No. 25,346 (GB189825346A)
Jean Milne Gower, Married Woman, of Rossmoyne, Wellesley Road, Sutton, in the County of Surrey. ‘Improvements in and connected with Ladies’ Skirts’, (21st Oct).
Tailored skirt

1899 Pat. No. 23,804 (GB189823804A)
Mrs Janet Riddle, Lady, of 7 Carlton Road, St. John’s London. S.E. ‘An Improvement Skirt Holder’ (4th Nov).
Device to attach skirt to rider

1899 Pat. No. 818 (GB190000818A)
George Kemp Scruton, Tailor and Outfitter, of 64 New Street, Birmingham, in the County of Warwick. ‘An Improved Skirt for Ladies’ Use, particularly adapted for Cycling’, (24th Nov).
Tailor skirt

1899 Pat. No.11568 (GB189911568A)
Mary Cooke, Spinster, trading as Christie & Co, of No. 81 Baker Street in the Parish of Marylebone, in the County of Middlesex. ‘An Improvement in Cycling Skirts for Ladies’ Use’, (20th Jan 1900).
Tailor skirt

1899 Pat. No. 6997 (GB189906997A)
Harry Harrison, Ladies’ Tailor, 89 Corporation Street, Birmingham. ‘An Improvement in the Skirt of Ladies’ Cycling Habits’, (3rd Feb 1900).
Built-in bifurcation

1899 Pat. No. 24,136 (GB189924136A)
Katie Ryan, Gentlewoman, of 251 Rice Street, St. Paul, Minnesota, United States of America. ‘Skirts for Wear when Cycling or in Wet Weather’, (10th Mar 1900).
Convertible costume

1899 Pat. No. 12,370 (GB189912379A)
Frederick Charles Cooper, Tailor’s Cutter, of “West Leigh”, 27 Upperton Road, Eastbourne Sussex. ‘Improvements in Cycling Skirts’, (7th Apr 1900).
Convertible costume

1900 Pat. No. 6929 (GB190006929)
Ethel Eva Minie Levien, Gentlewoman, of Madowla, St. Kilda Road, Melbourne, Australia. ‘Improved Women’s Cycling Knickers’, (19th May).
Adapted bloomer

1900 Pat. No. 5996 (GB190005996)
Tailored skirt
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