HOW CYCLISTS WERE THE FIRST TO PUSH FOR GOOD ROADS & BECAME THE PIONEERS OF MOTORING

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CARLTON REID

Roads Were Not Built For Cars
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Back cover photo © National Motor Museum. The photo shows an 1898 Benz Velo in front of Glover Brothers Cycle Makers & Engineers of Windsor Street, Coventry. As well as signs for the CTC and Ariel bicycles there's a sign (on the spine) advertising Pratts Spirit, one of the earliest petrol brands in Britain.

Bicycle shops were among the very few places that motorists could buy petrol. In 1912, Henry James Glover and Hubert Walter Glover manufactured a (short-lived) motor car of their own.

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For Jude

CROWDFUNDING

Much of the research for this book was enabled by backers of a Kickstarter campaign run in 2013. The names of these backers – all 648 of them – can be found in the back of the book.

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CONTENTS

	<i>Foreword</i>	xi
	<i>Preface</i>	xiii
	<i>Introduction</i>	xix
1.	When Two Tribes Were One	1
2.	Pioneers	8
3.	Mastodons to Motorways	35
4.	Who Owns the Roads?	54
5.	Speed	80
6.	Width	96
7.	Hardtop History	110
8.	“What the Bicyclist Did for Roads”	123
9.	Ripley: “the Mecca of all Good Cyclists”	134
10.	Good Roads for America	143
11.	America’s Forgotten Transport Network	159
12.	Pedal Power	173
13.	Motoring’s Bicycling Beginnings	183
14.	Without Bicycles Motoring Might Not Exist	190
15.	From King of the Road to Cycle Chic	243
	<i>Epilogue</i>	263
	<i>Acknowledgements</i>	266
	<i>Appendix A – History of roads timeline</i>	267
	<i>Appendix B – Motor marques with bicycling beginnings</i>	271
	<i>Appendix C – Kickstarter supporters</i>	306
	<i>Bibliography</i>	309
	<i>Index</i>	310

FOREWORD

By Edmund King

I thought I knew a lot about roads, until I read this book. After all, I am president of the Automobile Association and, indeed, in the past, was campaigns manager for the British Road Federation. I have also had an interest in cars and cycles since the age of five, when my mother bought me my first bike (from Colin Chapman, founder of Lotus Cars).

In my life, cycles and cars have always gone together.

I was astonished to read how closely cyclists and motorists were joined at the hip. Perhaps I shouldn't have been surprised? The history and origins of the AA owe much to cycling, as this book relates.

It wasn't just the AA that was influenced by cyclists. Carlton Reid skilfully traces back the extensive links between cycling and many automotive companies, such as GMC, Chevrolet, Land Rover and even Ford. (Henry Ford loved cycles; Hitler loathed them.) Ground-breaking technological developments, such as ball bearings and the pneumatic tyre, had their origins in cycling. The early drivers' bible *Autocar*, which still exists today, was founded by a cycle magazine editor. In the 1890s, Victorian cyclists and motorists were closely aligned, and worked together to improve roads (and create motoring).

This brilliantly researched book should help to demolish many of the Car v Cycle arguments, and put us all on a much safer road for the future. Motorists and cyclists are *not* two tribes. It would be healthy for some of the Mr. Toads out there to read this book; it amply illustrates that Roads Were Not Built for Cars.

Edmund King is President of the Automobile Association and Visiting Professor of Transport at Newcastle University.

PREFACE

Roads were invented for cars ... Roads are for cars, not bikes.

DANIEL MEERS, GOLD COAST BULLETIN, AUSTRALIA, 2012

This is a highway history book, showing how we originally got our solid roads, roads that some motorists believe were built for their sole use. (Many now are, of course.) It's also about how Victorian and Edwardian cyclists helped motoring become globally pervasive. Motorists and cyclists – deemed by many to be poles apart – have an intimately shared history.

