

# The Road Transport History Association

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## Road Transport Research at the National Physical Laboratory

### Peter White

The annual Open House Weekend in London over 16/17 September provided an opportunity to visit Bushy House. Located on the northern edge of Bushy Park, west of Kingston-upon-Thames, it dates from 1663, and its history encompasses a number of distinguished occupants including The Duke of Clarence (later King William IV) and the Duc de Nemours (second son of King Louis-Philippe of France, in exile from 1848). Following the latter's death in 1896, the House reverted to the Crown, and in 1900 became the first home of the National Physical Laboratory (NPL). In subsequent years the NPL has greatly extended over the adjacent site, but Bushy House remains part of its estate. The display for visitors documented not only the history of the house itself, but also of the NPL, with a number of fascinating illustrations of its work related to transport.

With the very helpful assistance of Sam Gresham of NPL's Communications Office, a number of these and other illustrations have been made available, as

reproduced in this issue (all Crown Copyright), along with reference material from which text below has been drawn.

In 1907, His Majesty's Commissioner of Police asked the NPL to test the accuracy of construction and working of taximeters. This work continued for fifty years. In the interwar years, 10,000 taximeters were tested each year. These two illustrations show such testing work in the 1920s, both of a single meter, and of a whole batch awaiting test.



Testing individual taximeters (Crown copyright)

## Roads and Road Transport History Association Limited

Honorary President:  
Dr Robert McCloy

Chairman:  
Roderic Ashley  
[roderic.ashley@gmail.com](mailto:roderic.ashley@gmail.com)

Journal Editor:  
Peter White  
13 Lingwood Gardens, Isleworth, TW7 5LY  
[whitep1@westminster.ac.uk](mailto:whitep1@westminster.ac.uk)

Secretary:  
Philip Kirk  
The Kithead Trust, De Salis Drive,  
Hampton Lovett, Droitwich Spa, WR9 0QE  
[philip@kitheadtrust.org.uk](mailto:philip@kitheadtrust.org.uk)

Membership Secretary:  
Annette Gravell  
49 Heol Goffa, Llanelli, Carmarthenshire,  
SA15 3LT  
[amgrav@tiscali.co.uk](mailto:amgrav@tiscali.co.uk)

Events Organiser:  
John Ashley  
6 Cefn Glas, Tycosh, Swansea, SA2 9GW  
[john@globespinner.net](mailto:john@globespinner.net)

Promotions Officer:  
Amy Graham  
[213bus@gmail.com](mailto:213bus@gmail.com)

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Registered Office: De Salis Drive,  
Hampton Lovett, Droitwich Spa,  
WR9 0QE

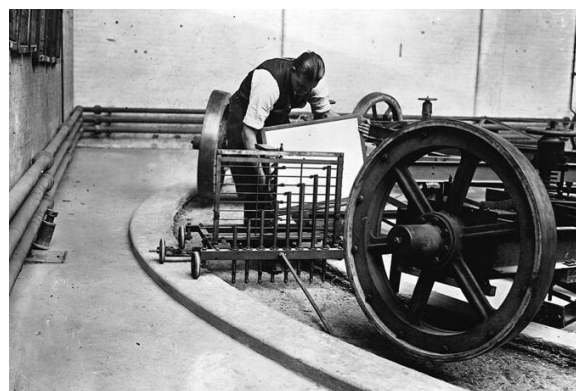
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The Editor is always interested in hearing from members and non-members who would like to write an original piece about transport history and/or research.



*The taximeter test bench (crown copyright)*

From 1911 to 1933 mechanical tests on road surface materials were carried out. These included impact, abrasion, cementation value and hardness. Endurance tests were carried out using a circular machine which had 8 loaded wheels running on a track with a diameter of 34 feet, laid with the test surface. With solid steel wheels, 24 hours' running at 10 miles per hour was thought to be equivalent to one year's wear on a typical heavy trafficked road of the time. In the transport research field, testing of road materials continues to be important, but today would be the responsibility of the Transport Research Laboratory at Crowthorne, or that of consultants on specific projects.

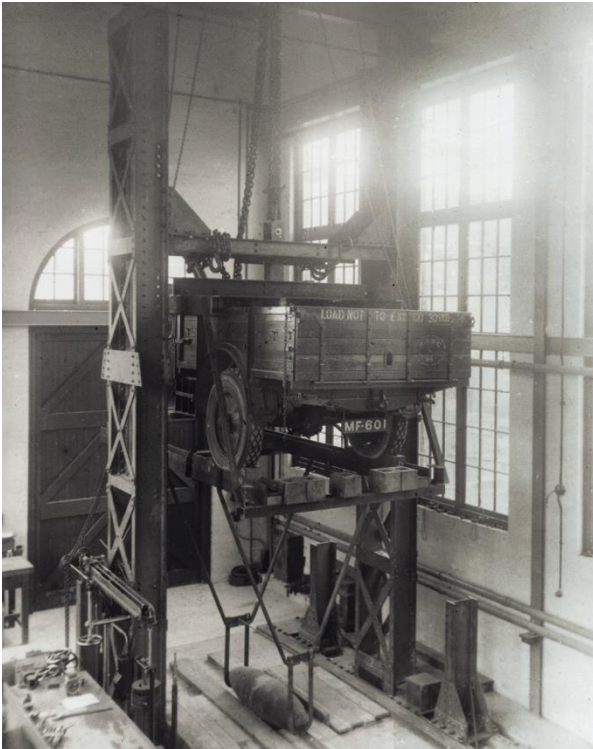


*Road testing (crown copyright)*

In the 1920s, the mechanical properties of spring steels were investigated, including the development of test methods for complete laminated springs fitted to lorries. A machine was built to test the endurance of such springs. It was found that the fatigue failures were governed more by the surface condition of the steel than its intrinsic bulk properties.

Perhaps the most striking illustration is that of testing acoustical properties of motor horns in 1929. A wide range of horns was evidently assessed by an observer placed at an appropriate distance; this photograph deserves appropriate space and so it is reproduced on page 16.

Since the period illustrated, the NPL's activities in relation to road transport have focussed more on components of vehicles themselves, as described in its publication 'A Century of Measurement' published in 2000. These have included modelling of emissions from vehicle exhausts (especially performance associated with 'cold start' conditions), use of materials which can be recycled, metal casting of components, and advanced lightweight structures.



*Testing the effectiveness of springs (Crown copyright)*

## Little-known Motoring Heroes 2: further pioneers of whom you may never have heard.

### Rod Ashley

The February 2017 edition (Vol 87) of the *Journal* featured (p21-23) a number of transport pioneers who are little-known. As argued then, there are also engineers, entrepreneurs and motoring godparents who have made a quieter but nonetheless significant impact upon the automotive world, not necessarily because they were shy and retiring – but simply that their efforts did not reach a mass audience, even if their products did so.