When, in 2011, Dutch urban anthropologist Line Algoed moved to London, she was shocked by the “two tribes” split between motorists and cyclists:

You are either a cyclist, or a driver – as if people never switched between transport modes ... Both groups are moving farther away from each other, creating misunderstanding and conflict.

The president of the UK's Automobile Association, Edmund King, has urged “we must get past the dangerous *them and us* mentality.” Optimistically, he concludes: “When we release our grip on the steering wheel or handlebars, the differences disappear.”

He's right. Historically, at least. Cyclists and motorists have far more in common than many people realise. Early motoring was highly reliant on the cyclists of the 1890s. Not only did motorists later benefit from the improved roads first lobbied for by cyclists, but those motorists were often the same people who had originally done the lobbying. Cyclists and motorists of the late 1890s and early 1900s were not from separate tribes – they were often the exact same individuals.

It's usually assumed – and, thanks to some historians, often explicitly written – that motor cars evolved from horse-drawn carriages. This is not so. Carl Benz's *Patent-Motorwagen*, the first true automobile, was a motorised two-seater tricycle made from parts sourced from Germany's biggest bicycle shop. The key components for Henry Ford's *Quadricycle* – including the wire spoke wheels, bush roller chains and pneumatic tyres – were from bicycles. If a paternity test were possible, it could be shown that the first motor cars had much more cycle DNA in them than carriage DNA. The cycle was a vital part of the trunk of the automobile's family tree.

The first promoters of motoring were cyclists, and were used to lobbying thanks to their earlier promotion of cycling. Moneyed and socially elevated, these promoters had often been officials of cycling organisations. The long-time prime mover behind the Automobile Club of America (precursor to the Triple A) was Amos G. Batchelder, described as “America's foremost highway enthusiast.” He had earlier been an official with the League of American Wheelmen cycling club. The ultra-exclusive Automobile Club of Great Britain and Ireland – later to add the Royal prefix – was founded in 1897, by cyclists. In 1904, many of its members, in their entries in a motoring annual, were still proudly displaying their love

Library of Congress

In the 1890s, cycling was a pursuit for the leisured elite.

for cycling. Ernest Shipton would have seen no irony in being a committee member of the influential Automobile Club as well as being, at the same time, the long-standing secretary of the Cyclists' Touring Club. Henry Sturmeý was a cycling journalist to his dying day, wrote a classic 1877 book on cycling and gave his name to Sturmeý Archer bicycle gears in the early 1900s, but he also founded *The Autocar*, the world's first weekly motoring magazine (which is still published, without the definite article). In the mid-1890s Sturmeý was editor, at the same time, of both *The Cyclist* and *The Autocar*. He was one of many cycling-fixated committee members of the Automobile Club. The first automobile manufacturers tended to be cyclists, too: from the Dodge and Duryea brothers in America to the co-founders of Rolls-Royce and Aston Martin in Britain. At least 64 motor marques had bicycling beginnings, and in the appendix I discuss the cycle backgrounds of companies such as Cadillac, GMC and Chevrolet.

Without cycles and cyclists, motoring would have evolved very differently, and perhaps in a far inferior form. Cyclists became the first and staunchest evangelisers of motoring because they had been the first to awaken to the possibilities afforded by self-determined mobility – free from fodder, free from timetables, free from rails. And, as they were intimately aware of the benefits that came from the provision of smoother surfaces upon which to glide, pushy Victorian cyclists agitated for highway reforms. In America cyclists formed the hugely influential Good Roads movement. In Britain there was the trail-blazing Roads Improvement Association, a campaigning body founded by cyclists ten years before

it was legally possible to drive a motor car on British roads.

That cyclists pioneered highway improvements before the advent of motoring is not heretical, it's hidden. To revive this hidden history I've spent umpteen hours immersed in Victorian and Edwardian journals, diaries, personal correspondence and newspapers. I've travelled from Coventry in the English Midlands to Detroit in America, to get up close and personal to the papers – and the geography – of the motoring pioneers. Before Coventry and Detroit became known as motor towns, they were cycling cities. One of the key reasons they became important centres for motor manufacturing was that, some years beforehand, they were important centres for cycle manufacturing.