This follow-up article examines three more pioneers to whom all transport enthusiasts owe a debt of gratitude. They are, by turn, a gifted engineer; a passive heroine whose name was adopted by others to create one of the greatest marques in the automotive world; and one whose invention came to nought through her own

endeavours, but who lived to see it widely-adopted as a safety feature on all road vehicles.

Whilst many pioneers have gained the fame they merit, it has sometimes been their collaborators, perhaps with less need for publicity, who have made considerable technological and social impact on the world of transport. Whilst the genius for lateral thinking and space-engineering of Alec Issigonis (designer of the Morris Minor and the original Mini) is widely-known, his inventions would not have been possible without the crucial input of:

### Alex Moulton

Many readers will recall the Moulton small-wheeled bicycle, an icon of the 1960s. The bicycle is still built today, in various guises, and has a loyal customer base around the world. Alex Moulton was an ingenious engineer who considered that the traditional large-wheeled, diamond-framed bicycle had limitations in comfort and flexibility. To him, building separate bikes for males and females was nonsensical, so he put his considerable engineering skills into the small-wheeled design with rubber suspension. From his base in Bradford-upon-Avon in Wiltshire he created a bike which has influenced other manufacturers such as Brompton and Dahon, famous for their folding commuter bikes.

Yet Moulton's background was not in cycling – nor were the bikes the main part of the business. Having met the American entrepreneur Charles Goodyear of the eponymous tyre company, Moulton's great-



Above: The Moulton cycle (source: [https://upload.wikimedia.org/wikipedia/commons/a/ac/Moulton\\_Stoaway\\_bicycle.JPG](https://upload.wikimedia.org/wikipedia/commons/a/ac/Moulton_Stoaway_bicycle.JPG))

grandfather had started a company specialising in rubber suspension for vehicles. Indeed, that part of Wiltshire had become famous for other products based on rubber – Avon Tyres (and later the Llanelli-built Avon inflatable boats). Moulton's own father was a naturalist working in the Far East, so it was not



surprising that rubber as a commodity began to feature in Alex's work.

### **Suspension of BMC cars**

By the late 1950s the family company had been absorbed into Avon Tyres and Alex was seeking a new challenge. He was approached by his good friend Alec Issigonis, the designer of the 1948 Morris Minor, about an exciting new project, the Mini-Minor. Moulton maintained (in a video interview listed below) that Issigonis had been dismissive of rubber suspension for anything but lightweight cars and had used conventional torsion bars on the Minor. However, he now envisaged for the Mini-Minor a small-wheel at each corner and a front-wheel drive transverse engine with the gearbox slung underneath. Inspired by this concept, Moulton started up a new company, Moulton Developments Ltd, whose main task was to design the suspension for the Mini. Moulton's use of conical springs and small wheels (sounds familiar?) were key factors in allowing the Mini to be so compact.

Over time, this design evolved into the Hydrolastic® suspension standard on all Issigonis-designed front-wheel drive BMC cars in the early and mid-sixties – the 1100, 1300 and the 1800. The principle was to interconnect the suspension of all four wheels and stiffen the roll of the vehicle as it navigated bends. Hydraulic fluid would be displaced to even out the ride, with the rubber suspension cones having some natural give. Handling of the Mini (particularly in Cooper S specification) was legendary, holding its own against far more powerful touring cars on racetracks and winning an impressive series of Monte Carlo Rallies in the hands of Paddy Hopkirk. However, some passengers felt that the Hydrolastic® ride was unnerving and that, because the car did not pitch and wallow like many other makes of the day, they claimed that it induced a worse form of travel-sickness! As a child I certainly recall family friends visiting, all the passengers looking decidedly green. The husband's new Austin 1800 was on its first outing and they were all bewailing the trade-in of the traditionally-sprung Austin Cambridge.

By the early 1970s Moulton had developed the design into Hydragas®, which was fitted initially to the Allegro, and then to the Maxi, Metro, Princess, Ambassador and MGF. This solved some of the problems – yet despite such systems having been fitted to over 15 million British-built vehicles between 1959 and 2000, it was insufficient on its own to prevent large numbers of the British motoring public falling out of love with the overall build-quality of BMC products. The troubles and later demise of the parent company which variously called itself BMC, BMH, BL and ultimately, Rover, were not of Moulton's making.

Moulton's focus returned to his cycle, cited for its "sparse beauty" by the architect Norman Foster, as representing "the greatest work of 20th-century British design" and for being "synonymous with the Mini, the mini-skirt - the mini bike". For his engineering innovations he was awarded the CBE, a number of honorary doctorates and was recognised widely by the engineering profession for his distinguished and independent-minded service. Although he sold his company to Raleigh at a time of financial difficulty, he later bought back the patents.

Moulton lived quietly in Wiltshire, suggesting that he had remained unmarried because of his devotion both to engineering and to the Jacobean family home. He died, aged 92 in 2012, but the Moulton Bicycle Company continues today with a very loyal customer base.



Above: Mercédès Jellinek (source: <https://commons.wikimedia.org/wiki/File:Wimbit-MercedesJellinek.jpg?uselang=en-gb>)

### **Mercédès Adrienne Ramona Manuela Jellinek**

She was a young lady whose impact on vehicles is known the world over. "Who?" you might ask. "I've never heard of Ms Jellinek .... what on earth does she have to do with cars?"

Let's start with her father, the Austrian entrepreneur, Émil Jellinek. Born into a wealthy family in Leipzig, after a variety of roles in insurance he became a successful Daimler dealer in France, selling cars to the aristocracy who wintered on the French Riviera. He was also to become Austrian Consul-General in Nice and an influential diplomat and businessman. With some racing success to his credit, he rose to become a

board member of the fledgling Daimler (DMG) company in 1900. Part of his brief was to specify from renowned engine designers Gottlieb Daimler and Wilhelm Maybach a new engine for a sports Daimler. As a proud family man, he had two daughters but had lost his wife in childbirth. Being superstitious, he believed that, despite his wife's death, his beloved elder daughter was still a blessing and that her name, the Spanish for 'gifts' (*Mercédès*), was apt. So Émil insisted that the new 35hp engine be named Daimler-Mercedes after his 10 year-old first daughter – as he also did with all his houses and his yacht. It is not known what his younger daughter thought of this habit!

The new engine created, Jellinek decreed what the rest of the cars in the series would be like – long wheelbase, low centre of gravity, Bosch ignition system – as well as a new 8hp Daimler. The cars would be known as Daimler-Mercedes. In 1926 Daimler merged with Benz to become Daimler-Benz, but called their cars Mercedes-Benz (without the accents). The three-pronged star logo of Daimler-Benz represented the three different transport modes the company manufactured – land, sea and air. The engineering genius of Benz, Daimler and Maybach became supplanted by the name of one of the dealer's daughters – just as Rolls-Royce is often shortened to the name of the flamboyant, aristocrat salesman Rolls rather than the engineer and designer, Royce.

For Miss Mercédès Jellinek, life did not proceed with the 'gifts' her father had anticipated. From a childhood of luxury in grand houses and aboard her father's yacht, in 1900 she married a Baron (much to delight of the aristocratic pretensions of her father). But she left him for an impoverished artist and was reduced from a flamboyant life in Vienna to begging for food on the streets in 1918 (the same year that Emil died). Dying in 1929, aged just 39 from bone cancer, she was buried close to her Hungarian-born grandfather, the former Chief Rabbi of Vienna – from which point emerges a certain irony. In the 1930s and 1940s open-topped Mercedes were the favourite transport of Nazi leaders and politicians. Did Hitler realise that he was parading around in a car named a generation before after the grand-daughter of a Rabbi?

### **Mary Anderson**

Asked to name manufacturers of windscreen wiper blades, most transport enthusiasts would probably be hard-pushed to go beyond Bosch or Trico. Certainly Anderson would be unheard of – but as with many inventions, the inventor or person to whom the patent is granted does not feature widely. So, how did Mary Anderson come to be associated with a device which is now a standard safety feature on most forms of road transport, trains, ships and aircraft?

Born in Alabama in 1866, as a young woman in 1902, she visited New York City. Here she experienced weather not seen in Alabama – snow. From her streetcar she noted that the driver regularly had to dismount the car to clean the screen so that he could continue safely. What, she wondered, could help the



*Above: Mary Anderson (source: WikiCommons courtesy of Birmingham Public Library, Alabama.)*

driver see clearly without having to dismount?

Returning to Alabama, she started to sketch out ideas for a windscreen cleaning device. Mary's design featured a rubber blade attached to a swinging arm, with a spindle through the screen connecting the blade to an internal handle. Once the description was written up, she applied for a patent. For her, a key element was that it should be a temporary, removable device which could be stored away in fine weather and thereby not mar the visual appearance of the car. Mary moved quickly – by 18 June 1903, the patent was filed and by 10 November the same year, the US Patent Office had awarded her patent number 743,801 for the Window Cleaning Device – a patent which would endure until 1920.

Then, of course, started the hard slog of trying to interest manufacturers in the device. Neither automobile manufacturers, streetcar manufacturers nor component manufacturers seemed interested. After all, it didn't rain every day, some states had minimal rainfall and, of course, safety equipment in vehicles of any type was to be fairly minimal for decades. Many

open-topped cars also still lacked windscreens and were used only in fine weather.



Above: An example of car windscreen-wipers (source: [https://commons.wikimedia.org/wiki/File:Scheibenwischer\\_eines\\_IFA,\\_Bj.\\_1954\\_\(2008-07-12\).jpg](https://commons.wikimedia.org/wiki/File:Scheibenwischer_eines_IFA,_Bj._1954_(2008-07-12).jpg))

The letter to Mary Anderson dated 20 June 1906 from patent agents Messrs Dinning and Eckenstein is notable for three key reasons. Firstly, it reminds us that processing any patent is a lengthy affair – three years after submitting her patent, Mary is still doggedly pursuing its commercialisation. This is all the more remarkable given that she is a spinster in a male-dominated world – with no males arguing on her behalf. Secondly, the address of the patent agents is Montreal in Canada, illustrating that an agent outside the USA has examined the patent. Thirdly, the reasons for rejection of the patent are cited as “we do not consider it to be of such commercial value as would warrant our undertaking its sale.” Now that may have been the initial response of a manufacturer selling into the arid conditions of California, Utah or Arizona – but could not an agent based in cold, wet and snowy Montreal see beyond this? Detroit, on the US side of the Great Lakes, was becoming the centre for automotive manufacturers yet was hardly noted for its balmy climate.

Mary continued her battle but to no avail. She never received any money for her invention, although she did live to see wipers fitted on cars. In 1922, just two years after Mary’s patent expired, the flagship General Motors marque Cadillac incorporated windscreen wipers as standard equipment.

Throughout her life Mary continued her entrepreneurial activities until her death in 1953: building and managing an apartment building in Birmingham, Alabama, as well as operating a cattle ranch and vineyard in Fresno, California. In 2011, she received the accolade of being inducted into the US National Inventors Hall of Fame.

#### Further references

#### Alex Moulton:

- <http://www.moultonbicycles.co.uk/heritage.html> contains references to books on Moulton’s inventions and developments.
- Norman Foster quoted in BBC obituary (10 December 2012) of Moulton: <http://www.bbc.co.uk/news/uk-england-somerset-20667842>
- A fascinating interview with Moulton (*Alex Moulton: A Lifetime in Engineering*) by John Pinkerton was published as a book and is available on Amazon. However, the 90 minute filmed interview is also available, courtesy of the Veteran Cycle Club, free on YouTube (<https://www.youtube.com/watch?v=JsqKsHvGSSs>). Despite being in his late 80s, Moulton outlines in lively detail his dedication to restoring the house into which he was born and his engineering developments in a variety of fields: motoring, cycling, aeronautical and steam.

#### Mercédès Jellinek:

- Adler D. (2006). *Daimler & Benz: The Complete History: The Birth and Evolution of the Mercedes-Benz*. New York: William Morrow/HarperCollins.
- Butterfield L. (2005). *Enduring Passion: The Story of the Mercedes-Benz Brand*. Hoboken, NJ: John Wiley & Sons.
- For an online Daimler-Benz company history overview, see: <https://www.mercedes-benz.com/en/mercedes-benz/classic/history/corporate-history/>

#### Mary Anderson:

Mary was a private person and there are few books about her (or any copyright-free images), other than:

- Macdonald Anne L. (1992) *Feminine Ingenuity: How Women Inventors Changed America*. NYC: Ballantine.

However, plenty of online information about her patent exists on the US public websites below:

- <http://www.npr.org/2017/07/25/536835744/alabama-woman-stuck-in-nyc-traffic-in-1902-invented-the-windshield-wiper>

Mary’s obituary from digital collections of Birmingham Public Library (Alabama):

- <http://bplonline.cdmhost.com/digital/collection/p4017coll6/id/118>

The patent application itself can viewed at:

- <https://patentimages.storage.googleapis.com/25/46/86/ce9bd7d1d6a2bd/US743801.pdf>

The letter of patent rejection by Messrs. Dinning & Eckenstein:

- <https://patentimages.storage.googleapis.com/25/46/86/ce9bd7d1d6a2bd/US743801.pdf>
- Induction into US National Inventors Hall of Fame: <http://www.invent.org/honor/inductees/inductee-detail/?IID=422>

## Evaluating the economic and environmental aspects of historic transport

Most of the academic literature on assessing economic aspects of transport, and its environmental impacts, is concerned with current systems and future proposals – for example, evaluating the likely economic benefits of new infrastructure (and *ex-post* evaluation of that recently built). Environmental assessment – for example, of noise or pollution – is likewise focussed on the current system. Transport heritage is usually seen as an almost wholly separate activity, not susceptible to such analysis.