This book is based on the opinions and knowledge of those who lived through the period I'm focusing on, which is roughly the early 1860s to 1914. The official organs of the League of American Wheelmen (L.A.W.) and the Cyclists' Touring Club (CTC) were produced by enthusiasts with a clear and obvious bias. Similarly, the pioneer motoring journals exhibit the same blinkered breathlessness, often because the journals were written by the same individuals – almost all of the first motoring journalists cut their teeth on cycling magazines.

THE TITLE of my book is polemical, but it's also a statement of historical fact. Roads were *not* built for motor cars. By and large, they were built for pedestrians. That roads were allowed to be colonised by cars is not something that happened by accident, nor was it inevitable. Powered road-going vehicles existed before Carl Benz attached a gas explosion engine to a Coventry-inspired tricycle but, for many interlocking reasons, the earlier road steamers did not catch on, and it wasn't for want of trying. Something different happened when Benz, Daimler and the other motor pioneers created the powered road-going vehicle that, eventually, caught on – or, rather, was allowed to catch on. Society, or at least the powerful parts of it, decided the fate of motor cars. The great majority of the Victorian public, with no prospect of owning them, hated motor cars, and this hatred continued, in some quarters, until the 1920s. Had more restrictions been placed in their way, motor cars would have evolved very differently – they may even have been stillborn. When motor cars arrived, it was the age of the train and, later, the tram. There was nothing inevitable about the acceptance of motoring. In the 1890s, very few people imagined motor cars would go on to dominate the world. That motor cars did so was partly due to cycling, and cyclists.

PEDESTRIANS (WHICH we all are!) may not always agree but, give or take the odd “scorcher” or two, bicycling is benign. Cyclists and pedestrians can mix far better in the same space than motorists and pedestrians. This is amply demonstrated at “car-free” events where roads are shut to motors. There are a growing number of these events around the world, usually organised on Sundays. They have been popularised by the *ciclovías* – or “open streets” events – of Bogotá, Colombia, first held in 1976. Major highways are closed to motorised traffic, and people take over, on skateboards, on roller skates, on foot, on bicycles. Space normally dedicated to movement for motors alone becomes public space where anything goes. Dance classes, pop-up cafes, leisurely chats, architectural tours and more transform streets back to what they originally were: public spaces, not spaces for motor cars alone.

Strictly speaking, as a British rights of way expert said in 1913, “a Highway is no place for a picnic, a public meeting, an al fresco dance, or an itinerant auctioneer's stand,” but throughout history, roads have been about more than just transport. We have lost that aspect of roads, and this is a major amenity loss. *Ciclovías* – even when held on just one or two streets, and just once a week – remind people that roads need not be just for cars.

A great many residents of Leeds in Yorkshire discovered this when the Tour de France cycle race

started in the city in July 2014. The congested A61 dual-carriageway north of Leeds was closed to “normal” traffic – it was busy, briefly, for the passing of the professional riders (and their support cars, team buses and trucks in the shape of tea-pots). After the riders and the motor convoy had passed, the roads remained closed to motor vehicles for some hours but were open to pedestrians and cyclists. Tens of thousands of people realised they could wander all over the road without fear of obliteration – tiny tots, wheelchair users and many others who wouldn’t normally go anywhere near the A61 found they could share it quite happily with cyclists. It was party time! Children remained on the road long after the race had passed, laughing, playing, joking, having fun. This was liberating and uplifting for thousands of residents. Later the A61 returned to being an unwelcoming place for anybody not motor-propelled. The fun stopped.