However, two recent studies bridge this gap. In the September 2017 issue of 'Transport Reviews' (Vol 37, no 5) a paper by Yashar Araghi, Bert van Wee and Maarten Kroesen of the Delft Technical University, 'Historic vehicles: an overview from a transport policy perspective' examines the role of such vehicles (defined as all of over 30 years of age, which may include some still in regular use as well as preserved vehicles). On this definition, some 805,000 vehicles (90% of which were cars or motorbikes) in the UK in 2010 would be classified as 'historic', albeit only 2.27% of the total fleet. Such vehicles often have higher emission and noise levels than modern equivalents, and also potentially lower safety. However, the authors suggest these issues are marginal, given the very low average mileages incurred and cautious driving. They also note that positive social effects may emerge from vehicle preservation, both to their owners and wider society.

In New Zealand, the government Transport Agency (NZTA) commissioned a study from Landcare Research to provide framework for assessing the economic values of historic and cultural heritage as part of transport projects. A summary appears in the 'NZTA Research' bulletin for March 2017, and the full report may be downloaded from [www.nzta.govt.nz/resources/research/report/601](http://www.nzta.govt.nz/resources/research/report/601). It covers a wider range than transport infrastructure as such, and includes the impact of new transport projects on other types of heritage such as archaeological remains. Aspects such as alternative uses for historic structures, and assigning monetary values where possible are considered. **Peter White**

## Reviews

**This Ancient Road: London to Holyhead, A Journey Through Time** Andrew Hudson. Red Door Publishing. ISBN 978-1-910453-45-2, £10.99. Paperback, 217pp with black & white illustrations. Available for purchase via Amazon.

In a broadly similar style to Tom Fort's book on the A303 (as previously reviewed in this Journal, issue no 71) this volume combines a history of the road – in this

case following the A5 – with other reminiscences and links to the wider history of the region traversed. From the starting point at Marble Arch to Holyhead the route followed includes St Albans, Watford Gap, the West Midlands, Shrewsbury and the section through north Wales. Much of the book, especially the earlier part, is a broad slice of history from Roman times onward, drawing on familiar sources such as the Domesday Book, Defoe, Leland, Fiennes, and Ogilby. Transport issues as such generally receive less attention, apart from the rightful focus on the work of Thomas Telford in the early nineteenth century and the related role of turnpikes. The short-lived period when fast mail coaches traversed the route prior to swift domination by rail, is well recorded.

However, the extent to which this book contains original in-depth research as distinct from bringing together a wide range of sources in an informative manner, is uncertain. The quality of black and white illustrations could have been improved in some cases where poor contrast is found (e.g. figures 8, 10 and 47), which are difficult for the reader to discern. Conversions to current monetary values are provided when historic data are quoted (although this involves very large multiples in many instances), but that for Telford's overall works at £700,000 in the early nineteenth century appears to be somewhat overstated in the text at £60 billion, the figure in the corresponding footnote being about £57 million. **Peter White**

**As the Crows Fly: The Story of Crow Carrying Company Ltd. 1920-1985.** Clinton York. Published by the author, 2017, 106pp, illustrated. ISBN 978-1540732156. Can be ordered through booksellers using ISBN.

The back cover proclaims this book to be "The history and the drivers and more", which is an indication of the author's different approach to a haulage firm's history. There are illustrated profiles of some drivers, including the author's father, two generations being a recurring feature of staffing, from to management to drivers. Vehicle listing indicates the significance of Scammell motive power. The numerous illustrations, some clearer than others, and some reproductions of advertisements, show the development of the fleet and, its operation, and the predominance of articulated tanker traffic. As well as bulk liquids of various kinds, for which dedicated tankers were provided, the transport of footwear from Northampton was a regular traffic. It is unfortunate that, as with many independently-produced books, inadequate proof-reading interferes with the reader's progress through an interesting history. **Richard Storey**

*This company is presumably the same as that described in the supplement to our November 2012 issue – Ed*



**The Light Brigade: Vans, pick-ups & light commercials.** Kelsey Publishing Ltd., 2017, 114pp, illustrated, £7.95.

This is the 13th issue in the bookazine 'Road Haulage Archive' series, and as usual good use is made of manufacturers' publicity in the form of brochures and photographs, well interpreted by the editor, Malcolm Bates. "Light commercials" means that some products of manufacturers such as Albion and Thornycroft are featured and such models as the 3-ton Commer and the Ford Thames. Subject chapters include three-wheelers, specials, four-wheel drive and emergency services vehicles. As so often, closer proof-reading would have been welcome. **Richard Storey**

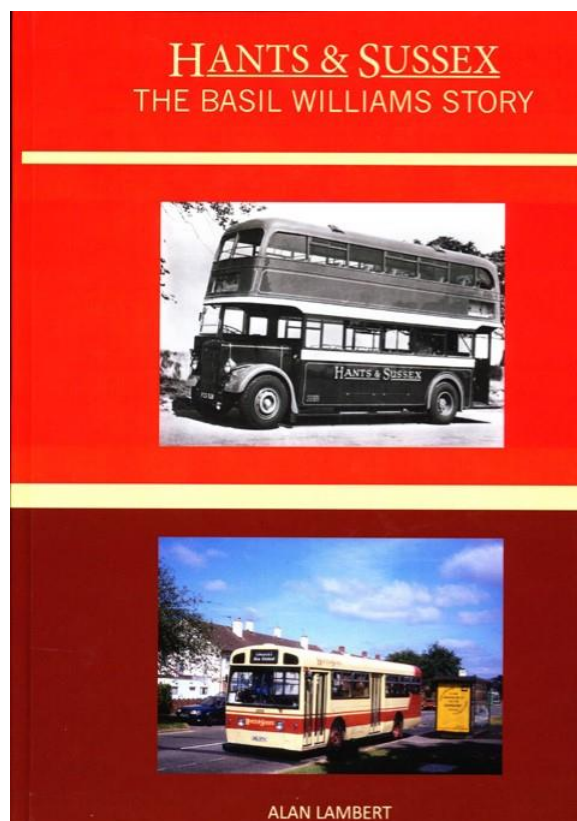
**Hants & Sussex: the Basil Williams Story** Alan Lambert, Bowden Publishing, 2017. ISBN 978 09572 6855 5. £40, with free postage and packing. Available from Julian Bowden, 21 Forde Avenue, Bromley, Kent, BR1 3EU

Anyone who has seen Alan Lambert's slim 1983 paperback on Hants & Sussex will immediately be struck by the vast quantity of new material the author has uncovered over the following 30+ years, giving rise in 2017 to a substantial 228-page hardback.

Basil Williams (1914-99) applied, unsuccessfully, for his first bus operating licence in 1934, at the age of 20. The last of his operations were sold to Southampton City Transport in 1996. The story of Basil Williams' operations began in a way that continued throughout his businesses' existence: an unsuccessful licence application, followed by the establishment a company jointly with a pre-existing and potentially competitive undertaking, changed membership of the joint business, 'private hire' work (not needing a Road Service Licence) that was perilously close to being a scheduled service and the eventual commencement of a correctly licensed stage carriage service between Emsworth and Thorney Island, Hampshire, in 1939.

The intricate structure of Williams' empire is painstakingly set out, with the resultant text eminently readable; almost a business thriller in places. The author presents the complex story of companies, mergers, takeovers, insolvencies and reincarnations in a masterly way. Many of the individuals concerned pop up again and again in different roles, not least Basil Williams himself as director of numerous companies as well as the personal owner of his own buses and coaches. Vehicles were hired, sold and loaned between companies to operate newly created or acquired services, or to ensure work for vehicles whose previous workload had evaporated. The wider Williams family involvement is also spelled out, with Basil's parents, wife and son all holding directorships at companies within the group at one time or another.

Fourteen of the book's nineteen chapters are devoted to the stories of individual companies that were part of the Williams portfolio, although these headings only partially reveal the web of ownership and relationships that are outlined in the text. For example, in the 1970s there was a short-lived liaison, involving the formation of a separate company, between Glider & Blue Motor Services and the London-based R & S Travel. While most of Williams' business took place in the counties implied by the name Hants & Sussex, there were also links elsewhere, for example through the acquisition of Plymouth-based Blake's (Continental) Tours in 1952. As with many of Williams' operations, there was military influence here. The original Thorney Island service's rationale was to carry RAF personnel to and from a new base being constructed there. The transport of Royal Navy personnel between Portsmouth and Plymouth underpinned the Portsmouth-Plymouth connection. The reliance on buses for local travel, even in small towns and rural areas before mass car ownership, typically up to the 1950s, is made clear by the nature of many of the services operated.



*The cover of the Hants & Sussex book. The upper illustration shows FCG528, a Northern Counties-bodied Leyland Titan PD1, acquired new in 1947 by Basil Williams for £3833, which ran in his personal fleet until 1955, then transferred to BS Williams Ltd. Withdrawn 1960. The lower illustration shows AML97H, an AEC Swift/Park Royal, new to London Transport as SMS97 in 1970. Operated by Townsend Ferries at some stage, then owned by Hants & Sussex, probably until the company closed in 1996. Since 2014 owned by London Bus Retro Hire, Longfield Kent, preserved in its original London Transport livery.*



The book is very well presented on high quality paper and is amply illustrated with clearly-printed photographs of vehicles, timetables, tickets, advertisements and other company documents. Appendices list the routes and services operated and show a selection of destination blinds. There is a fleet summary, but not a full fleet list (despite there being one in the 1983 paperback), readers being referred to one published in 1986 by the PSV Circle – so no listing is available of the most recent fleet. There is one map, depicting the route network up to 1954, operator by operator. The attractive maroon, cream and red cover replicates a principal Hants & Sussex's livery and house style.

Hants & Sussex was always meticulous in following 'big company' practices in vehicle liveries and signwriting, the presentation of route and destination information and timetable production. Its vehicle policy was varied in the extreme, with single and double-deckers, buses and coaches, new and second-hand vehicles all featuring, by numerous different manufacturers. Sometimes seemingly unpromising vehicles stayed in the fleet for many years, whilst on other occasions new vehicles were quickly sold on; maybe due to changed demand, or to a need to realise some ready cash. A recurrent feature was the acquisition of former London Transport buses, including AEC double-deckers (STL), and single-decker Guy (GS) and AECs (Merlin, Swift).

The book concentrates on service developments throughout the six decades of Hants & Sussex's existence. There is comprehensive information about the companies within the group and their (un)profitability, but summaries for the whole group, perhaps as tables and diagrams, would make it easier to see the complete picture. It would also be interesting to know more about Basil Williams the man, as distinct from his business record: childhood, upbringing, outside interests, family, etc. John Chacksfield's biographies of the railway engineers Sir Henry Fowler and Sir William Stanier (Oakwood Press, 2000 and 2004) are good role models in this respect, leaving readers feeling they get to know the subjects of the biographies as rounded individuals.

A bibliography would be another valuable addition. Your reviewer was particularly intrigued by references in the text to a book entitled 'We had a bus', by Basil Williams' wife Irene. Apparently privately published for limited circulation, no copy has yet come to light. Although the Basil Williams story is well structured, an index would be useful, to enable the reader more easily to trace, for example, all the repeated appearances of particular individuals who recur in the saga. Compiling an index is not such a daunting task in the word-search-enabled digital era as it was previously, so authors need not be deterred from producing one.

What has clearly been a labour of love has resulted in an informative, revealing and entertaining company history - or rather set of company histories. This is an important work, describing the evolution and eventual demise of a portfolio of businesses that lasted from before World War 2 until a decade after deregulation; and remained in the same ownership throughout. We are left with the impression of the businesses always being on the brink of crises, yet surviving against the odds through times of war, depression, austerity, road service licensing, the era of public ownership, mushrooming car ownership and changing social habits. Yet, despite this proximity to disaster, we also perceive Basil Williams to have lived comfortably, with the financial resources to make new acquisitions on a regular basis, to own Rolls-Royces and to live in a substantial mansion.

I heartily commend Alan Lambert's dedication and scholarship and recommend this work to anyone wanting to know more about how a privately-owned rural bus business survived as an influential concern for six eventful decades. **Martin Higginson**

**A Most Deliberate Swindle.** Mick Hamer. Red Door Books. ISBN 978-1-910453-42-1 Price £10.99. Available for purchase via Amazon.

Looking at the front cover of this book, my immediate reaction as this was a story of some dirty events that had taken place many years ago. Then, the highlighted photo of an Electrobus operating in central London, decreed that further reading was necessary.

The Electrobus story has been told many times, especially with regard to the vehicles themselves, the technical specification, the build process, the operation (considering this was in the early days of commercial battery electric vehicle propulsion), and the difficulties when in actual use. On the first reading of the book, I was amazed at the depth of research Mr. Hamer had gone into, and for me personally I had never read a story about the people (directors, investors, senior management etcetera) behind a commercial vehicle product (in this case passenger vehicles).

We must remember that during the early years of the first decade of the twentieth century, conditions for vehicular use in London were poor, but did nevertheless apply to all motor vehicles. Such as the roads themselves, often cobbled, the volume of traffic (all sorts), the low average road speeds and mess from thousands of horses doing their daily work. The problem confronting heavy goods vehicles, was compounded by the solid rubber tyres on which they ran, which did not suppress vibration from the road to the operating parts of the vehicle. So it was that at this moment the Electrobus project was launched.