I’m not an Arcadian, wishing for simpler times. Clearly, modern society relies on transport of people and goods by road but there are dangers in being in thrall to the motor car, and the reliance on propulsion in five-seater motor vehicles even when travelling alone and for the shortest of journeys is unsustainable in a number of well-understood but ignored ways. We all live in fear of those propelling motor cars – parents clutch their small children closer to them when walking near roads, and the “fear of traffic” compels people to retreat from the street. Sweden’s “Vision Zero” – the principle that no level of “traffic efficiency” is worth a single pedestrian death – shows that it’s perfectly possible to live in a modern democracy yet not have the “freedom” to treat speed limits as minimum targets. Vision Zero is infectious, many localities are inspired by it, including New York City which is gradually taming the motor car and transforming formerly motor-choked streets into thoroughfares where people matter.

ROADS BELONG to all, a shared resource. Too often, one user – the motorised user – has been allowed to dominate. This does not require any diktats from on high. Any and every road can become a “motor” way, because those piloting heavy, fast motor vehicles can use their speed and power to muscle all non-motorised users out of the way, often without knowing they’re doing it. “Vulnerable road users” become either invisible, or irritants to be buzzed out of the way. Rule 170 in the Highway Code states: “Watch out for pedestrians crossing a road into which you are turning. If they have started to cross they have priority, so give way.” Few motorists (or cyclists) know this rule exists, and pedestrians meekly scuttle out of the way, or risk being flattened. In America, the creation in the 1920s of the concept – and crime – of “jaywalking” shows how roads for all users quickly became defined as roads for motorists alone.

Try this experiment – ride a bicycle on a narrow road with cars parked on one side and play “chicken” with motorists heading towards you. You’ll not get far because many British and American motorists won’t pull to one side to let through a cyclist. (Actually, don’t try this, it’s potentially lethal.) Cyclists can be forced aside, unthinkingly, by nurses, nuns and White Van Man alike. Motor cars are deemed, by many, to have priority on roads. Might, it seems, is right. On a bicycle you often don’t register on retinas. This results in SMIDSY – “sorry, mate I didn’t see you” – a phrase commonly heard by upended cyclists (and motorcyclists).

When motorists *do* notice cyclists it’s often because they are perceived to be “getting in the way.” Motorists sometimes articulate that cyclists “slow down” what they consider to be the only legitimate road users. More normally, what slows down motorists is fellow motorists but it’s human nature to scapegoat the “other”.

A small minority of motorists believe they should inform the non-motorised what modern roads are for – the use of cars as weapons is well documented. Violence may be rare, but verbal abuse is not. In May 2014, Keith Maddox of Piedmont, Alabama, filmed himself ranting at cyclists he passed in his

powerful SUV. He said he was “just trying to get to work,” and didn’t consider that the fellow road users he complained about were doing the same. After passing one cyclist, Maddox videoed himself on his smartphone saying: “I’m going to hurt one of them one of these days, I can’t help it.” He later gave two cyclists a “punishment pass”, then pulled in front of them and proudly shouted: “That scare ya, boys? Get your pedalin’ butts off the road.” This type of unbidden hate is not limited to cyclists. Pedestrians and equestrians are also shouted at for daring to “share the road”. In Pennsylvania there are a great many slow-moving horse-drawn buggies on the roads, and members of the Amish community are frequently abused by passing motorists. A courtesy guide produced for the Pennsylvania Department of Transportation uses a faux religious edict to put the guilt trip on those without internal combustion engines – it advises “plain people” in their buggies to “... stop and let the faster traffic go by. Never think, ‘I have just as much right on the road as he has.’ That is true according to the law, but ... it is our Christian duty to ... not hog the road.”

AMERICAN PHILOSOPHER Marshall Berman’s powerful polemic of 1981, *All That is Solid Melts Into Air* – which influenced the 1990s “Reclaim the streets” and Critical Mass movements – stressed that the streets belonged to people on foot, not people in motor cars:

[There is] revolutionary protest that transforms a multitude of urban solitudes into a people, and reclaims the city streets for human life ... the streets belong to the people.

In fact, streets belong to people on foot, people on bikes, people on horses, people on pogo-sticks, and, yes, people in motor vehicles. Yet it is now perfectly mainstream to argue that roads are the sole domain of only those people surrounded by steel overcoats. Unprotected propulsion, Shanks’s pony or pedalling, is seen as perverse.

But change is in the air. That motor-car use ought to be restrained is becoming less of a minority position as the social, environmental, health and economic benefits of the “liveable city” are becoming better understood. Cities that put quality of life for all before amenities for motorists alone are finding that one of the first steps towards civic “attractiveness” is to rip out much of the ugly infrastructure that motorists are deemed to require. Some of this motor-centric infrastructure – roundabouts, crash barriers, sweeping corners with long sight-lines – encourages motorists to travel faster, making urban areas sterile and unpleasant.

HISTORY is a social construct, written by the winners, and the winners in highway history have been motorists. Cycling’s role in highway history was consciously downgraded – and, in some cases, deliberately deleted – when the bicycle morphed from the vehicle of rich transport progressives in the 1890s to “poor man’s transport” in the 1930s. It’s time that Victorian cyclists were given credit for what they helped bring about. Some became ardent motorists and were all too happy to forget their cycling roots, but many of the other motor pioneers continued cycling, and they celebrated the shared links between transport modes that are now deemed to be worlds apart. I’d like those links to be celebrated again.

CARLTON REID
Newcastle upon Tyne
August, 2014

INTRODUCTION

CAR v AUTOMOBILE

Throughout this book I use *motor car* and *automobile* interchangeably. (*Car*, too, but to a much lesser extent because, in the 19th century, car meant a train, tram or trolley *carriage*.) To British ears, the use of the word *automobile* sounds American. It's very much not a word in everyday use in Britain; ditto for the contraction *auto*. The Royal Automobile Club, founded in London in 1897 as the Automobile Club, shows that "automobile" was once a perfectly acceptable British English word. Automobile is a Latin and Greek mash-up, with the collision taking place in France in the 1890s. Even though the world's first automobile was developed in Germany, the first mass-market sales, promotions and brand building for automobiles took place in France. Why? Motoring pioneer and Cyclists' Touring Club trustee Sir David Salomons put it down to avarice, thanks to a bicycle magazine's challenge:

The great success which cycling had in France, following upon the prize given by *Le Petit Journal*, which also gave so large an advertisement to that newspaper, led to the energetic proprietors offering a prize for quick self-propelled carriages, with the result which is so well known. Consequently the [new popularity of motoring] is not due to any new discovery or special invention, but simply that many minds were turned to the subject in the hope of gaining the large money prize.

French engineers – using German engines – dominated the (tiny) world market for automobiles until the late 1890s, just enough time for French words to predominate: words such as *chassis*, *garage*, *carburettor* and *chauffeur* – which, before 1905, meant "driver of a motor car" rather than a servant who drove a motor car. Other French motoring words – such as *coupé*, *limousine* and *cabriolet* (from which the word "cab" is derived) – had first been words for horse-drawn carriages. Limousine was originally a shepherd's cloak from the Limousin region of France. The first chauffeurs, who sat in the open air, adopted this heavy garment and the word transferred itself from a cloak, to a horse-carriage, to the covering for a driver, to the vehicle itself. Think of that the next time you see a stretch limo.

Other equestrian words – such as *driving* – transferred to motoring. *Motoring* wasn't the obvious word for the activity. An early favourite was *moting*.

There were many competing words for what one British Member of Parliament called "stinking engines of iniquity." Anticipating history, in 1879 American chancer George Seldon patented, but did not build, a *road engine*. Ford built a *quadricycle* (using bicycle parts). Other suggested names for the motor car included *Benzene buggy*, *diamote*, *self-motor*, *autovic* and, simply, *machine* – the Italian word for automobile is *macchina*. *The Weekly Times and Echo* said its favoured name was *Greasier*.