Entry of the Electrobus onto the streets of London was really a local event (apart from the Brighton activities later), so the story has no national interest. However, these vehicles were a new concept and the future did look promising. Mr. Hamer gives the reader a more in-depth history of the company, which is rarely detailed in histories of other road vehicle manufacturers. It is sad to read of the greed, corruption, theft, and dishonesty of the individuals who set up the company, and who continued their activities leading to termination of the Electrobus project.

For the die-hard commercial vehicle historian, this book may not provide all the details they seek, but Mr. Hamer's superb research certainly completes the story of this one commercial enterprise. Even more remarkable, that the subject covers battery electric commercial vehicles in their earliest stages of development, a method of propulsion rarely covered in motoring publications up to the present time. As Michael Palin's comment on the front cover of the book says, 'A great tale expertly told'. **Keith Roberts**

**Trolleybus Twilight** Jim Blake. 112pp, hardback. 200 illustrations, mostly black and white. ISBN 978 147386 1466. £19.99. Pen & Sword Transport, 47 Church Street, Barnsley, South Yorks, S70 2AS.

This A4-sized book provides an illustrated review of British trolleybus systems in the 1960s, as they successively ceased operation, leading to the final closure in Bradford in 1972. Networks depicted – often with atmospheric street scenes – include London (along with personal reminiscences), Nottingham, Maidstone, Derby, Reading, Bournemouth and Hull (many familiar to this reviewer). It is noteworthy that many of the more modern vehicles, some delivered in early 1960s, ran for only a few years with their original owners, although in some cases seeing further life with remaining systems such as Walsall or Bradford. The longest-lived vehicles may have been the ex-London vehicles operated in Spain, shown in their new home. A concluding section lists all the systems in Britain by opening and closing dates.

The quality of reproduction is generally good, although whether all the views merit an entire half-page might be questioned. Some more analytical text might also have been useful – for example was the decline of the trolleybus simply a result of falling demand for all types of bus service as car ownership rose, or might it have been affected by crude costing systems, using network averages per bus-mile which ignored the fact that serving high-density routes may have incurred higher costs? **Peter White**

**The Classic Car Adventure: Driving Through History on The Road To Nostalgia.** Lance Cole. Pen & Sword Books. Barnsley, S. Yorkshire S70 2AS. ISBN 978 1 47389 641 3. 216pp, extensively illustrated, mostly in colour. £19.99 hardback.

Focusing on the design and engineering of cars built between the late 1920s and the 1970s, this book comprises some new and also previously published (but updated) sections, gathered into a single volume. It is a subjective view of design classics, from the informed perspective of an author with a pedigree in automotive design as well as motoring journalism.

Consequently, the marques featured as icons are selective – including Bugatti, Citroen, Lancia, Porsche, Riley and Saab. Lance Cole outlines the drift into corporate design and manufacture, thereby diluting the purity of design and engineering prowess of individuals into the grasp of accountants.

Cole guides us meticulously through many individual engineering achievements, arguing that, ultimately, there were "great cars eclipsed by circumstances and perceived opinions". Nowhere is this more true than the 1970s rotary-engined NSU Ro80, whose sleek design would still grace a contemporary showroom; whose handling and performance would shame many modern cars, but which was let down by premature wear on its engine rotor tips. Indeed, NSU's industrial design taken to an exquisite level – 'The Future through Design' – might be a suitable motif for this book. The later chapter on designer heroes is fascinating, drawing on Italian design excellence's blend of couture and technicality, as well as featuring some lesser-known designers. Beyond Italy, Cole's designer icons include, quite rightly, the individualist Sydney Allard, plus Ogle's Tom Karen (Scimitar GTE) and BL's David Bache (Rover SD1) and Harris Mann (original Allegro, not the dumbed-down production version).

An intriguing if somewhat laboured chapter draws links between the ellipsoid shapes of Saab, Jaguar and Bristol cars and the Spitfire aircraft's wings. Indeed, aerodynamics figure prominently, symbolised by the repeated dust-jacket images of an early Saab. Conversely, chapters 13-17 contain no images, so we are left pondering the real impact on design of the marques featured therein.

There are some weaknesses – proof-reading is patchy and the melding of new and old articles is highlighted where successive sentences or pages refer to a 'mini-Aston Martin', the 'Citroen GSA from Mars', or give two accounts within pages of the same meeting with racing driver Innes Ireland.

Nevertheless, this is a fascinating, well-illustrated book, reminding us how car design has progressed – not always for the better – from the smell of old Saabs (it's the glue, says Cole) and the visual and aural ecstasy gained from the design purity of the 1973 Porsche 911 to today's often bloated, electronics-laden machines. **Rod Ashley**

# Road Safety Campaigns: different approaches

## Amy Graham

The safe use of roads has been highlighted as an interesting topic for discussion from a variety of chance discoveries and observations in the last year or so. Below, I share some of my initial findings.

### Educating through play

Preparing a piece of research into 1950s Kingston, a former volunteer found a most delightful video available to view via British Pathé's Youtube Channel (search 'Kingston Garden 1952' or go to [www.youtube.com/watch?v=R4tMs0GiejI](http://www.youtube.com/watch?v=R4tMs0GiejI)). It features a private garden in Kingston which has been made into a miniature roadway, complete with crossing points, stop signs and a scaled down Kingston Bridge. It was designed for children to learn about road safety hazards from a motorist's perspective and financed completely by a private individual, who hoped to reduce road casualty rates. At one point the commentator says: 'Maybe it's a pity they can't bring some grown up drivers to practice here too, then we'd really get somewhere!'. The video features vintage pedal cars and views of the 500ft of roadway which had been accurately scaled down. An interesting comment from one of my customers highlighted that the drivers were all boys, whilst girls were on pedal cycles and on foot.

### Memorial

I came across this memorial on a recent trip to Liverpool, in St Johns Gardens. It is a sculpture of a crossing pylon surrounded by discarded shoes, a teddy bear, a doll, a pair of glasses, a watch, a walking stick and a bag. It was erected by Road Peace with the City of Liverpool and Merseyside Police and made by Tom Murphy, a prolific sculptor in the North-West. The inscription reads 'Injured or killed, lives unfulfilled... The reality of road crashes'.



Road Peace is a registered charity which has been campaigning at national level for the rights of road crash victims since 1992. Their website states that 5 people die on UK roads each day and that 1 in 75 of us will be bereaved through a road crash. They believe that generally road crashes are perceived as merely 'unfortunate accidents, instead of preventable collisions' and that 'society tolerates road death and disability as an acceptable price to pay for increased motorisation and convenience'. They say that road deaths are not normal deaths - they are sudden, violent, unexpected and premature. I know of two people in my own year at high school who died in road collisions, one at 15 years old and another when he was 19. These statistics certainly inspire further thought about how much we are willing to pay for increased mobility

### The Role of Government

The Road Safety division of the Department for Transport is responsible for many aspects of road safety. Their stated aim is the prevention of death and serious injury. They do this through a number of means: developing driver skills, knowledge and attitude towards safety, but also through licensing of drivers and vehicles, the enacting of law and developing the Highway Code. Their most prominent campaign is called 'Think!' and many of us will recall seeing the shocking imagery that TV advertisements employ.