In the late 1890s, people seemed to prefer *autocar*, especially the British magazine *The Autocar*, although Automobile Club founder Frederick Simms (a member of the Cyclists' Touring Club in his

Pioneering 1890s cycle infrastructure: the elevated California Cycleway in Pasadena (see chapter 11).

youth), rather cheekily wrote to the journal suggesting instead:

Petrocycle, Motorfly, Automotive, Horseless Car, Motor Cycle, Oleo-Locomotive, Volvite, Autokenetic, Mechanical Car or Carriage, Automobile, Electrobat, Paramount, Locomotive Car or Carriage, Non-equine, Automatic Car or Carriage, and last but not least, the Autocar and Motor Car or Carriage.

An editorial in *The New York Times* had cause to hesitate when using the word automobile:

There is something uncanny about these new-fangled vehicles. They are all unutterably ugly and never a one of them has been provided with a good, or even an enduring name. The French, who are usually orthodox in their etymology if in nothing else, have evolved “automobile,” which being half Greek and half Latin is so near to indecent that we print it with hesitation ...

WHEEL

There used to be many names for the cycle. In America, one of the most popular was *wheel*, even though a *bicycle*, as the name suggests, had two wheels. The reason is writ large: the first mainstream bicycle was a high-wheeler, with a prominent front wheel and a tiny trailing wheel. The national cycling organisation in the US was the League of American Wheelmen, which is now known as the (non-sexist, tricyclist-offending) League of American Bicyclists. 19th-century American cycling magazines were littered with the wheel word, and it takes some time to get used to the fact the writer means the complete machine rather than one of its component parts. An 1895 advert for a New York bicycle insurance company said “if your wheel is stolen we recover it for you.” This was a policy for whole bicycles.

Similar to *automobile*, the first name for bicycle was another Greek-Latin mash-up: *velocipede* (*velox*: fast plus *ped*: feet). At times, I am a velocipedestrianisticalistinarianologist (one who studies the study of studying cycling), a 40-letter concoction coined in 1869. The noun *bicycle* dates back to at least 1828 when a horse-drawn cabriolet was described as such.

The Polish word for bicycle is *rower*, with the *w* pronounced as *v*, named after J. K. Starley’s Rover Safety bicycle of the mid-1880s. In other languages, the diminutive *bike* is *vélo* in French, *bici* in Italian, *fiets* in Dutch, *Rad* in German (from *fahrrad*), and, my personal favourite, *birota* in Vatican Latin – two-wheeler. This is very similar to *birotate chariot*, a term used in Charles Pratt’s 1879 introduction to the joys of cycling. English and American magazines often referred to the cycle as a “steel steed” or even, in an American newspaper from 1879, a “mustang of steel.”

Throughout this book I use the term *high-wheeler* for the type of early bicycle commonly known as the *penny-farthing*. This coinage-derived term was an 1890s disparagement, and collectors of antique bicycles used to steer well clear of the slur. Today, cycle historians and cycle collectors have softened, and often refer to high-wheelers as *pennies*. Period sources called the high-wheeler simply the bicycle, although after the introduction of the *Safety bicycle*, high-wheelers became known as *ordinaries*, or even, in some sources, *Grand Old Ordinaries*, or G.O.O.s.

I hope tricyclists will forgive me if I sometimes slip up but, throughout the book, I’ve tried to use the word *cycle* rather than *bicycle*.

TIME

This book mostly covers the period 1868 to 1896 and on to 1914 – from when bicycles were introduced, to when they boomed as part of a global “bicycle craze,” and ending at the start of the Great War when, for the first time, automobile sales overtook bicycle sales. There is no single name for this period.

Instead, there are overlapping eras, the names of which I use interchangeably, depending on geography, period and whim.

In France, the late 1880s and 1890s formed part of what was known as the *Belle Époque*, the “beautiful era”. In America, Mark Twain invented the term the *Gilded Age* for the off-golden era of US industrial expansion coupled with the excessive riches of the “robber barons.” In Britain, it was the *Late Victorian* period, soon to merge into the *Edwardian* era. Motor historians often use the term *Brass Era*, the period when the early automobiles had brass lamps and brass radiator grilles.

The final chapter goes beyond 1914 in order to reveal how cycling and motoring went their separate ways, and how cycling became proletarian, and is still perceived to be “poor man’s transport.”

PAVEMENT v SIDEWALK

In Britain, the word *pavement* is not anywhere near as descriptive as *sidewalk*, the American term for the same sliver of pedestrian infrastructure. When Americans – and all nationalities of road engineers, including British – talk about *pavement*, they mean the road, not the sidewalk. In everyday speech, I use *pavement*, especially when bamboozling Americans: “That’s right, in England, bicycles aren’t allowed on the pavement.” For clarity, in this book, I use “sidewalk”.

FREEWAY v MOTORWAY

When talking about “motor-specific” roads in general I use the word *motorway*; when describing motorways in America I use *freeway*.

CYCLE PATH v CYCLEWAY

At the end of the 19th century America had the world’s best cycle infrastructure – the California Cycleway and the Coney Island Cycle Path. I reckon *way* is a far more powerful word than *path*. In America and Britain, path became low status: a path is deemed to be narrow and for walkers. The words path and *pad* indicate earth beaten down by feet (either human or animal). In Victorian era magazines there was much discussion about “bicycle roads”. The use of the right terminology can be important, especially in cultures which later downgraded the bicycle. In the Netherlands, a *fietspad* – or “bicycle path” – is not low status. Way denotes moving or travelling and comes from the same Sanscrit root (*vah*) as the words *wagon* and *vehicle*. Perhaps Eric Claxton, designer of the New Town of Stevenage in the 1960s, had the right idea when he insisted that the separated cycle infrastructure he created had to be called *cycleways*. Claxton’s grand-daughter Joanna Brown told me he was very proud of his cycleways and insisted on calling them that:

I remember as a child being pulled up for using the wrong term and being told “paths are for pedestrians, tracks are for horses, I built cycleways.”

SETTS v COBBLES

Setts are quarried stones cut rectangular with flat surfaces. They are often colloquially known as “cobble”, yet true cobbles are naturally bulbous pebbles dredged from rivers or collected from beaches, a road surface popular in medieval times but way too bumpy for moderns. A cobbled street is, in fact, a setted street. The famous Paris–Roubaix cycle race has riders bumping over setts, not cobbles. Roubaix is close to Belgium – another name for setts is “Belgian blocks”. The French word for setts is *pavé*. Cycling on setts is famously difficult – many professional riders won’t ride the one-day classics which feature *pavé*. From the many disparaging comments in magazines of the time, it’s clear that 19th century cyclists also disliked setts, preferring to ride on *asphalte*, wooden blocks or smooth *macadam*.

ASPHALT v ASPHALTE

There are differences between asphalt, asphalte, tarmac and Tarmac. When I feature pre-1900 asphalt I add an “e” to the end of that word because in most period sources it was called *asphalte* – this was different to today’s blacktop. Chapter 7 provides more information on macadam, metalling and the experiments that eventually led to “asphaltic cement” – hard, smooth road surfaces were vital to the success of first cycling, and then motoring. A metalled, macadamised road is often thought to mean a road capped with asphalt: it’s not. *Metal* is derived from the Greek word for road stone, and macadam is a road-building method using small stones that knit together to form an all-weather surface. Named for Scottish engineer John Loudon McAdam, macadamisation revolutionised road transport in the early part of the 19th century – but this revolution was short-lived as railways swiftly put roads to sleep.