One possible avenue for researching more into the history of Road Safety in a UK context would be to read official records held at the National Archives. Reference



MT92 is the Registered files of the Road Safety Division of the DoT, dating from 1931 to 1985. Biographical notes associated with those records inform us that the Ministry of Transport was founded in 1919 with a Roads Department. In 1937, the Roads Department was further divided into two Highways Divisions, a Licensing Division and a Traffic and Safety Division. In 1940 the last division was absorbed into a single Highways Administration Division, but in 1946 a separate Traffic Safety Division was again formed. This division was in turn divided in 1955 into Road Safety and Road Traffic Divisions. The latter was dissolved in 1961 and its functions distributed among a number of Highways Divisions and the Road Safety Division. In 1966 the Road Safety Division was split into two divisions, the first dealing with traffic and the second, designated the Road Safety General Division, with the road safety programme and legislation, particularly in relation to education and training. A third Road Safety (Local) Division was added later to deal with the local application of road safety publicity and training. The link between traffic and road safety has clearly been a problematic one, indicating a difficulty in balancing the needs for having vehicles on roads (collective use and responsibility in general terms) versus the safety of particular situations, vehicles and individual road users.

### Personal Remembrances

Preparing this article has brought to mind my childhood obsession which my 'Tufty Sticker', the absence of which apparently caused me quite a lot of trauma as a pre-schooler. Tufty, full name Tufty Fluffytail, is the protagonist of the Green Cross Code campaign. He is a red squirrel, created in 1953 to provide clear, simple safety messages to children. I loved him, and remembering receiving Tufty stickers and books in the late 1980s/early 1990s. The Green Cross Code campaign was a brand set up in 1970 by the National Road Safety Committee. Its aim is to promote awareness of pedestrian road safety and the 2005 Code reads:

1. *THINK!* Find the safest place to cross, then stop.
2. *STOP!* Stand on the pavement near the [kerb](#).
3. *USE YOUR EYES AND EARS!* Look all around for traffic, and listen.
4. *WAIT UNTIL IT'S SAFE TO CROSS!* If traffic is coming, let it pass.
5. *LOOK AND LISTEN!* When it's safe, walk straight across the road.
6. *ARRIVE ALIVE!* Keep looking and listening

### Closing remarks

Improving road safety has been the preoccupation of government, charities, lobbying groups, and individuals. I have found a number of avenues to

explore on the topic. There is such a rich amount of information available online and it certainly merits more sustained research from a historical perspective. It also isn't a topic that I have yet seen presented in a transport museum or heritage environment. A quick library search indicates that a general history of road safety is yet to be written.

When we research and celebrate roads and road transport history, we must also bear in mind the cost of our historical and present mobility. This is environmental, economic and social. As road safety reminds us, it is also human and deeply personal. I dedicate this piece to my two school friends who died on the road.

Please do email me at [213bus@gmail.com](mailto:213bus@gmail.com) if you have further leads or comments on this piece.

### Additional comments from the Editor:

A 'Model Traffic Area' still in use may be found at Lordship Lane Recreation Ground in Tottenham, north east London (accessible by bus services W4, 123 and 243). A fairly extensive traffic layout, including road signs and junctions, is provided, which children can follow using bikes, tricycles and pedal-wheel toy cars. A commemorative plaque erected by 'Friends of Lordship Rec' records that it was opened in 1938 by the then Minister of Transport, Leslie Burgin. Some 800 children were given tickets for the event, which is also available on the Pathé News website. In the early days bikes and model cars were available for hire. After closure during World War Two, the facility was reopened by Burgin's successor, the Rt Hon A. Barnes, on 17th July 1947 'with great ceremony'. The area was restored in 2012, retaining the original layout, but also with cycle lanes, and continues to be popular with child cyclists.

*A view taken from the commemorative plaque at Lordship Lane, showing child cars and a 'halt' sign in the early years*



Two views of the current model traffic area, as restored in 2012, showing the addition of a cycle lane, and a mini-roundabout with appropriate signage (Bessie White)



The recent DfT publication 'Reported road casualties in Great Britain: 2016 annual report' (available at <https://www.gov.uk/government/collections/road-safety-statistics>) indicates current trends. From 3,172

fatalities to all types for road user in 2006 this figure has dropped to about 1,750 in recent years, albeit growing slightly (by 4%) between 2015 and 2016. Going into earlier decades, even higher figures, approaching 8,000 per annum, were observed, peaking at 7,985 in 1966 (when total population and traffic levels were far lower). British data also compare favourably with almost all other countries, only Norway, Sweden and Switzerland showing a similar ratio of fatalities to population. However, these findings should not be any reason for complacency. The DfT data indicate that pedestrians form a disproportionate number for road fatalities (448, or 25% of the total, in 2016) relative to the volume of travel produced. Taking all levels of casualty severity, children (i.e. those aged 0-15) represented 26% of all pedestrian casualties.

## From the Archives

*The original text from which that below has been drawn, and the advertisements for the vans, is taken from issue 11, August 1996.*

### THE TUNNEL WAGON: Early road-rail Pantechnicons

This piece was compiled by Richard Storey, drawing on an article by Allan Brigham in Local History Magazine, no 54, March – April 1996, based on a nineteenth century removals wagon, rediscovered in a yard at Leeds, and which had previously had a sixty-year working life in Cambridge. It had begun life in the 1870s and was used until the start of World War Two. It was hauled by horses (two abreast) and for destinations further afield was specially designed to be transported on flat railway wagons. The body structure fitted the railway loading gauge, and was capable of passing through all the tunnels it might encounter.

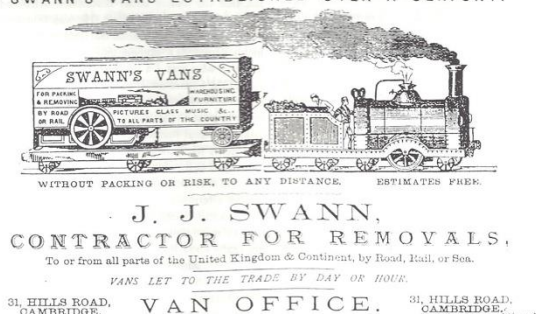
When the last member of the Bolton family retired from business in 1954, the pantechnicon was acquired by a firm in Leeds which still used horse-drawn vehicles. The van was subsequently rediscovered by Allan Brigham, a Cambridge historian and tour director. The vehicle was shown to date from 1877, the axles bearing the inscription "Kirkstall Forge Leeds August 1877".