WEIGHTS AND MEASURES

I’m no metric martyr, but I use Imperial measurements throughout this book, unless the context suggests otherwise. This is because I quote extensively from pre-metric British and non-metric American cycling and motoring pioneers. There are no conversions in brackets (apart from the one below). This looks messy and confusing in print and, should you want to know what 30 miles equals in kilometres, you can easily pop the figure into a well-known search engine.

Some roads book authors use the abbreviation Mm. This is the Megametre, not the millimetre. Mm is equal to one million metres or 1,000km (or 621.37 miles). Mm is a surveyor’s measurement. Another, albeit older and shorter, system is the chain. Not the bicycle chain, Gunter’s chain. This was designed in about 1610 by English clergyman and Oxford-trained mathematician Edmund Gunter, and was used to measure roads in Britain, America, Australia, India and other countries associated with the British Empire. Gunter used a 22-yard chain of 100 links. The length of a cricket pitch is 66 feet, or exactly one chain. This is not a coincidence.

SPELLING

When transcribing from original US sources I have attempted to keep American spellings even though my British English spellchecker tries to correct me when doing so. The word *aluminium* has proved to be especially taxing. When I feature aluminium, I include the extra “i”; when American quotes are included, I’ve used *aluminum*. Incidentally, the missing “i” is a spelling mistake, as demonstrated in chapter 14. For much of the 19th century and part of the 20th, Americans were perfectly happy spelling *aluminum* as *aluminium*. *Webster’s Revised Unabridged Dictionary* of 1913 advises readers to turn to aluminium when seeking aluminum. Some Americans used to spell *tyre* with a *y*. According to the *Oxford English Dictionary*, usage of both *tyre* and *tire* was acceptable in the 15th and 16th centuries. In the 17th century, *tire* became the settled spelling, in both Britain and America. Thomson’s “aerial wheel” English patent of 1845 – which predated John Boyd Dunlop’s pneumatic tyre patent – used the *i* variant. It was only in the 20th century that *tyre* became specifically British, and *tire* specifically American. I use “tyre” in this book, except when quoting from those American bicycle magazines which didn’t ape English habits.

WHEELMEN

Even when there were plenty of wheelwomen, the League of American Wheelmen kept its original name. The casual sexism – and racism – of earlier eras is shocking to our eyes but I haven’t expunged every example of such *isms*. When I use the term “wheelmen”, I don’t mean men alone. The bicycle, of course, was a great emancipator of women – in dress and mores – and there were women who raced, toured the world and wrote about bicycling for a living. Cycling, and later motoring, attracted women

Frances Benjamin Johnston of Washington, D.C. was a professional photographer. This photo was a self-portrait – her extended foot is probably pressing a remote switch.

Ms. Johnston was the official White House photographer for a time. If the high-wheeler was hers – and it appears to be the right size – this photograph was provocative for the time given that she’s wearing mens’ clothing and is even sporting a false mustache. Ms. Johnston was one of many high-society lesbians attracted to cycling.

participants but the main protagonists in the cycling and motoring organisations, in the push for Good Roads, in cycling and motoring journalism, and in the founding and running of cycling and motoring companies, were invariably men. Cycling and motoring were both transformational for the position of women in society but it was many years before women reached positions of power in either cycling companies and organisations, or motoring ones.

CYCLE DOMINANCE

When reading this book, you might get the impression I’ve pinned a cycle-credential on every character mentioned – finding a bicycling red under every bed. Do I really think *everything* has a cycling-related back-story, from roads to rockets? Of course not. I haven’t done a *Forrest Gump*; there has been no insertion of cycling snapshots into historical episodes where they didn’t exist. No need. There’s plenty of evidence available, but it’s evidence that rarely sees the light of day or has been suppressed.

NOTES

As much of this book is about resurrecting lost or deliberately obscured histories, there will be some who think I’ve made it all up. I’ve therefore been very careful to cite the source material for all the facts and quotes I’ve included. The copious notes would double the length of this book so I have placed them online: roads werenot built for cars.com/notes.