The illustration (overleaf) shows two advertisements from the Spalding Cambridge Almanac of 1879. It is clear that Swanns and Boltons were in competition with each other. Artistic licence (by the same artist?) was taken with the railway locomotive and wagon, but the drawing of the tunnel wagon was reasonably accurate. A contemporary photograph revealed a slightly different form of wording on Bolton's van: "Furniture Removals by Road or Rail. Bolton Bros Furniture Vans, 18 Union Road, Cambridge. To any Distance. No Packing Required. No Risk of Change of Carriage".



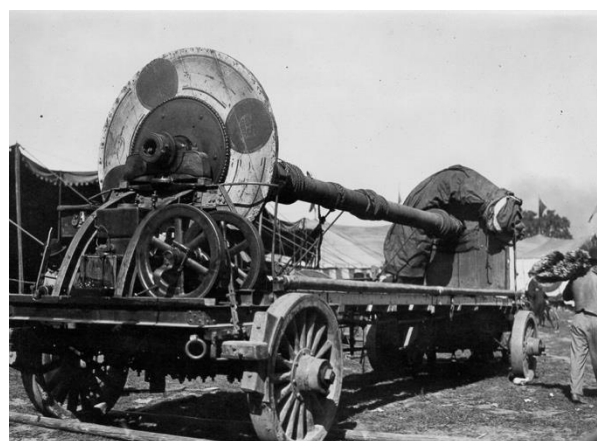


SWANN'S VANS ESTABLISHED OVER A CENTURY.



The design of the wagon was quite sophisticated, the forward steering axle being equipped with small diameter wheels to allow for as low a floor level as possible. When placed on the railway flat wagon, the van was lowered and made more stable by the release of the tension of springs. In addition, there must have been some form of securing wires or chains.

A parallel may be drawn with the 'Tent-wheel holder'. As reported in an earlier issue, John Ashley has undertaken extensive research on Buffalo Bill's Wild West show. This travelled between towns on three trains, with a total length of over three quarters of a mile, plus an advanced party in a three coach train. The horse drawn vehicles used to transport the show from the railhead to the showground were loaded onto flat-bed rail wagons. The Wild West had three sets of horses with their handlers – a team loading and unloading the train, another hauling between railhead and showground, and the show horses themselves. The road vehicle shown opposed carried some of the 23,000 square yards of canvas used for the stadium.



## Omar Arnold Bartle

A quick internet search produced further information on this Bedfordshire operator, recalled in the Archives item in our August issue.

As mentioned by Roger Atkinson, his office at 7 Market Square, Pottton, was part of an imposing structure. A site hosted by Bedford Borough Council indicates that this building is covered in the 'Bedfordshire Historic Environment Record'. Although seemingly of nineteenth century construction from the exterior brickwork, it dates from about a century earlier. A valuer visiting the building under the provisions of the Rating and Valuation Act 1925 found that it was owned by Omar Arnold Bartle, and divided into three parts, one being leased by Lloyds Bank and another by a shop. Omar Bartle's house comprised the middle part of the building, described by the valuer as a "Very good House, very nice inside". Kelly's Directory for 1931 lists O.A. Bartle and Company as "motor engineers, hire service, any make of car supplied. Gilford saloon buses for hire".

A site hosted by the Pottton History Society records local weddings from newspaper cuttings, indicating that Omar Bartle married Nellie Kitchener at St Mary's Church in 1902. Issue no 6 (undated) of the Society's newsletter includes a short article on Bartle's operations by George Howe. These began in July 1925 with a 14-seater Chevrolet, followed by two similar buses in June 1926 and May 1927. By 1936, when a photograph of the fleet in Pottton Market Square was taken, about 17 buses were operated. Between 1925 and 26 July 1953, when the operation was sold to United Counties, about 37 buses and coaches had been purchased in total. Chassis makes operated included Chevrolet, Gilford, Dennis, and Guy. All vehicles were single deck, apart from two Guy Arab double-deckers built in 1945 and 1949. The internet search also produced references in The National Archives to BTC documents from the period to 1953, presumably linked with the sale to United Counties.



The Gamlingay History website contains recollections by Mr N.J.R.Empson, including that of "The outings which Nellie organised to such exotic places as Clacton and Hunstanton after the War c1946/7, using Omar Bartle's or Safford's Coaches".

Roger Atkinson points out that further reference is made to Omar Bartle, in his autobiography 'Blackout, Austerity and Pride', as reviewed in this Journal, on pages 148/149. He noted that he could think of no other bus operator in Britain named Omar, and speculated that Mr Bartle must have been born around 1880 (which would be consistent with the date of his wedding, above), when the *Rubaiyyat of Omar Khayyam*, in translation by Edward Fitzgerald, was in the best-seller lists of the period. His book also illustrates two of Bartle's tickets, of the Bell Punch 'Geographical' style, identifying points served by his buses such as Gamlinghay, Wrestlingworth and Potton.

#### **Correction**

There was a misprint in the article by John Edser on rail freight in the August issue: the figure for motorway mileage in 1970 (table 1, page 3) should have read 635, not 6351.

### **Scope of the Association**

The management committee meeting held at the Kithead Trust on 29 April confirmed the scope of the Association, as also shown on the website, as:

"We cover the whole range of transport history from the earliest times to the current age.....packhorses, carters, street furniture, economics, social trends, the effects of gender upon transport, personalities in road transport, a avenues of research, regulation by governments of local authorities, manufacturers and bodybuilders, cycling, sources of transport history, the preservation of artefacts, photographic material, the exploration of archives, the need to promote transport and logistics as a career, a general, boundless interest in transport and even quite simple nostalgia. This breadth of interests contributes to valuable cross-fertilisation. We aim to encourage those interested in a particular aspect of transport to understand their chosen subject in the context of other areas and developments."

### **Cancellation of October meeting**

We struggled to get delegates for the autumn conference, and with great regret the decision was taken to cancel. The speakers and many delegates were to travel a long way and we feel they deserve a more substantial audience. Our next meeting is the AGM and conference in March – date to be advised. Apologies to everyone who signed up for the disappointment and inconvenience.

### **A course in transport history**

The University of York Centre for Lifelong Learning, in conjunction with Transport for London, is offering an online course covering the history of London's transport from 1860 to 1962, run by Dr David Turner, and illustrated by numerous archive documents. It runs for six weeks, the next start date being 16 April 2018, for a fee of £66.00. Details may be obtained from <https://www.york.ac.uk/lifelonglearning/tfl/>

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Viewpoints and opinions expressed by contributors to this Journal should be seen as personal, and do not necessarily reflect the view of the Association



*If ever a photograph deserved the full page treatment! Testing the acoustical properties of motor horns at the NPL in 1929 (Crown copyright)*